

THE  
MOHANDAS INDOLOGICAL SERIES

34



# Kaumarabhrtya

**UPDATED Notes on Kaumarabhrtya-Based on B.A.M.S. Syllabus**

#### Author

**Dr. DINESH K.S. B.A.M.S; M.D.**

Asst. Professor, Dept. of Kaumarabhrtya

V.P.S.V. Ayurveda College, Kottakkal,  
Edarkode - 676 501, Malappuram, Kerala

#### Chief Academic Assistance

**Dr. DEEPTHI NAIR (M.D. Scholar)**



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This image is a vertical strip, significantly blurred along its entire length. The left side is a uniform light beige or cream color. A dark, vertical shape, possibly a book or a folder, runs along the right edge. This dark shape has a lighter, yellowish-brown band near its top and bottom edges. The overall texture is grainy and lacks clear definition due to the motion blur.

This image is a vertical composition dominated by a warm, orange-brown hue. The left two-thirds of the frame are filled with this color, which has a subtle texture and slight variations in tone, suggesting a warm surface or a sunset sky. A sharp, thin vertical line, possibly a crease or a seam, runs from the top to the bottom of the frame, separating the warm area from the right side. The right third of the image is occupied by a dark, almost black, vertical streak. This streak is not perfectly straight; it shows some curvature and slight variations in width, giving it a sense of organic movement. The overall effect is abstract and minimalist, focusing on the interplay between light and shadow.

# COLLECTION OF VARIOUS INDIAN SCRIPTS

- ⇒ **HINDU COMICS**
- ⇒ **HINDU MELA**

A vertical, blurry image of a book cover. The title "IMAGINE" is printed in large, bold, black letters across the top. Below the title, there is a smaller, less distinct line of text that appears to begin with "by J.D. SALINGER". The background of the cover is a warm, reddish-orange color.

FIND ALL AT [HTTPS://DC](https://DC)

This image is a vertical, highly blurred photograph. The colors are dominated by warm tones of orange, yellow, and brown, suggesting a sunset or a close-up of wood grain. A prominent, lighter-colored vertical streak runs down the center of the frame, creating a sense of depth or motion. The overall texture is soft and lacks sharp details due to the blur.

This image is a vertical strip, possibly a screenshot from a mobile game or a screen recording. The left side is dominated by a dark, textured background with a bright, horizontal orange glow running through it. On the right side, there is a digital interface with several colored bars: a red bar at the top, followed by a green bar, a pink bar, and a blue bar below that. Below these bars, there is some illegible white text on a black background.

A vertical strip of a colorful, abstract painting featuring vertical bands of red, orange, yellow, green, and blue.

This vertical image shows a transition from a solid orange background on the left to a dense, colorful pattern on the right. The pattern consists of numerous thin, vertical bands of various colors, including blue, red, yellow, and green, creating a textured, abstract effect.

The image consists of two distinct vertical sections. The left section is a large, solid yellow rectangle with a fine, horizontal grain texture. The right section is a smaller, irregularly shaped rectangle containing a complex, abstract pattern of orange, red, blue, and black. This pattern has jagged, flame-like edges and a central area with a mix of red and blue hues. A thin vertical line marks the boundary between the two sections.

This image is a vertical composition featuring a sharp, diagonal line running from the top-left corner towards the bottom-right. The left side of the image is dominated by a dark, almost black, surface with visible vertical grain or texture, suggesting a close-up of a wooden board or a similar material. The right side is a bright, warm-toned area with a smooth, slightly blurred texture, possibly representing light hitting a wall or a different type of material. The overall effect is one of a high-contrast, minimalist aesthetic.

This vertical image features a dark, almost black, central column that tapers towards the bottom. The background is a vibrant, warm orange color with visible vertical grain or texture. On the far left edge, there is a small, distinct pinkish-red vertical strip.

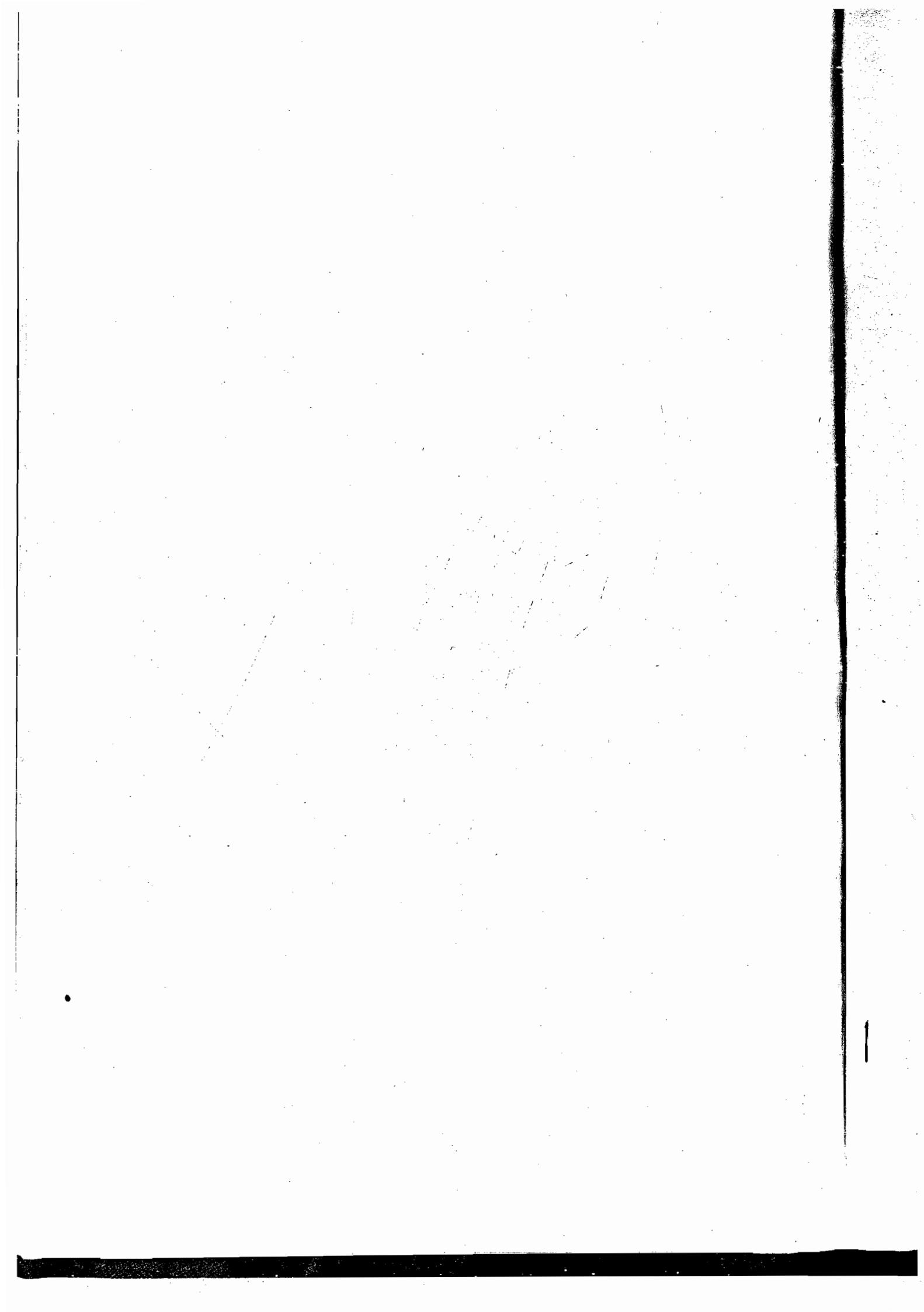
The image consists of two distinct vertical bands. The left band is a solid, deep black color, while the right band is a solid, warm orange color. There is a sharp, straight vertical line at the center where the two colors meet. The texture appears slightly grainy, and the lighting is uniform across both colors.

The image consists of two distinct vertical bands. The left band is a deep, solid black, while the right band is a vibrant, solid orange. There is a thin white vertical line at the center where the two colors meet. The background is completely black, making the orange band stand out sharply.

This image consists of a dark, almost black, background. On the left side, there is a prominent, bright green vertical strip that appears to be a reflection or a light leak. On the right side, there is another bright, vertical strip of orange or red light. The rest of the image is very dark, with no other discernible features.

The image is a vertical strip of a dark, abstract background. It features several vertical streaks of light. On the left side, there are bright yellow and green streaks that appear to be moving upwards. On the right side, there are red and orange streaks that also appear to be moving upwards. The background is mostly black, creating a strong contrast with the bright streaks.

A vertical strip of a colorful, abstract pattern featuring vertical bands of yellow, green, blue, and red against a black background.



## DEDICATION

*My respectful teachers  
who led my path  
with their enlightened vision*



## FOREWORD

The first edition KAUMARABHRITYA published in 2008 was a maiden venture by the author Dr.Dinesh.K.S. It was warmly accepted and well accommodated by the readers as a text book on Ayurvedic paediatrics. With its easy language and the simplified explanation of the concepts, it is still popularly circulating among the students.

The regular updating of the existing knowledge is inevitable for the development of the science and updating the available literature is the most important part of it. The second edition Kaumārabhritya updated is the contribution towards that. The topics introduced in the revised syllabus by the CCIM have been well incorporated in the present edition. The explanation of all the related topics based on the scientific concepts has been included here in a student friendly design.

The author Dr.Dinesh.K.S. was my student and is a dynamic academician with a highly scientific vision about the subject. He has always been sincerely involved in passing down the knowledge to the students of Ayurveda.

The present edition is definitely unique in itself in having gone through all the important topics of the subject with the highly scientific approach laid down in a easily conceivable language.

This book is guide to the students to understand the subject in total and definitely an asset to be possessed.

Jamnagar  
10.03.2010

Dr. Kalpana S. Patel M.D. (Ay.); Ph.D.  
Professor & HOD, Dept. of Kaumarabhritya,  
IPGT & RA, Gujarat Ayurveda University,  
Jamnagar, Gujarat.

## FOREWORD

It is my proud privilege and earnest wish to write a foreword to the second edition of *Kaumarabhrtya* by Dr.Dinesh.K.S., who is an eminent scholar, committed academician and intelligent practitioner in the field of *Kaumarabhrithya* (the Indian version of Pediatrics). Dr. Dinesh is a painstaking teacher who has matured into an authentic and confident professor of Ayurveda by assigning and diffusing the Indian pediatrics to the younger generation. He has done a commendable job by writing and publishing a book on Indian Pediatrics in English in 2008 (First edition) to help the Ayurvedic student fraternity to study the topic scientifically and thoroughly. It was the first book on *Kaumarabhrityam* in English based on undergraduate syllabus in Kerala. The Second edition of the book- *KAUMARABHRITYA UPDATED-* is published barely within two years of publication of the first edition. This shows the enormous demand of the book and the wide acceptance it has got from the students and practitioners of Ayurvedic fraternity.

In the present edition, the content of the book has been reorganized and updated as per the new syllabus of B.A.M.S course prescribed by the C.C.I.M. and thus it will be useful to the new generation of students. The author has succeeded in illustrating all the Ayurvedic terminologies scattered over different parts of the Ayurvedic Classics and given scientific explanations wherever possible. He has written this book in a simple language without losing the credibility of Ayurvedic literature.

It is a book every under graduate and post graduate student should possess. I am very happy to foreword the '*KAUMARABHRITYA UPDATED*' to the Ayurvedic sorority and sincerely wish him success in this venture.

Dr. S.K. Ramachandran M.D. (Ay.)

Professor and HOD, Dept.of *Kaumarabhritya*  
Govt.Ayurveda College, Thiruvananthapuram

Thiruvananthapuram  
02.04.2010

## FOREWORD

'Kaumarabhrtya Updated' is the second in the series of the author's contribution to the academy of Kaumarabhrtya, still in its growing stage. The author, Dr Dinesh K. S., has always been a highly inquisitive scholar and thus grown into a highly efficient academician. His attempt to write and publish a book based on B.A.M.S. syllabus in 2008, the first edition - Kaumarabhrtya - for the Ayurveda students was an expression of his dedication to the science and his involvement into the academy.

The first edition of this book was accepted warmly by the Ayurveda students as a friend and as a guide which proved to be a great help for them to understand the basic concepts of Kaumarabhrtya.

The present edition is a step forward to the last venture. Herein, well considering the revised B.A.M.S. syllabus the author has prepared all the topics, covering both the Ayurveda and modern discussions. The language used is easy to understand and wherever required flowcharts and diagrams have been included to convey the concepts in a much simplified manner.

This edition will definitely be helpful for the students of Kaumarabhrtya to master the subject and is surely a great asset to be possessed and kept even for the future references.

Ollur  
12.04.2010

Prof. Dr. K.G. Viswanathan M.D. (Ay.)  
Superintendent & HOD, Dept. of Kaumarabhrtya  
Vaidyaratnam Ayurveda College, Ollur, Thrissur

## FOREWORD

'kaumarabhritya' a text on B.A.M.S. syllabus published in 2008 was an attempt by the author Dr.Dinesh.K.S. to introduce the subject to the students and to help them understand the basic concepts of Ayurvedic Paediatrics.

Dr.Dinesh with his efficient teaching skills is a highly appreciable academician and the person just act to write and publish a book on Kaumarabhrithya.

In the present edition based on the revised syllabus of Kaumarabhritya, the conceptual explanations of the subject matter have been well presented keeping in mind the needs of the Ayurveda student faculty. The author has included both the Ayurveda and the modern views about the topic discussed in a pattern that can easily be understood by the students.

Kaumarabhritya updated is definitely a boon in disguise for the Ayurveda students to help them emerge successful in understanding the subject matter. This noble attempt is highly appreciable especially in the prevailing academy where the dearth of related textbook is a major challenge being faced.

Kottakkal  
28.03.2010

Prof. Dr. V.J.E. Elizabeth M.D. (Ay.)  
Principal, VPSV Ayurveda College, Kottakkal

## PREFACE

In ancient India, the transmission of knowledge was through the verbal flow from the Aachaaryas to the Sishyaas. Even after the advent of script the scenario doesn't change much. Ayurveda also was not an exception to this. Later, in the earlier 18th century, with the flaring up of the Swades'i concept, Ayurveda saw resurgence.

The concept of script, education and knowledge was brought into limelight by the Britishers as a part of their new educational system based on a pre-planned academic syllabus. Like any new experiment, this also was incorporated with many critical anomalies which, unfortunately, continue to run in the academy even today. These can be wiped off only by publishing improved text books based on syllabus from time to time.

Kaumaarabhritya, just like modern paediatrics stands last in the mainstream of medical development and so the dearth for related textbooks still exists. An attempt was made to fill this dearth with Kaumaarabhritya-Textbook for Ayurveda students in 2007. The major concern of the book was explaining the Ayurvedic topics than modern subjects which were rather left untouched.

Considering the valuable feedbacks from my students and as a part of revised BAMS syllabus the 2nd edition, Kaumaarabhritya updated, was planned to satisfy the subject related academic needs of the BAMS students.

All the topics as per the revised syllabus have been tried to be included in this book. Discussions on related modern subjects have also been made. Due to my limitations as an Ayurveda doctor to deal with the subject, I am highly indebted to the leading modern paediatric textbooks wherefrom academic notes have been taken. I humbly express my gratitude to the authors of those textbooks.

Respecting the need of the hour, certain new conclusions have been put forth herein based on the comparative study of modern and Ayurvedic paediatrics.

These are, at some instances, purely conceptual analysis from my view point with a pure aim to provoke a new thought and sight among the contemporary Ayurveda people for the development of our science. At other instances, these are based on my clinical experiences and so may not be satisfactorily acceptable to all.

This book is a blend to serve all the strata of people in the Ayurveda field - as a guide to the students for understanding the basic concepts of Kaumaarabhritya, as an object of critical analysis for the academicians and practitioners, and as a substratum of detailed analytical study for MD scholars.

Though, I still believe this work is not yet complete and many future editions are inevitable, if my work could still benefit or contribute even a meagre share to the pace of development of the science, I would be highly obliged.

Kottakkal

19.04.2010

Dr. Dinesh K.S. M.D. (Ay.)

## ACKNOWLEDGEMENT

*This second edition of my previous work, Kaumarabhrtyam, is an outcome of the acceptance and the appreciation shown by the readers. I would hereby like to acknowledge those who stood with me in all the ups and downs for realization of this venture. I first of all bow in front of my teachers who extended their fingers to me in my early days into the Ayurveda academy and strengthened me with the knowledge of basic concepts of Ayurveda and with rational thoughts. My sincere gratitude towards Dr. V.J.E. Elizabeth, who encouraged this work to the maximum as the previous Head of the Department and the present Head of the Institution. I express my gratitude to Dr P. K. Beena Rose , Professor & HOD, Department of Kaumārabhrtya, V.P.S.V. Ayurveda College, Kottakkal for her support and co-operation. The help rendered by my colleagues Dr Anita K. Viswambharan, Dr Neeta Surendran, Dr Naseema P.K. and Dr Anu George is thankfully remembered herewith. My heart felt gratitude towards my spouse Smitha K.K. who is my constant source of inspiration and without whose support and co-operation this dream could not have been achieved.*

*My special thanks to Dr Sreeparvathy R, Dr Sreelakshmy V, Dr Hima Aliyas and Dr Dilna Raj with whom I kept my first step into this venture with the first edition of this book. I acknowledge Dr Deepy Nair with great gratitude whose contribution as the co-author of this present edition to complete this work on a time bounden schedule requires special mention.*

*Dr. Bharvi Ben Trivedi, one of my friend from ISM Department of Govt. of Gujarat has contributed a lot in this venture and I am highly indebted for her works. I am sincerely thankful to Dr. A. Raja Hariprasad, who led me in several occasions of this work and has proposed the name*

*of this book. The modern explanations included here is not an active contribution of the author due to his limitations in the field and so have been borrowed from the authentic modern textbooks. I humbly courtesy those authors, Textbook of Practical Neonatal Care- Orient Longmann, Current Paediatric Diagnosis and Treatment, IAP Textbook of Paediatrics, Dr P V Tiwari, Textbook of Surgery - S. Das, Notes on Paediatrics- Medknow Publications, Clinical Paediatrics for Undergraduates- Elizabeth K E and Pediatric Companion- T U Sukumaran .*

*At long last my humble tribute to my mother for bringing out the true self in me.*

*My sincere thanks to one and all.*

March 24, 2010

Dr. Dinesh K.S. M.D. (Ay.)

## CONTENTS

### PART A

<u>1</u>	Introduction to Kaumarabhrtya	27
<u>2</u>	Vayo bheda (Classification of age)	34
<u>3</u>	Importance of Kashyapasamhita in Kaumarabhrtya	37
<u>4</u>	Navajaatasisuparicharya (Neonatal care)	43
<u>5</u>	Navajaatasisu pareekshanam (Examination of newborn)	71
<u>6</u>	Kumaaraagaaram	79
<u>7</u>	Navajaatasisuposhanam	83
<u>8</u>	Dhaatree (Wet-nurse)	111
<u>9</u>	Baala vriddhi vikaasa karma (Growth and Development of Child)	116
<u>10</u>	Importance of Kreedaabhumi, Kreedanaka and Kumaaradhaara	125
<u>11</u>	Poshana (Nutrition)	130
<u>12</u>	Samskaaras (Cultural Ceremonies)	135
<u>13</u>	Dantotpatti Evam Dantarakshaavidhi (Dentition and Dental Care)	144
<u>14</u>	Vyaadhikshamatva	155
<u>15</u>	Knowledge of National Programmes Related to Child Health Care	161

## PART B

1	Baalaroga Saamaanya Chikitsa Siddhanta	167
2	Oushadhmaatranirdhaarana (Posology in Children)	186
3	Specific Therapeutic Procedures in Children	189
4	Prasavakaaleena Abhighaata (Birth injuries)	196
5	Sahajavyaadhi(Congenital Disorders)	202
6	Anuvamshikavyaadhi (Hereditary Diseases)	221
7	Prasavottaravyaadhi(Neonatal Disorders)	231
8	Dushtastanyapaana janyavyaadhi (Disorders due to Vitiated Milk)	244
9	Kuposhanajanya vyadhi (Nutritional Disorders)	257
10	Aoupasargika vyadhi (Infectious Diseases)	273
11	Praanavaha sroto vikaaras (Diseases of Respiratory System)	302
12	Annavaha srotovikaaras (Diseases of Gastro Intestinal System)	313
13	Rasavahasrotovikaaras	332
14	Raktavahasrotovikaaras	338
15	Maamsa Medovahasrotovikaaras	347
16	Mutravahasrotovikaaras (Diseases of Urinary System)	357
17	Anyabaalavikaaras (Miscellaneous Paediatric disorders)	364
18	Behavioral Disorders of Children	389
19	Aatyayikabaalaroga Prabandhanam (Paediatric Emergency Management)	397
20	Baalagraha	406

## Appendices

i	Measurements and values	421
ii	Questions	428
iii	Entrance preparation notes	434
iv	Important oushadha yogas	450

## **SYLLABUS**

### **Part A**

**Kaumarabhritya parichaya Evum Baalaka Paricharya  
(introduction to ayurvedic paediatrics and child care)**

- 1 General introduction of Kaumarabhritya (ayurvedic paediatrics): Definition, importance, description and etymological interpretations of terminologies used in Kaumarabhritya.
- 2 Vayobheda (classification of age): Garbha, baala, kaumara; Ksheerada, ksheerannaada & annaada, etc.
- 3 Importance of Kasyapasamhita in Kaumarabhritya
- 4 Navajaata Sisu paricharya (neonatal care): Care of the samayapurvajaatasisu (preterm), purnakaalikasisu (full term), and samayaschaatajaatasisu (post term neonate), naabhinaala chhedana (cutting of umbilical cord), complication of improper cutting of umbilical cord and its treatment.
- 5 Praana Pratyagamanam (neonatal resuscitation): Methodology; complications and their management (ayurvedic and modern view)
- 6 Navajaata sisu pareekshana (examination of new born): Ayu pareekshana (including lakshanaadhyaya)modern approach of neonatal examination including gestational age assessment.
- 7 Kumaaragaara (nursery, NICU and paediatric ward)

- 8 Navajaatasisuposhana (nutritional aspects including neonatal feeding): Specific feeding schedule as per ayurvedic texts and modern concept; stanasampat (characteristics of normal breast), stanya sampat (properties of normal breast milk), stanyotpatti and prasruti (physiology of lactation), stanya saṅghattana (composition of breast milk), stanya pareekshana (examination of breast milk), stanya-piyusha (colostrum); stanyapaanavidhi (method for breast feeding), stanyakshaya-Stanyanaasa (inadequate production and absence of breast milk), stanyabhaave pathya vyavastha (alternative feeding in the absence of breast milk), various other feeding methods.
- 9 Stanyadosha (vitiation of breast milk): Stanyadosha (vitiation of breast milk), stanyashodhana (purification of breast milk), stanyajanana and vardhanopakrama (methods to enhance breast milk formation).
- 10 Dhaatri (wet nurse): Dhaatriguna and dosha (characteristics of wet nurse), concept of human milk banking
- 11 Garbhavridhivikaasakrama: Saamaanyaparichaya (general introduction to normal fetal growth from conception to full term maturity), saareerika vriddhi, maanasika evam saamaajikavikaas (physical, mental and social growth & development; Anthropometry-measurement and their interpretation.
- 12 Importance of kreedaabhumi (play ground) and Kreedanaka (toys), kumaaradhara (child caretaker)
- 13 Poshana (nutrition): Normal requirements of nutrients for newborn, infant and children, common food sources, saatmya and asaatmya aahaara (compatible and incompatible diet)
- 14 Samskaaraas: Jaatakarma, nishkraamana, upaveshana, annapraasana, karnavedhana, choodaakarma, upanayana and vedaarambha.
- 15 Dantotpatti evam danta raksha vidhi (dentition and dental care): Dantasampat (characteristics of healthy teeth), danta nisheka evam dantotbeda (eruption of teeth), dantotbhedajanyavikaara (dentition disorders).

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- 16 Vyaadhikshamatva: General concepts of bala (immunity) and methods of balavridhi.
  - 17 Knowledge of National programmes related to child healthcare: Reproductive and child health (RCH) programme, community child health programmes, nutritional programmes, national immunization programme and other programmes incorporated by Govt. of India, time to time.

### Part B

#### Saamaanya Chikitsa Siddhaanta and Baalaroga (General principles of treatment and management of paediatric disorders)

- 1 Baalaroga saamaanya chikitsa siddhaanta (general principles of treatment in children), Baalaroga pareekshaavidhi-shadvidha, ashtavidha, dashavidha pareeksha evam sisu vedana parigyanam (examination of diseased child and diagnostic methods-ayurvedic and modern).
- 2 Aushadhi maatra nirdharana - According to vaya, bhaara evam aushadhi kalpana (drug doses according to age, weight and drug preparations)
- 3 Specific therapeutic procedures in children: Panchakarma procedures specific to paediatric age group.
- 4 Prasava Kaaleena abhighaata (birth injuries): Shwaasaavarodha (asphyxia), upasheershaka (caput succidaneum and cephalohaematoma), Sastraaghaatajanya: Facial paralysis, erb's paralysis, Bhagna (fractures).
- 5 Sahajavyaadhi (congenital disorders): Sahaja hridaya vikaara (congenital cardiac disorders) jalasheerashaka (hydrocephalus), khandaoushtha (cleft lip), Khanda-talu (cleft palate), sanniruddha guda (anal stricture/imperforated anus), pada-vikriti (talipes equinovarus and valgus), tracheoesophageal fistula (TOF), spina bifida, meningeocele, meningeomyelocoele, pyloric stenosis.
- 6 Anuvanshika vyadhi (Hereditary diseases): Down syndrome, turner syndrome, myopathy, thalassemia, sahaja prameha (juvenile diabetes).

- 7 Prasavottara vyadhi (neonatal disorders): Navajaata Kaamala (Neonatal Jaundice), Navajaata netraabhishekha (neonatal conjunctivitis), naabhiroga (umbilical disorders), mastishkaaghaata (cerebral palsy), rakta vishamayata (neonatal septicaemia), rakta vaishamayata (Rh-incompatibility), raktasraavi vikaara (Haemorrhagic disorders), ulvaka roga.
- 8 Dushta stanyapaanajanya vyadhi (disorders due to vitiated milk): cow's milk allergy, charmadala (infantile atopic dermatitis), ksheeraalasaka, kukunaka (conjunctivitis), ahiputana (napkin rashes).
- 9 Kuposhanajanya vyadhi (nutritional disorders). Kaarshya, phakka, baalashosha and parigarbhika (protein energy malnutrition), vitamin and micronutrient deficiency disorders, hypervitaminosis.
- 10 Aupasargika vyadhi (infectious diseases): Karnamulasotha (mumps), romantaika (measles), rubella, masurika (chicken pox), rohini (diphtheria), kukkan-kaasa (whooping cough), dhanurvaata (tetanus), krimiroga (worm infestations), dengue, malaria, poliomyelitis, rajayakshma (tuberculosis), jeevaanujanya yakrit shotha (hepatitis).
- 11 Srotas vikaara:
  - a Praanavaha srotas: pratishyaaya (common cold), kaasa (cough), Swaasa (respiratory distress syndrome), tamaka swaasa (bronchial asthma), utphullika, swasanaka jwara (pneumonia/pneumonitis, bronchiolitis), gala sotha (pharyngitis, laryngitis), taalukantaka (tonsilitis).
  - b Annavaaha srotas: Ajirna (indigestion), atisaara (diarrhoea), chhardi (vomiting), vibandha (constipation), mukhapaaka (stomatitis), gudapaaka (proctitis), parikartika (anal fissure), udarasoola (infantile colic), pravaahika (dysentry), gudabhramsa (rectal prolapse).
  - c Rasavaha srotas: Jwara (fever), paandu (anaemia), mridbhakshanajanya paandu (anaemia associated with clay eating/pica)
  - d Raktavaha srotas: Kaamala (jaundice), raktapitta (haemorrhagic disorders), krimija hridroga (infectious cardiac diseases including

- rheumatic heart diseases), uchcharaktachapa (hypertension), yakridpleehodara (hepatosplenomegaly).
- e Maamsa-medovaha srotas: Apachi (lymphadenitis), galaganda (goitre), gandamaala (cervical lymphadenopathy), sthaulya (obesity).
  - f Mutravaha srotas: Mutraaghaata (anuria), mutrasanga (retention of urine), mutrakriccha (dysuria), vrikkasotha (glomerulonephritis and nephrotic syndrome).
- 12 Anyabaalavikaara (miscellaneous paediatric disorders: Pangutwa (locomotor disorders), vaamanatwa (dwarfism), jadatwa (mental disorders), Apasmaara (epilepsy), kushtha (skin disorders), madhyakarnasotha (otitis media), karnasraava (ottorrhoea)).
- 13 Behavioral disorders of children, their management and counselling: Breath holding spell, sayyaamutra (bed wetting), autism, ADHD (Attention Deficit and Hyperactive Disorders).
- 14 Aatyayika Baalaroga prabhandhana (paediatric emergency management): Shock and anaphylaxis, fluid and electrolyte management, drowning, poisoning, foreign body aspiration, hemorrhage, acute renal failure, febrile convulsion, status asthmaticus.
- 15 Baalagraha: General description, types, clinical features and management
- 16 Various ayurvedic & modern procedures and investigations in paediatric practice.

### Practical

- 1 Clinical training in above mentioned disorders of children
- 2 Navajaatusisuparicharya (care of the newborn)
- 3 Praanapratyagaamanavidhi (resuscitation procedure of new born)
- 4 Vaccination
- 5 Panchakarmavidhi (panchakarma procedures)
- 6 Knowledge of various equipments such as phototherapy unit, overhead radiant warmer, special resuscitation equipments, panchakarma and their application

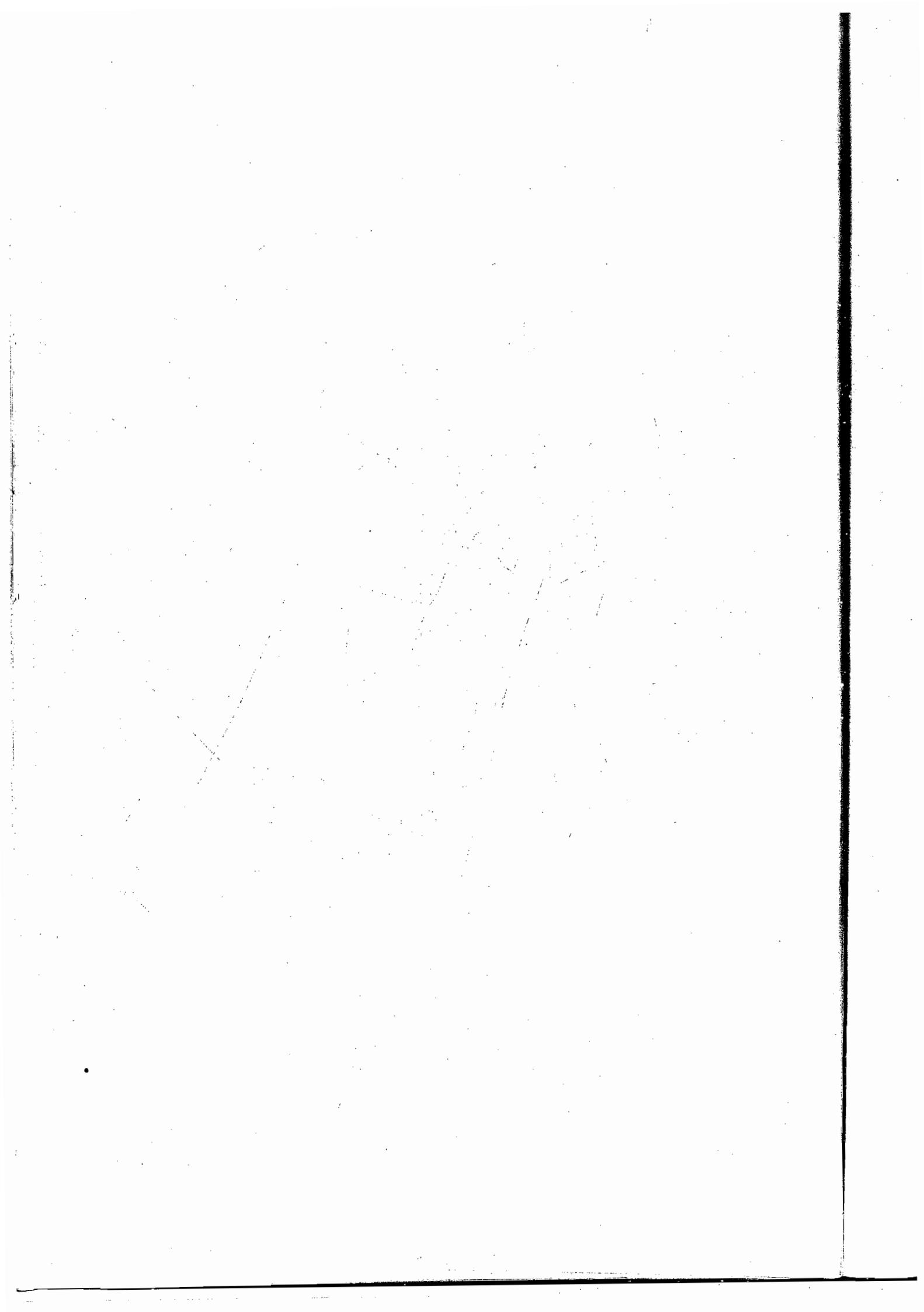
- 7 Knowledge of IV fluids administration, blood sampling
- 8 Breast feeding technique.

#### **Practical marks division**

Clinical work (record of clinical cases)	20 marks
Examination of patient	40 marks
Spotting	10 marks
Viva - voice	30 marks

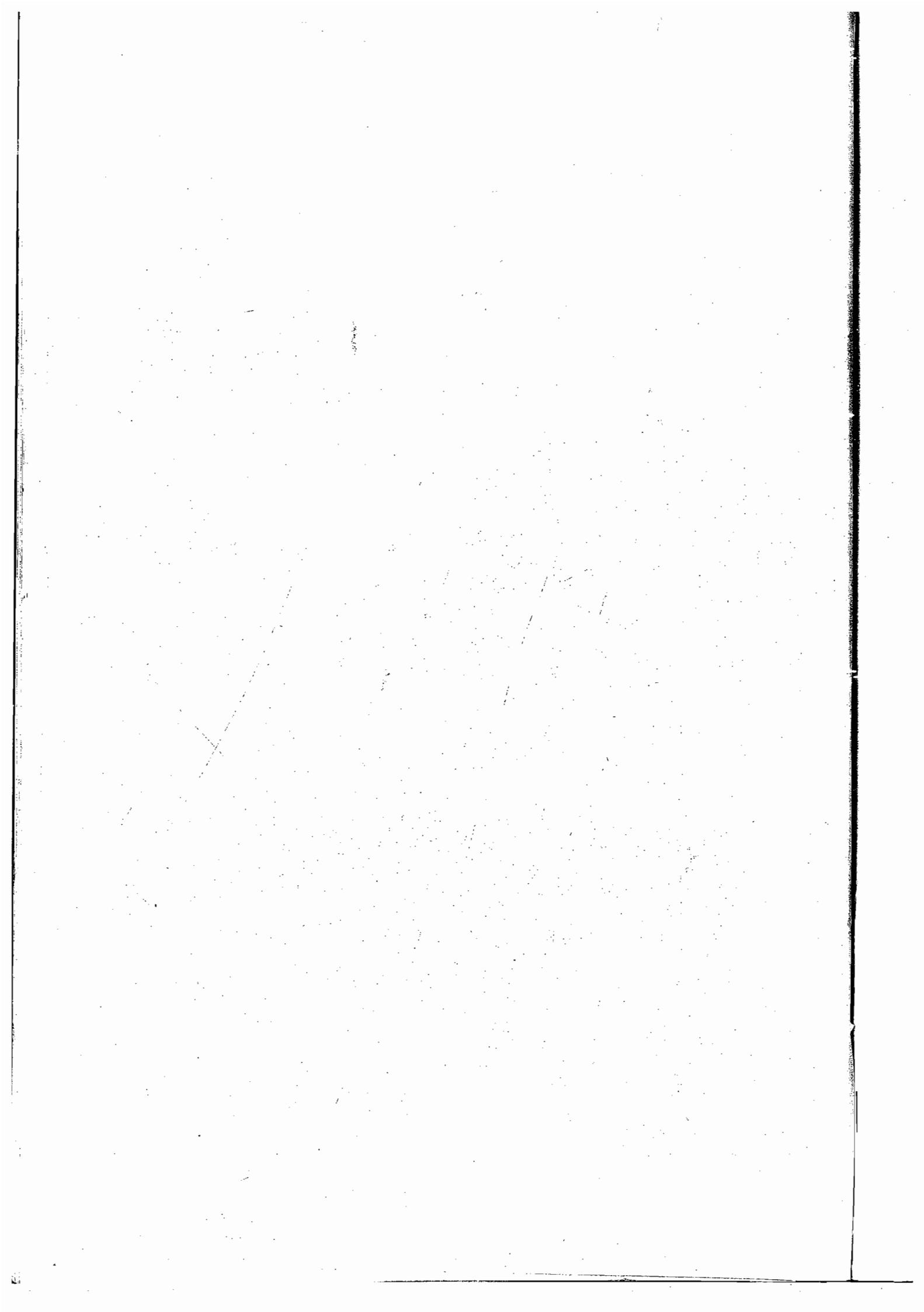
## LIST OF ABBREVIATIONS

K.S.	Kasyapasamhita
C.S.	Charakasamhita
S.S.	Sushruta Samhita
A.H.	Astanga Hridayam
A.S.	Astanga Samgraham
B.P.	BhavaPrakaasam
Y.R.	Yoga Ratnakaram
B.R.	Bhaishajya Ratnavali
Sh.Sa.	Sharngdhara Samhita
ARKD	Arogya Raksha Kalpa Druma
H.S.	Hareetasamhita



## PART A

KAUMARABHRITYA PARICHAYA  
EVUM BAALAKA PRICHARYA  
(Introduction to Ayurvedic  
Paediatrics and Child Care)



# 1

## INTRODUCTION TO KAUMARABHRTYA

The Ashtanga Ayurveda holds within itself the study related to all the domains of medicine. But, in ancient times, the study of Ayurveda was not split into branches as today. Rather, it was studied and practiced as a subject in total. Later, when the science developed to the extent of exploring the minutest cell in the body, the precise knowledge about each domain separately became inevitable. This phenomenon of splitting the medical science into segments to simplify its complex nature and to understand its application in the human body is known as reductionism in medical science. Thus, for the development of science reductionism played a key factor. As a part of this reductionism itself, the study of each one of the Ashtangas of Ayurveda separately was introduced.

Kaumarabhrtya is one among the eight branches of Ayurveda. In the context of Vajeekarana it is said that a person without a progeny is like a tree without branches and fruits serving no purpose in its existence. But, if the branches are lame or the fruits are bitter, the tree would still be looked down upon by the society. So it is not merely giving birth to a progeny that matters. Rather, more important is that the progeny should be capable- both mentally as well as physically- to be an active participant of the society. For the fact that today's children are the future of the family as well as the nation, it is our responsibility to provide them with the best care.

The practise of Kaumarabhrtya starts right from birth of the baby upto he becomes capable of independent existence. This is the time of maximum development of the child. During this time both his physical and mental development is promoted. And that itself is the contribution of Kaumarabhrtya. This branch suggests the rules and regimes regarding cleaning, bathing and stabilising the new born. Gradually, through domains of diet, milestones, education and upto attaining the age of puberty Kaumarabhrtya guides to carve out the best possible individual out of him. It deals with the diseases under two main heads- firstly, exclusively paediatric diseases like ksheeralasaka, phakka, etc and secondarily, paediatric management of the common diseases like jwara, atisaara, etc taking into consideration the factors like age and strength.

Thus, Kaumarabhrtya is the first hand of support offered by the science of Ayurveda to a new born on his arrival to this new world, to guide him towards a healthy living throughout the future.

Children were considered as vulnerable in the society since the date of Haritasamhita.

तस्वी च ब्राह्म.....  
 दीनो वा दुर्बलो वापि प्राज्ञो वा पण्डितस्तथा।  
 महात्मा श्रोत्रियः साधुरनाथो बन्धुवर्जितः  
 एतान् व्याधिविनिग्रहस्तान् प्रतिकुर्याद्विशेषतः (HS 1/3)

Several people like saints, Brahmins, females etc are to be cared well by vaidyas and remunerations should not be received from them for the treatment.

#### **Definition and fields of Kaumarabhrtya (कौमारभृत्यस्य व्याख्या व्याप्तिश्च)**

Developmental feature of any science is its presentation in a classified form. Ayurveda in its path of development divided into eight branches known as Ashtanga Ayurveda even at the time of Bhrihatrayees. Kaumarabhrtya is one and important of Ashtangas. Acharya Sushruta defines Kaumarabhrtya as:

कौमारभृत्यं नाम कुमारभरणधात्रीक्षीरदोषसंशोधनार्थं  
 दुष्टस्तन्यग्रहसमुथ्थानां च व्याधीनामुपशमनार्थम्॥ (S.S.Su. 1/7.3)

The branch of Ayurveda which deals with following categories is termed as

Kaumarabhritya. They are:

- 1 Kumaara bharanam
- 2 Ksheera Dosha Sodhanakriya of Dhathri/mother
- 3 Treatment of Dushta stanyaja disorders.
- 4 Treatment of Grahaja vyadhis.

Acharya Hareeta adds some more duties to the field of Kaumaarabhritya

गर्भोपक्रमविज्ञानं सूतिकोपक्रमस्तथा ।  
बालानां रोगशमनी क्रिया बालचिकित्सितम् ॥ HS 1/2

- Proper Antenatal care (गर्भोपक्रम विज्ञानम्)
- Proper Post natal care (सूतिकोपक्रमम्)

Acharya Sushruta in an another context add some more duties to the Kaumarabhritya. They are :

- All the mentioning regarding the sukla and arthava diseases are coming under the definition of Kaumaarabhritya.
- Knowledge about fetal growth and development is a topic of Kaumarabhritya.

### Kumaara bharanam

A child should be born and brought up in unimpaired circumstances. The social, biological, economical, mental, physical and political factors should be made pleasing by his care takers. Then only he will be competent enough to fit in to the family and society. The word *Bharanam* carries all these dimensions. A child after proper care will show all the positive features of a healthy kid as explained by Acharya Kasyapa.

तथा बालानां रूषितरूदितस्वप्नप्रजागरकोधर्ष-  
विसर्गादान पट्टिकस्थैर्य गाम्भीर्याणि - युक्तानि गुणाधिकानि  
प्रशस्यन्त इति । K.S.Su. 28/6

Properly cherished kid shows sufficient happiness, crying, sleep, awakening, anger, evacuation (urine and faecal output), food intake, digestive power and stability.

### Ksheera Dosha and Dusta stanyaja disorders

A child is supposed to be excessively dependent on breast milk during first 6 months for their nutritional needs. These 6 months are highly crucial

and determinant so far a child's growth and development is concerned. So providing healthy and nutritious breast milk is the duty of paediatrician. Moreover breast milk is an ideal medicine for many ailments too.

संभवन्ति महारोगा अशुद्धक्षीरसेवनात्।

तेषामेवोपशान्तिस्तु शुद्धक्षीरनिषेवणात्॥

K.S. Su.19/27

So the field of Kaumarabhritya covers all the protective measures to have good breast milk curative measures to the diseases from diseased breast milk and treatment to the stanyadushti.

### Grahabaadha

Grahaas are invisible causative agents of diseases in children. Graharogas are acute infectious diseases with immediate progression and fatal outcome. As infancy is in an immuno compromised age utmost care should be taken to prevent these health hazards. This concern was well explained by Acharya Kasyapa as

ये च त्वां पूजयिष्यन्ति श्रद्धाना जना भुवि-

नैतेषां सर्व भूतेभ्यो भविष्यति भयं कवचित्॥

### Importance of Kaumarabhritya (कौमारभृत्यस्य महत्वं)

Children, being the building blocks of the nation as well as the most vulnerable group in the community, require to be handled with utmost care and concern. Hence, *Paediatrics*, the branch of medical science dealing with their health and diseases, is indeed, of special significance.

कौमारभृत्यमष्टानां तन्त्राणामाद्यमुच्यते।

आयुर्वेदस्य महतो देवानामिव हव्यपः॥ K.S.Vi. 2/10

According to Acharya Kasyapa Kaumarabhritya is considered to be the best among the 8 angas of Ayurveda. This has been compared to the excellence of Agnideva among other devas.

कुमारमासौबनप्रतेघर्मथिक.....

एवमेनं कुमारामायौवनप्राप्तेऽर्धमार्थकौशला-

गमनाच्चानुपालयेत्। इति पुत्राशिषां समृद्धिकरं

कर्म व्याख्यातम्। तदाचरन् यथोक्तेर्विधिभिः

पूजां यथोक्तं लभतेऽनसूयक इति। C.S. Sa. 8/66-67

An infant is advised to be brought up from childhood to adolescence in

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accordance with the Ayurvedic Principles, so that he becomes capable of attaining the purushaartha.

The health problems of children are different from those of adults because of the following aspects:

- 1 सौकुमार्यता – Children are highly vulnerable due to *sukumaaratwam*.
- 2 अल्पकायता - Lower body mass index in comparison with adults.
- 3 सर्वानुपसेवता – Children cannot consume all types of food.
- 4 अपरिपक्वधातु - Immature dhaatu status of children
- 5 दोषदूष्यमलाल्पता - Quantitatively and qualitatively doshas and dushyas are less.
- 6 असमत्वागतप्राणदोषधातुबलौजसा - Equilibrium of functional and structural entities of children is unstable.

The pratyagaata Praana is not in samaavastha (stable). The praana may go to asamaavastha with very simple reasons. Same is happening with dosha, dhaatu, bala and ojus due to immaturity of the body. The stability of these bodily factors will be gained only after 30 years of age according to Charakacharya.

- 7 अजातव्यञ्जनम् - children have not developed secondary sexual characters. Here the term vyanjanam is the feature indicative of secondary sexual characters (*smaśruaadikam*).
- 8 आहारसंकरात् अनियतवह्नि - the status of agni in children is unstable as they are not acclimatized with different states of food materials (solid, liquids, semi solids).
- 9 मधुरसात्म्यम् - children are more fond of madhura rasa and it yields better health in them.
- 10 वाक् चेष्टयोरसामर्थ्यम् - children cannot properly express their needs through language and action.

The character of a human being is moulded right from the childhood by the interaction with paediatrician, parents, teachers and society. Among them, the paediatrician plays an important role as he deals with the health of the child, which is considered as the wealth for a lifetime (शरीरमाद्यं खलु धर्मसाधनम्).

### Special attributes to the paediatric age group

- 1 As a rule an infant's eye is hypermetropic
- 2 The fetus has very high total body water, which gradually decreases to about 75% of the birth weight for a term infant.
- 3 Neonates can be regarded as hypersensitive to pain stimuli.
- 4 Head circumference of a neonate is greater than chest circumference.
- 5 An interruption of regular breathing pattern by an episode of apnea may be normal in a term infant in the first month of life.
- 6 A physiological decrease in haemoglobin content is noticed at 8-12 weeks in term infants and at 6 weeks in preterm babies.
- 7 Blood vessels of the umbilical cord anatomically present in a baby up to 10-20 days of life.
- 8 Sucking and swallowing are not fully coordinated before 34 weeks of gestation.
- 9 The movement of the bowel pattern is different in neonate (adult-triphasic migrating motor complex; neonate-non migrating phasic activity)
- 10 Secretion of pancreatic amylase and lipase is low in an infant. Adult level of these enzymes in the duodenum reaches by the age of one year.
- 11 The liver constitutes 5% of body weight at birth but only 2% in an adult. Ductus venosus obliterates when the oral feeding is started.
- 12 The development of lungs is completing in child by the age of 2 years. The pace of growth of the respiratory system after birth is highly dependant on the functional needs of the other growing organs.
- 13 The development of paranasal sinuses will be completed by the age of puberty only.
- 14 The lymphoid tissue of Waldeyer (especially adenoids & tonsils) ring is most active immunologically between 4-10 years of age with a decrease after puberty.
- 15 New born infants at rest have relatively high oxygen consumption, which is associated with relatively high cardiac output.

- 16 The wall thickness and muscle mass of neonatal left and right ventricles are almost equal.
- 17 Foramen ovale is functionally closed by the 3<sup>rd</sup> month of life.
- 18 Functional closure of ductus arteriosus is usually complete by 10-15 hours in a normal neonate.
- 19 Normal newborn infants have higher haemoglobin and haematocrit levels with larger RBC than older children and adults.
- 20 Within the first week of life, a progressive decline of haemoglobin level begins and persists for 6-8 weeks.
- 21 During first year of life children are getting less amount of iron rich food.
- 22 At birth spleen weighs approximately 11gms. Thereafter it enlarges until puberty, reaching an average weight of 135gms before diminishing in size during adulthood.
- 23 During summer the babies(neonate) may develop a temperature of 90-100°F on the 2<sup>nd</sup> and 3<sup>rd</sup> day due to environmental heat and physiological dehydration.

## 2

## VAYO BHEDA

### (Classification of age)

For expressing a particular matter, the most accepted scientific approach is the simple process of classification. Classification can be in different view. In Ayurvedic classics, total age of a human being is classified according to his physical dynamics. i.e. (dhaatu pushti stithi naasam). Of these Kaumarabhritya deals with the first phase of life i.e. the stage of dhaatupushti, the basis of which is the maturing annavaharsrotas. So the most number of classifications are based on the nature of food taken by baby.

#### Kasyapasamhita

गर्भबालकुमाराख्यमित्येतस्त्रिविधं वयः। यौवनं मध्यमं  
 वृद्धमेतच्च त्रिविधं पुनः॥। वर्षावारः क्षीरपः स्याद्यावत् पिबति  
 वा पयः। वयस्तद्बालमस्माच्च यावत्  
 षोडशवार्षिकः॥। अन्नादः सर्व एव स्यात् कौमारे वयसि  
 स्थितः। अतः परम् धातुसत्त्वबलवीर्यपराक्रमैः॥। K. S. Khi. 3/72-74

- 1 Garbha -from intrauterine phase till delivery.
- 2 Baala – upto 1 year after birth.(Ksheerapa)

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1. वयस्तु त्रिविधं - बाल्यं, मध्यं, वृद्धमिति। तत्रोन षोडशवर्षा बालाः। तेऽपि त्रिविधाः - क्षीरपः, क्षीरान्नादा, अन्नादा इति। तेषु संवत्सरपराः क्षीरपा, द्विसंवत्सरपरा क्षीरान्नादा; परतोऽन्नादा इति। S.S.

- 3 Kumaara: 1 – 16 years
- 4 Youvanam: 17 – 34 years
- 5 Madhyamam: 35 – 70 years
- 6 Vaardhakyam: Above 70 years upto death

### Sushrutasamhita<sup>1</sup>

1. Baalya: Upto 16 years, which is further divided into 3 phases.
  - a Ksheerapa: Upto 1 year (period of maximum feeding on milk food)
  - b Ksheerannaada: 1-2 years (period of feeding on milk and solid food)
  - c Annaada: 2-16 years (period of feeding on solid food only)
2. Youvana
3. Vaardhakya

### Ashtangahridayam

1. Baalyam: upto 16 years
  - a Ksheeravartanam
  - b Annavartanam
  - c Ubhayavartanam
2. Madhyam
3. Kshayam

त्रिविधः कथितो बालः क्षीरान्नोभयवर्तनः।

A.H.U. 2/1

वयसत्वाषोडशाद् बालं तत्र धात्विन्द्रियौजसाम्  
वृद्धिरासप्ततेर्मध्यं तत्रावृद्धिः परं क्षयः॥

A.H.Sa.3/105

### Charakasamhita<sup>2</sup>

1. Baalya:
  - a Upto 16 years
  - b 16 – 30 years – Vivardhamaanadhaatu
2. Madhyama: 30 – 60 years
3. Jeerna: 60 -100 years

2. तद्वयो यथा स्थूलभेदेन त्रिविधं बालं, मध्यं, जीर्णमिति। Ch. Vi. 8/122

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### Ashtangasamgraham

1 Baalyam: upto 16 years

- a Stanyavartanam
- b Aahaaravartanam
- c Ubhayavartanam

2 Madhyamam – upto 60 years

3 Vriddham – after 60 years

वयस्त्रिविधम् बालं मध्यं वृद्धं च। तत्राऽषोडशाद्वर्षाद्

बालम्। आषष्टेर्मध्यम्। ततो वृद्धम्।

तेष्वपि स्तन्याहरोभयवृत्त्या बालम् त्रिविधम्॥ A. San. 8/124

### Hareetasamhita

1 Adhama, Uttama, Madhyama and Heena

2 a Baala              upto 16 years

b Yuva              10 – 25 years

c Madhyama 25 – 70 years

d Vriddha              above 70 years

पथि श्रान्त श्रमक्षीण बालस्त्री सुकुमारकम्।

एतां मध्यमा संज्ञा प्रोच्यते बैधकागमे॥

आषोडशादभवेद्बालः पञ्चविंशो युवा नरः।

मध्यमं सप्ततिर्यावत्परतो वृद्ध उच्यते। H.S. 1/5

In Hareetha samhita, the terminologies related to female age is quite different.

- 5 yrs.              Baala
- Up to 11 years      Mudga

### 3

## IMPORTANCE OF KASYAPASAMHITA IN KAUMAARABHRITYA

Kasyapasamhita, the exclusive classical textbook on Kaumarabhritya, is misconceived generally to be dealing only with the paediatric medicines. But it actually is a text book that has given much importance to all the branches of the science, of course, predominantly Kaumarabhritya. Following are the unique contributions by acharya Kasyapa in the field of this science.

- 1 Lehana-an entire chapter has been dedicated to the lehana for a child. It deals with indications, contra indications and effects achieved by lehana. There are a wide spectrum of lehana drugs listed in this chapter. Both the curative as well as palliative effect of lehana drugs has been described.
- 2 Posology-specific pososlogy has been discussed in detail not only for drug administration, but also for sodhana dravyas. The kalpana(formulation), mode of action and the age is specifically considered before deciding dose.
- 3 The first mention of ksheeradushti caused by graham was introduced.
- 4 The significance of the best quality of milk for correct growth and development-both physical and mental-has been highlighted.
- 5 The concept of 'vajra' and its role in causation of disease called stanakeelaka has been mentioned. The articles like *trina* (grass), *keeta*

(insect), *suka* (spike of grains), *makshikaanga* (body parts of flies) etc. are included under *vajra*. This is not digested and metabolized in the body and reaches *stanya vaha srotas* and cause the disease.

- 6 Mention of tantra prayoga for curing stanyadushti has been mentioned.
- 7 Dentistry-the process of teeth eruption has been detailed with special reference to time of eruption and fall of temporary teeth and that of permanent dentition. Physiology of dental eruption with respect to the child has been mentioned. Different types of dental arrangements has been discussed. Acharya named the different tooth viz-*raajadanaa*, *vasta*, etc. The ideal dental arrangement has also been mentioned.
- 8 *Vedanaadhyayam*-the alarming signs and symptoms of the disease occurring in a child has been mentioned in all the samhitas. But only in *Kasyapasamhita*, the author dedicated a separate chapter for this subject. He has discussed 34 diseases with their premonitory and chief clinical features.
- 9 In *Vimaanasthaana*, *sishyopakramaniya adhyaaya* achaarya has pointed out that a child cannot be managed as easily as an adult. The dose and mode of action of the drug for a child has to be specially planned. And also the drug formulations have to be made palatable for the child. With this view, the significance of *Kaumarabhritya* has been well elaborated.
- 10 Colour of 'show' during child birth, depending upon the sex of the child has been specified;said to be *tantree varna* (like that of guduchee), unctuous and scanty in case of male child and in case of female it is *kimshukodaka* like (dark red).
- 11 The appearance of '*graahi soola*' (tetanic uterine contraction) as a sign of approaching time of delivery has been mentioned besides the *aavi* (labour pains) mentioned by others.
- 12 The chikitsa has been classified in to two-oushadha (pharmaceuticals) and bheshaja(non-pharmaceuticals)
- 13 While discussing the prediction of cessation by grahas, author has added a new graham called 'pundarika'.

- 14 Acharya has given special reference to the diseases occurring in garbhinee and sutika and their treatment has been discussed in separate chapters both in chikitsa sthaana and khilasthaana. Eg: garbhinee jwara, swasa, hikka, kaamala, paandu, etc. The term *untarvatnee* has been given for garbhinee. The management of sutika with special reference to the desa visesha has been discussed. Traivrita yoga (oil preparation) is mentioned for the treatment of puerperal disorders.
- 15 In context of baala graham, 20 grahas have been discussed and each one of these is different from that told by other authors.
- 16 Separate chapters have been dedicated for the diseases like pleeha, haleemaka, etc.
- 17 Use of rasaayana oushadhas like pippali (especially vardhamana type), naagabala, mandukaparni has been discussed in rajayakshma chikitsa. Similarly lasuna kalpa and special yogas like Indrani ghrita has been mentioned.
- 18 References of Dasanga ghrita and Saisuka ghrita in gulma chikitsa are special contributions of the author.
- 19 Special mention of diseases like aarakeelaka, with reference to pathogenesis, clinical features and treatment are found to be only in Kasyapasamhita.
- 20 Phakka- this disease has been specially dealt with in the text. All the different varieties and clinical features have been discussed. It seems to be the first indication of protein energy malnutrition in the classical text. In treatment special yogas like Raaja taila and walking aids like phakka ratha is mentioned with special reference to vaatavyaadhi chikitsa in children.
- 21 A special chapter has been dedicated for dhaatrichikitsa and exclusive yogas like Balataila, Rasna taila and Meena taila is given.
- 22 In dhupa kalpa almost 49 dhupa yogas has been listed each with its specific effect. The classification of dhupa in to dhupa, anudhupa and prati dhupa has been given.
- 23 Rasaayana drugs like lasuna, katutaila, satapushpa, satavari have been discussed in separate chapters in detail.

- 24 Added therapeutic efficacies of lasuna have been highlighted in lasuna kalpa. The different types of lasuna and rasa in each part of lasuna has been mentioned.
- 25 The treatment principles of eye-disorders in children has been dealt with in a special chapter and six drugs have been specially mentioned in shadkalpa namely, *shivaa, chakshushya, rochana, pushpaka, rasaanjana, kataka*. Special yogas like Panchabhoutika taila have been mentioned in this context for health of all indriyas, smriti, budhi and sarira.
- 26 Different types of hormonal and chromosomal anomalies in women leading to vandhyata or garbhanaasa have been discussed under Revatee kalpa. These have been termed as jaatahaarinee, picturised as the effect of evil spirits.
- 27 The author has considered aahaara as the mahaabhaishajya and has dedicated chapters for aahaarakalpa and aahaara vidhi. By this he highlights the importance of the food for the growth and development of children.
- 28 Description of saannipatika jwara, probable complications and management, especially varieties like kootapaakala has been given.
- 29 Khilasthaana – is found only in Kasyapasamhita.
- 30 Definition of oshadhi. ‘ओसो नामः रसः सोऽस्याम्’ i.e.that which has rasa called osa is known as oshadhi.
- 31 Author has detailed the qualities of the best bheshaja
- 32 24 types of yushaas have been described.
- 33 Definition of swastha or the arogyalakshana has been mentioned in detail.
- 34 In chapter *Rasadoshavibhaageeyam*, different rasas have been discussed; their use according to dosha predominance, in different types of jwara has been discussed. Different permutations and combinations making a total of 3073 rasa combinations and 4160 dosha combinations have been listed.
- 35 The practice of karma, kaala and yogavasti has been presented differently with special indications for each of these.

- 36 Chaturbhadrakalpa in vasti is an exclusive contribution of Kasyapasamhita.
- 37 The order of mixing of nirooha dravyas has been detailed with proper reasoning.
- 38 Yogas like phalataila and eranda taila has been mentioned for sneha vasti.
- 39 Uttama, madhyama and heena maatra of sneha vasti has been discussed.
- 40 Special chapter has been dedicated to the disease rakta gulma. In this chapter the mention about the aasayaas has been made where in pureeshaasaya and krimyaasaya have been additionally mentioned. The exclusive symptom of raktagulma like douhrida, stanya pravritti, paandu etc. has been mentioned with separate explanation for each of these.
- 41 Certain jaatottara karmas not mentioned elsewhere has been discussed like suryadarsana, chandramasa, nishkraamana and phalapraasana.
- 42 Special chapter has been dedicated for kukunaka and the causes like dushtastanyapaanā, lavana amlā rasa seva has been attributed to it.
- 43 Like wise other diseases for example charmadala occurring only in ksheeraada and ksheerannaada group has been discussed.
- 44 Exclusive chapters have been dedicated for amla pitta, sula etc. about which only scattered references within other major diseases has been made in other samhitas.
- 45 Among the doshik prakritis vatikas are always afflicted to diseases.
- 46 Karnavedhana has been discussed with special mention to contra indications.
- 47 In swedadhyaya ashtavidha sweda to be administered in baala has been listed. Patasweda to be administered in a child is specifically told and other usages like Kapoorachoorna mukha dharana for inducing swedana have been mentioned.
- 48 In chatushpada while all others have given importance to vaidya, here the rogi is considered to be the most inevitable factor.
- 49 While describing the satwas, prajaapathy and yaksha satwa has been additionally told.

- 50 In the concept of srotas, it has been broadly divided in to sukshma srotas (Naabhi, Romakupa) and mahasrotas (other natural orifices).
- 51 Dealing with ritukaala of females, the duration based on the caste is told.
- 52 In context of vamana and virechana mention has been made for the causes leading to improper or excess administration of vamana or virechana drugs based on the factors like age, nature of drug, etc.
- 53 The author has discussed nasya and its administration with special reference to baala.
- 54 The congenial diet to be followed in gudaroga in case of a child has been mentioned including ksheera, yavaanna, saaka, jaangalamaamsa, etc.
- 55 After administration of vasti, anaaha has been discussed as a probable complication and the use of vartti is indicated by different authors. Here the number of varttis to be used based on age and condition is specially noted.
- 56 Acharya has suggested the type of drinking water for the child based on different seasons.

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## 4

# NAVAJAATASISUPARICHARYA (Neonatal Care)

In this context, the following three terms are usually mentioned.

- Jaatamaatra sisu paricharya
- Sadhyojaata sisu paricharya
- Nava jaata sisu paricharya

Classical texts do not provide clear definitions for these terms. Therefore, they can be possibly defined as follows:

1. Jaatamaatra- refers to the baby immediately after birth. The sisuparicharya mentioned in the Ashtanga Hridaya indicates this meaning. Jatamatra has been used synonymously with sadyojaata in Ashtanga Samgraha. Hence, jaatamaatra can be defined as the period immediately after birth up to the cutting of the umbilical cord. The Jaatamaatra sisu paricharya includes PRAANA PRATYAA GAMANAM(Jata karma kriya according to Charakasamhita), ULBA PARIMAARJANAM, MUKHA VISODHANAM, GARBHODAKA VAMANAM, NABHEE NAALA CHEDANAM.
2. Sadyo jaata- refers to first 24 hours of age. The sadyo jataa paricharya includes following procedures in addition to the Jaata matra sisu paricharya namely, TAILA PARISHEKAM, SNAANAM, PICHU DHAARANAM, UDAKA KUMBHA STHAAPANAM, PRAASANAM for the first day.

3. Navajaata- can be referred as the baby of 120 days of age. The Navajaata sisu paricharya includes jaatamaatra paricharya, sadyo jaata paricharya and all other samskaaras up to 120 days. Purely out of academic interest, Navajaata sisu paricharya can be considered to include those up to the samskaara of NISHKRAAMANAM. (PRAASANAM after first day, STANYA PAANAM, RAKSHA KARMAM, NISHKRAAMANAM.

### JAATAMAATRAPARICHARYA

These are immediate measures to be applied to a new born and are mentioned one by one.

#### 1. Praanapratyaagamanam(neo natal resuscitation )

In this context, the term 'praana' is none other than life or cardio-respiratory function. The whole of the efforts to establish a normal respiratory and cardiovascular functioning from a compromised life threatening status is to be considered as praanapratyaagamana vidhi. This needs to be discussed in two contexts:

- 1 At the time of birth
- 2 After the birth and in childhood - These are emergency resuscitative methods in critical conditions of diseases, accidents, etc.

#### Praanapratyaagamana at the time of birth

The activity of praanavayu in fetus shows a marked contrast to that in a neonate. During the fetal stage, the functions of panchavaayu are entirely dependent on the mother. After birth, it has to work independently (through establishment of proper cardio – respiratory function) and has to perform its motor functions at the earliest. (meconium passage, urine output, etc.). Ayurveda classics propose following methods to bring this praana pravritti in jaatamaatra.

Ayurvedic techniques of praanapratyaagamana go hand in hand with the modern resuscitative methods.

##### a) Clearing the airway

अथास्य ताल्वोष्ठकण्ठजिह्वाप्रमार्जनमारभेताङ्गुल्या  
सुपरिलिखितनख्या सुप्रक्षालितोपधानकार्पाससपिचुमत्या । C.S.Sa, 8/43

The throat, lips, pharynx and tongue should be cleared by fingers of the attender. The nails of the fingers should be trimmed off properly and should be covered by a clean cotton swabs prior to this.

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By this method we can remove the mucous present in the oral cavity so as to facilitate the smooth entry of air through it. This is also a source of stimulation to the baby because it produces gag reflex and irritation.

#### b) Stimulus to baby

- Cleaning of face with hot water or cold water

शीतोदकेनोष्णोदकेन वा मुखपरिषेकः। C.S.Sa. 8/42

In summer cold water and in winter hot water is advised for this procedure.

- Fanning with krishnakaapaalikasoorpa

कृष्णकपालिका शूर्पण चैनमभिनिष्टुणीयुः। C.S.Sa. 8/42

- Auditory stimulus by striking two stones near the ear of baby

अश्मनोः संघट्टनं कर्णयोर्मूले। C.S.Sa. 8/42

If the baby does not respire by these procedures he should immediately be transferred to neonatal intensive care unit.

A loud cry immediately after birth along with proper cardiovascular functioning signifies establishment of praana pravritti. This occurs due to the multiple stimuli perceived by the child and by the patency of airway tracts of the infant.

#### Pathophysiology of failure of establishment of praana

जरायुणा मुखे छन्ने कण्ठे च कफवेष्टिते

वायोर्मार्गनिरोधाच्च गर्भस्थः न प्ररोदति। S.S.Sa

Because of the following reasons the fetus is not crying as per Sushruta samhita.

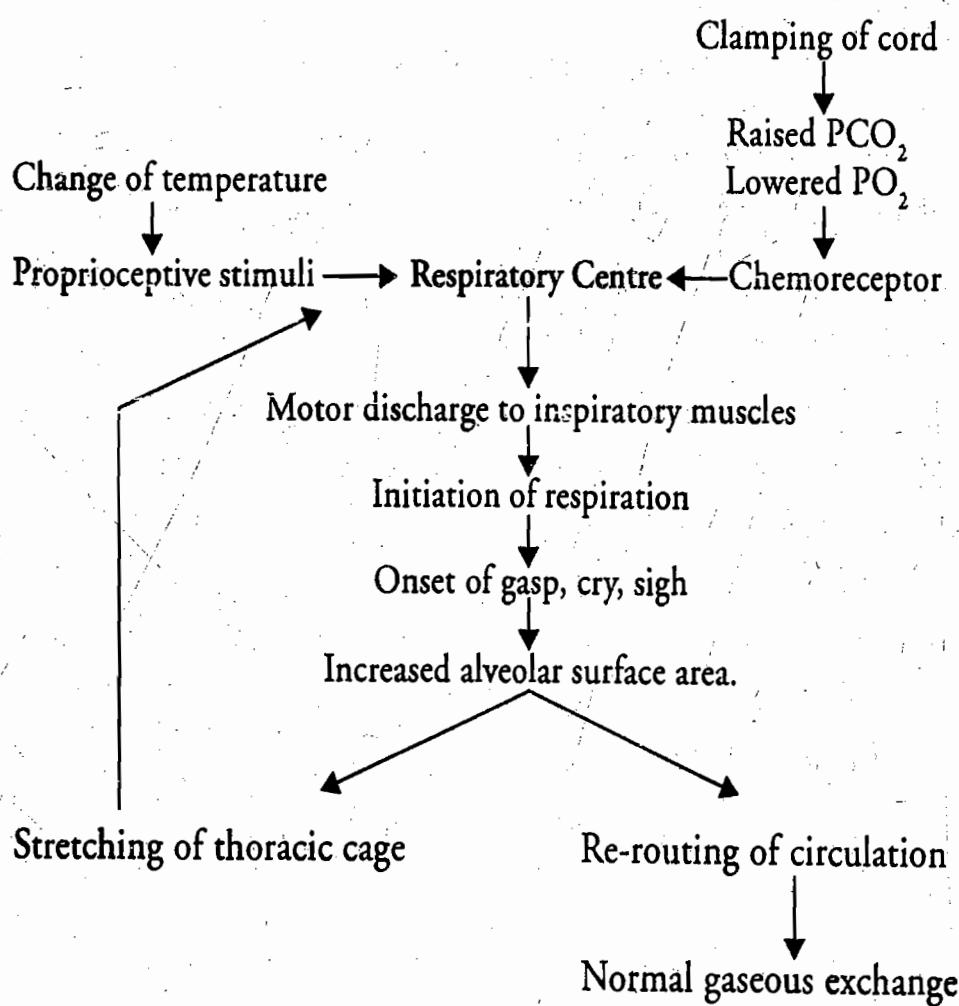
- Mouth is covered with jaraayu.
- Sleshma (Mucous plug) is present in the throat.
- Obstruction the path of vaayu

Baby can't make cry (Respire) if these three reasons are persisting even after birth.

1. Obstruction to the airway at nostrils (जरायुणा मुखे छन्ने)
- Fetal membranes and mucous on face and nostrils

2. Obstruction at throat or trachea by mucous plug (कण्ठे च कफवेष्टिते)
3. Insufficient stimulus (वायोर्मार्गनिरोधात्त्वं)
- Unable to pass sensory stimulus to brain centres. Here passage of stimulus in the form of action potential is compared with the gati of vaayu. Any obstruction in the initiation, propagation, processing and reaction can be taken as maarganirodha.

### PHYSIOLOGY OF INITIATION AND MAINTENANCE OF RESPIRATION

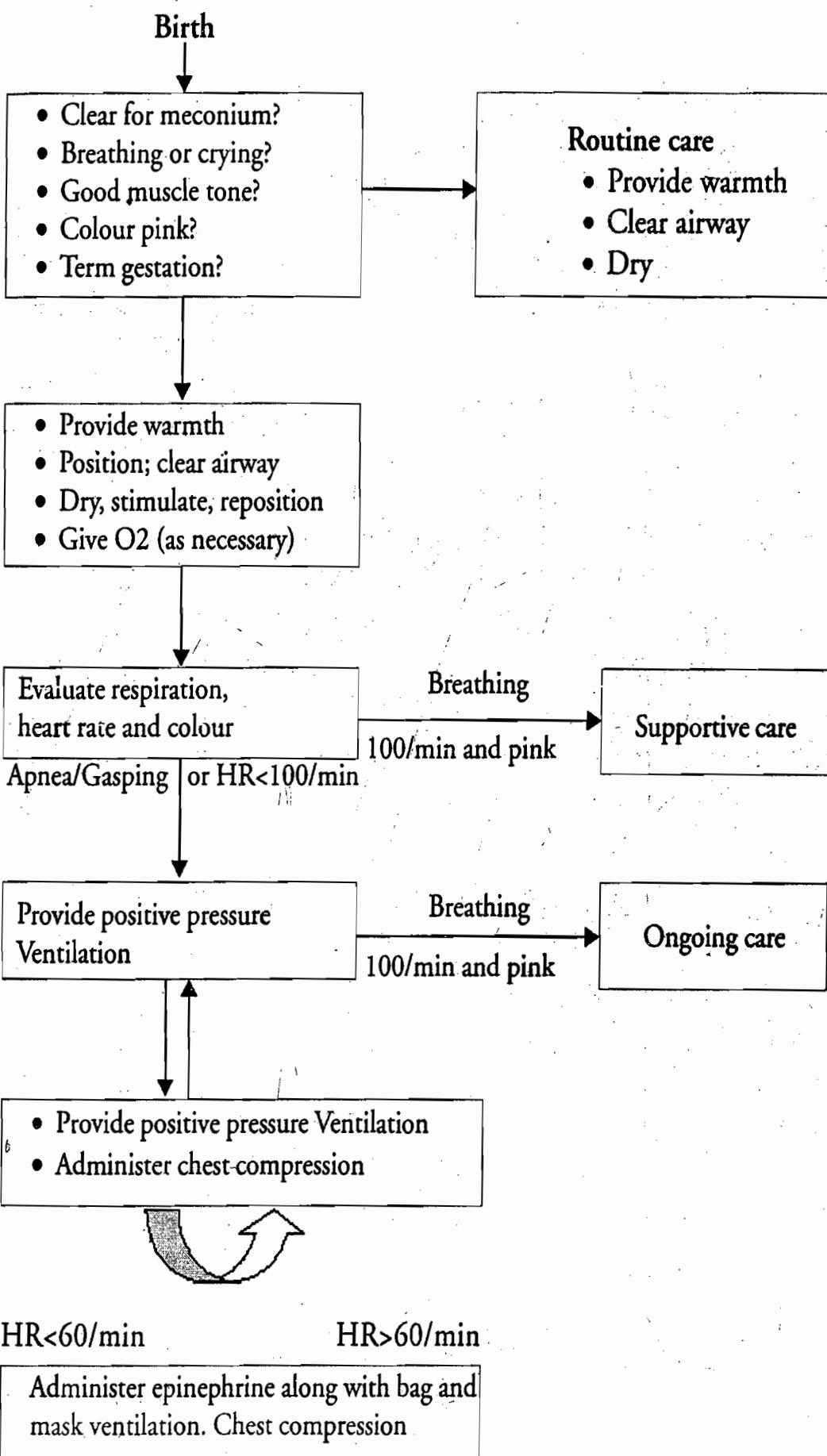


If the baby fails to attain proper cardio respiratory function at proper time immediate resuscitative methods should be applied. The paradigm for the resuscitation by Indian Academy of Paediatrics is given below.

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### FLOW DIAGRAM OF NEONATAL RESUSCITATION



## 2. Ulbasodhanam

The garbha is covered with a fine paste like substance called ulba(Vernix caseosa).

वेष्टिते जायते येन गर्भ स उल्बः प्रकीर्तिता ॥

From the definition, ulba may be equated to vernix caseosa or fetal membranes. At birth, the skin is covered by a white coloured paste- vernix caseosa formed by secretions from sebaceous glands and degenerated epidermal cells and hairs. It protects the skin from the macerating action of amniotic fluid.

The procedure of removal of vernix caseosa from the body of a neonate is known as ulbasodhanam. This is not practiced now a day because vernix caseosa is a powerful media for maintaining thermal stability of the baby, thus preventing hypothermia.

जातमात्रं विशोध्योल्बाद् बालं सैन्धवसर्पिषा । A.H.U. 1/1

Soon after birth, the baby should be smeared with ghee mixed with saindhava. This throws light on the fact that our ancient scholars were aware about the need of maintenance of thermal stability of the baby. Ghrita being a bad conductor of heat may give sufficient protection from hypothermia. Saindhava with सर्वसंघातविधापनकर & सूक्ष्म properties removes the vernix caseosa which is slimy and sticky.

## 3. Mukhakantha Visodhanam\*

Mukhavisodhana aims at the removal of fetal membranes from the air passages and mucous from the nasal or oral cavity of the baby. In most of the cases, normal labour is mostly accompanied by obstruction of airways by mucous plug or fetal membranes. This may inhibit inspiration and cause asphyxia. In Ayurveda, manual removal of mucous plug and fetal membranes with sterilized cotton swabs is advised.

अथास्य ताल्वोष्ठकण्ठजिह्वाप्रमार्जनमारभेताङ्गुल्या

सुपरिलिखितनखया सुप्रक्षालितोपधानकार्पाससपिचुमत्या ।

C.S.Sa. 8/43

His palate, lips, throat and tongue should be wiped with attendant's

Mukhakantha visodhana should be described in praanapratyagaagamanakriya as well as a seperate procedure in jaatamaatra paricharya.

finger, from which nails are properly trimmed off, well cleaned and covered with cotton swabs. This provides extra stimulus to baby's Central Nervous System for initiation of respiration. In modern neonatology, gentle suction is given to remove the fetal membranes and mucous plug. In cases of excessive fluid aspiration endotracheal intubation can be done.

#### 4. Garbhodakavamanam

It is a practice by which drugs are administered to the baby so as to make him vomit the aspirated fluid, if any. Several diseases like 'ulbakam' can arise if this fluid is not vomited out.

Vomiting should be induced with ghrita mixed with saindhava.

गर्भाम्भःसैन्धववता सर्पिषा वामयेत्ततः। A.H.U. 1/10

Nowadays, administering the emetics or subjecting the baby to extra stress is not advisable. The aspirated fluid can be removed by wide bored catheter. The suction of oral cavity, oropharynx and hypopharynx should be done. If the fluid is meconium stained the endotracheal intubation should be performed.

#### 5. Naabhinaala Chedana Vidhi (cutting of umbilical cord)

The procedure of cutting the umbilical cord and taking necessary precautions to prevent its secondary infection is known as NAABHEE NAALA CHEDANA VIDHI or NADEE KALPANA VIDHI.

##### When to cut?

The cord can be clamped and severed, when the baby gets devoid of prasoothiklesa and attains proper respiratory and cardiovascular functions (i.e. attains features of Praana pratyagamana). This period of time facilitates the entry of around 100-150ml of blood from mother to neonate, which is rich in immunoglobulins for boosting the immune mechanism of the baby.

Immediate clamping of the cord is advised if the baby is preterm, cases of Rh-incompatibility, baby of diabetic mother, asphyxia and in cases of Low birth weight.

##### Materials required

- Ardhadhaarasutra
- Kaarpaasasutra

- Post operative medicaments
- Kushta tailam
- Lodra, madhuka, priyangu etc.

### Procedure

According to Acharya Charaka, the umbilical cord should be tied with karpasasutra at a distance of 8 angula from the naval side. Then it is cut just above the knot with ardhadhaara sastra. The other end of the sutra is loosely tied around the neck of the baby to prevent further contamination and chances of bleeding.

Ashtanga Hridaya has a difference in opinion about the distance at which it is to be cut (4 angulas). Ashtanga Sangraha states that two knots should be made by cotton threads and cut in between.

स्वस्थीभूतस्य नाभि च सूत्रेण चतुरड्गुलात्।  
बद्धवार्धं वर्धयित्वा च ग्रीवायामवसञ्जयेत्॥  
नाभि च कुष्ठतैलेन सेचयेत्

A.H.U. 1/5

After cutting and knotting of the umbilical cord, the cord should be twined to the neck of the baby. According to Acharya Dalhana this procedure is to prevent further leakage of the blood from the cord (त्रावपरिहारात्थाम्). After the procedure, the stump has to be smeared with kushta taila to prevent secondary infections and for easy healing.

### Immediate care of the new born as per modern Neonatology

Soon after the delivery of the baby,

- Baby should be placed in a tray
- Tray should be covered with dry linen cloth
- Head should be put slightly downwards
- Tray should be better placed in between legs of mother
- Leg of the mother should be in lower position.

### Air passage

- Clean wipe the air passage
- Clear the mucous and liquor from mouth by suction

### Apgar scoring

- Done at 1 minute and at 5 minutes of age

### Clamping and ligature of the cord

- Clamping by two Kocher's forceps at a distance of 5 cm from body

- Two reef knots 1 cm apart is made 2.5 cm away from the umbilicus
- Cutting the cord with scissors
- Strict aseptic precautions should be taken
- Presence of cord abnormalities should be tested
- Cut end should be covered with sterile gauze after confirmation of bleeding arrest.

### Care at birth

After the baby has established breathing

- Efforts to prevent the hypothermia-place the baby under radiant warmer or other light source.
- Rapid gestational assessment. Detailed gestational assessment can be done after 24 hours of birth.
- Two identical bands carrying details of mother's name, hospital number, neonates' sex, date and time of birth should be tied to the baby's wrist as well as mother's wrist.
- Cord should be re examined for bleeding before the baby leaves the labour room.
- Eye should be cleaned with sterile normal saline from the medial to lateral side with two separate sterile cotton balls.
- Vitamin K injection if the baby is low birth weight.
- Quick examination for any gross congenital anomalies.
- Baby's vital signs should be checked and recorded
- Birth weight, head circumference, chest circumference and length should be measured and recorded.

### NAABHINAALIROGAS

(Diseases of Umbilicus in Neonates and Children)

Naabhirogas explained in Ayurveda classics are primarily of two types

- 1 Those originating from improper execution of naabhinaalichedana
- 2 Other rogas

### Complications of improper naabhinaalichedana

अस्मयक् कल्पने हि नाड्या आयामव्यायामोत्तुण्डि-  
तापिण्डलिकाविनामिकाविजृम्भिका बाधेभ्यो भयम् ॥ C.S. Sa. 8/45

The term kalpana in Naadeekalpanavidhi indicates the procedures of ligature, severing and after care of the umbilical cord with its medical management. Improper execution of this procedure leads to the following complications:

- 1 Aayaamam: Elongation of the umbilicus by improper cutting of umbilical cord.

आयामो दैर्घ्यम् ॥ Chakrapani

असम्यग्नाभिनालस्य विच्छेदाद्विकृतोऽनिलः ।  
कालाद्यननुकूलत्वादैवाद्वा नातिदुस्सहः ॥  
लब्धावकाशाऽऽतिष्ठन् कालादेरनुकूलताम् ।  
लब्ध्वा कदाचिदत्यन्तकुपितो नाभिमेकतः ॥  
नयेद्विनमयेद्वातं नाभ्यायामं प्रचक्षते । ARKD 21/16-17

### Chikitsa

- Internal administration of drugs like Balaagodhumadi kashaayam and Balaadhaatryaadi kashaayam.
- If the complaints persist inspite of drug use, daahakarma is to be done around the umbilicus.
- There after post operative treatment of agnikarma should be adopted.

### 2. Vyaayaamam

व्यायामो विस्तारः ॥ Chakrapani

Vyaayaama simply indicates a large umbilicus. But signs of herniation are not seen in vyaayaama. However, as it is described as an abnormal condition, vyaayaama may be considered as one of the stages of umbilical hernia.

### 3.Uttundita

ताभ्यामुत्तुण्डिता आयामव्यायामोत्तुण्डिता  
द्वीर्घपीनत्वयुतेत्यर्थः ॥ Chakrapani

Uttundita shows the features of both Aayaama and Vyaayaama

i.e. elongation and enlargement.

#### 4. Pindalika

पिण्डलिका परिमण्डलयुता।

Chakrapani

In this condition, the herniation is circular.

#### 5. Vinaamika

विनामिका अन्तोच्छूना मध्यनिम्ना।

Chakrapani

Here the umbilicus is inflamed and centrally depressed.

#### 6. Vijrimbhika

विजृम्भिका तु मुहुर्मुहुर्वृद्धिमती॥

Chakrapani

A fluctuating/pulsatile swelling is present at umbilical region

#### Naabhipaaka

This disease is explained in Aarogya kalpadrumam as a complication of improper cutting of umbilical cord but this disease is not mentioned by Charakacharya.

नाभेः पिच्छिलदुर्गन्थं जलस्रावोऽत्र कथ्यते।

नाभिपाको रुजाशोफयुतयाऽपि कस्यचित्॥

ARKD 21/3

#### Clinical features

- Foul smelling discharge
- Pain
- Inflammation
- Swelling

#### Chikitsa

The clinical presentations can be broadly grouped into sophaavastha and vranaavastha.

#### Treatment of sophaavastha

- 1 Pooranam
- 2 Avachoornanam
- 3 Abhyangam with taila prepared from the above mentioned drugs.
- 4 Lepanam

किञ्चत्र दूर्वा यष्टिभ्यां पिष्टाभ्यां बलया शृते।

तोये पयसि वा कुर्यान्नालिकेरस्य लेपनम्॥ ARKD 21/7

Doorva and yashti mixed with balaa kwaatha can be used for lepana.

Unique swedana karma is mentioned in Bhaishajyaratnavali for the naabhisopha as well as uttundita naabhi.

मृत्पिण्डेनाग्नितप्तेन क्षीरसिक्तेन सोष्मणा।

स्वेदयेदुत्थितां नाभिं शोथस्तेनोपशाम्यति॥

B.R.71/11

The bolus of mud (stone) has to be made hot and put in to the milk and the vapour coming from that milk can be used for the swedana karma of the uttundita naabhi. Naabhi sopha will also be relieved by this swedakarma.

### Treatment of vidradhyaavastha

General treatment of vidradhi has to be adopted. It is very difficult to treat by ayurvedic medicaments. Though the condition gets cured, it causes permanent scarring.

### Omphalitis

This is inflammation of umbilicus usually occurring secondary to infections. Poor sanitary conditions, injudicious administration and applications of drugs are the predisposing factors. Usual presentations of omphalitis are

- Slight purulent discharge
- Umbilical abscess
- Cellulitis of periumbilical area
- Umbilical gangrene

Chances of systemic manifestations like septicaemia, tetanus and jaundice cannot be ruled out.

### Naabhittundi

Features of tundi go hand in hand with features of vinaamika in Charaka.

वातेनाध्मापितां नाभिं सरुजां तुण्डसंज्ञिताम्॥ S.S. Sa.10/43

Vitiated vaata causes enlargement of umbilicus associated with pain and is termed naabhittundi

**Chikitsa**

1. Snehanam
2. Swedanam
3. Upanaaham - Sataahwaadi upanaaham
4. Samanaushadha - Balaahapushaadi kwaatham

**Pralambika**

Pralambika shows the features of aayaama as well as vijrimbhika.

वायुनाध्यापिता नाभिर्मूषाकारेण लंबते।

यदेषा विकूतिवैद्यरुक्ता पूर्वैः प्रलंबिका ॥ ARKD 21/24

In pralambika, the umbilicus becomes enlarged and elongated in the shape of a moosha

Clinically, pralambika manifests in 2 ways

- 1 With inflammation (सरुज)
- 2 Without inflammation (नीरुज)

The neeruja type is self limiting and requires no particular treatment. Saruja type calls in for urgent treatment which is inevitable. In spite of the treatment, if it goes to pakwaavastha, the prognosis is grave.

**Chikitsa**

Treatment is same as that of naabhitundi

**SADYOJAATAPARICHARYA****Taila parisheka & Snaanam**

The fetus has to undergo a lot of mechanical adjustment, stress and trauma, both intra-uterine and intra-pelvic, from the time of true labour pain up to delivery. Stress to the baby by this whole event is described in Ayurveda as prasootiklesam which is a vaata predominant condition. The most apt procedure which can be adopted here is abhyanga or parisheka.

प्रसूतिक्लेशितं चानु बलातैलेन सेचयेत् ॥

A.H.U. 1/1

Bathing was commonly practiced since ancient days and till recent past. Now-a-days, bath is not done immediately after birth, due to the fear of hypothermia. But cleaning the baby with hot water is good enough to

remove the blood so as to reduce the chances of infection from it. The chances of hypothermia were prevented by using ushnodaka during ancient days.

स्नापयेदनु।  
क्षीरवृक्षकषायेण सर्वगन्धोदकेन वा ॥  
कोष्ठेन तप्तरजततपनीयनिमज्जनैः।

A.H.U. 1/6

The baby has to be bathed in kwaatha of ksheerivrikshas or of fragrant drugs, made warm by dipping heated metal bars of gold or silver.

Ksheerivriksha kashaaya has been proved to be highly antiseptic protecting the baby from infections. The kwaatha is subjected to gentle heating so as to prevent hypothermia and also to make it aseptic. Despite these benefits, Snaana immediately after birth is not mandatory. It does not cause any concern even if avoided.

### BABY BATH

#### Indications

- Babies with HIV/HBV infection can be bathed after their vital signs become stable.
- A demonstration bath can be done before discharge from the maternity room

#### Procedure

- The baby should be bathed in a warm place.
- Baby should be weighed naked before bath
- The eyelids should be wiped first from medial to lateral with sterile swabs.
- Next the ears and skin behind ears should be swabbed.
- The baby should be held in arms, his scalp washed with soap, and wiped dry with a towel
- The perineum and groin should be cleansed next
- The trunk and limbs should be cleaned, with special attention to axilla and groin.

- The baby should be lowered in to the tub of warm water and washed thoroughly.
- The baby should be dried by patting rather than rubbing with a towel.
- The umbilical cord should be wiped dry and cleaned with a spirit swab
- The baby should now be dressed.

### Pichudhaaranam

Classically, moordhataila is indicated when vaatakopa occurs in jatrorrhwa region. Abhyangam, parisheka, pichu and vasti are the four types of murdhataila. Of the four, the simplest but effective one is Pichu (due to longer duration of contact with the drug). Hence, as far as a neonate is concerned, this procedure is helpful in reducing the prasootiklesa, especially that related to siras. It also facilitates the cure of some birth injuries like Erb's palsy, brachial palsy.

शिरसि स्नेहपिचुना.....

A.H.U. 1/8

**Udaka Kumbha Sthaapanam** (Refer in Jaatakarmam)

**Praasam** (Refer in Navajaatasisu paricharya)

## NAVAJAATA SISU PARICHARYA

### 1. PRAASAM

The words 'praasana' and 'lehana' are used synonymously in Kaumarabhrithya. Nowadays, the effect of this karma is being widely discussed. Therefore, a systematic and detailed study of praasana is mandatory.

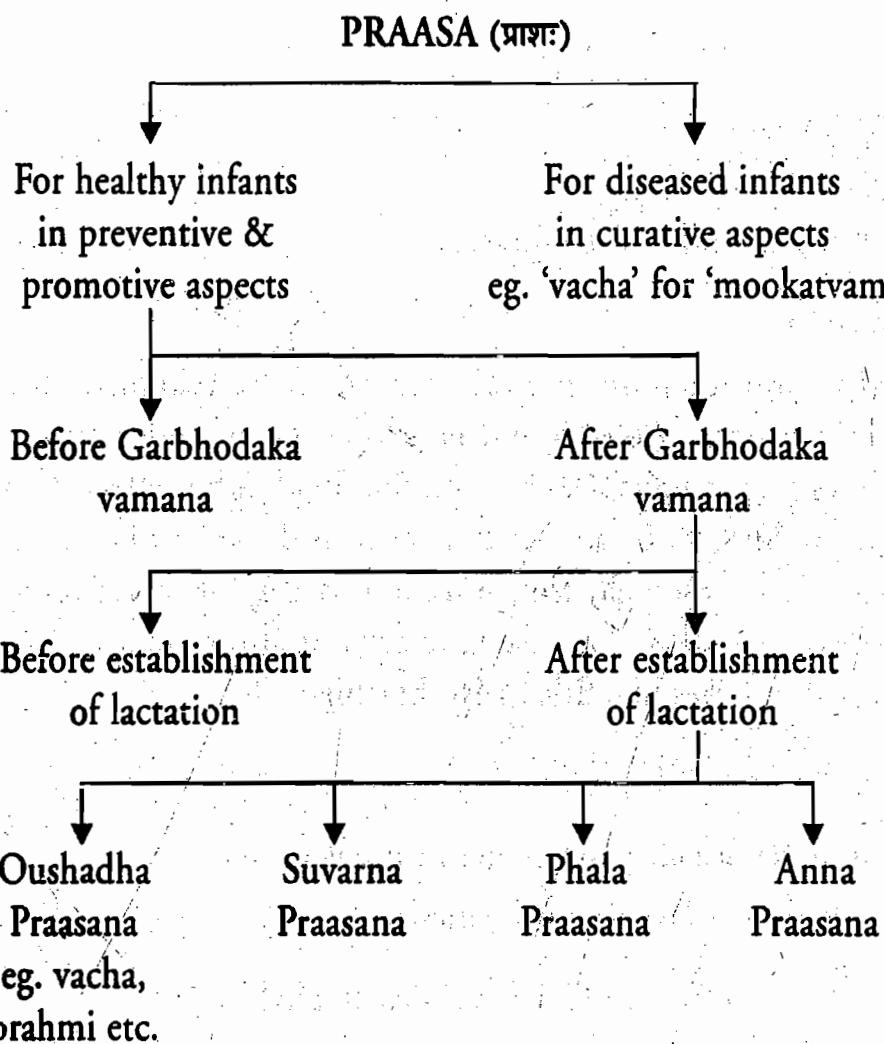
#### a Definition

तज्जनी मध्यमाङ्गुष्ठैः संस्पृश्य परिगृह्य ते।  
यावदन्नादिकं ततु प्राशमित्यभिधीयते॥

The amount of food which can be grasped by the tip of middle finger of the care taker is termed as praasa.

The concept of praasa can be viewed in the following manner as

per the classical references of Brihattryees.



### b. Praasa before vamana

#### Drugs

ऐन्द्रियादीवचाशंखपुष्पीकल्कं घृतं मधु ॥ (A.H.U. 1/8)

Aindri - ആംഡ്രുവൈള്ളതിവേർ, Brahmi - ബ്രഹ്മി

Vacha - വയന്ന്, Sankhapushpi - ശംഖപുഷ്പി

#### Aims

हरेणुमात्रं मेधायुर्बलार्थमभिमन्त्रितम् ॥ A.H.U. 1/8

Attainment of intellect, longevity and strength are the aims of praasa.

**c Praasa after vamana (before establishment of lactation)**

Praasa given after vamana, before the establishment of lactation, aims at speeding up the passage of meconium and also act as a compensatory food to colostrum to meet the nutritional requirements of the baby for the first three days or up to the effective establishment of lactation.

प्रथमे दिवसे तस्मात् त्रिकालं मधुसर्पिषी।  
 अनन्तामिश्रिते मन्त्रपविते प्राशयेत् शिशुम् ॥  
 द्वितीये लक्ष्मणासिद्धं तृतीये च घृतं, ततः।  
 प्राङ्गिनषिद्धस्तनस्यास्य तत् पाणितलसमितम् ॥  
 स्तन्यानुपानं द्वौ कालौ नवनीतं प्रयोजयेत्।

A.H.U.1/12-14

After delivery, the siraas, located in relation to the heart (seat of rasadhaatu - stanya is an upadhaatu of rasa) get dilated. So the production of breast milk starts only on the third or fourth day.

Hence on the first day, the baby should be made to lick the mixture of honey and ghee mixed with anaanta(Gold) fortified with sacred mantras, three times a day.

On the second and third days, the baby should be given ghee prepared with lakshmana. After wards, the baby, which was hitherto prevented from sucking the breast, should be made to lick one panitala of navanita followed by drinking of breast-milk, two times of the day.

**d Praasa after establishment of lactation**

Mainly three types of praasana are explained, of which the foremost is suvarnapraasa. The very first chapter of sutrashaana of available Kasyapasamhita explains suvarnapraasa with due importance.

Suvarnapraasa is the procedure by which swarna along with some herbal drugs is administered to a neonate for gaining positive qualities of life.

**Suvarnapraasanavidhi**

विघृष्य धौते दृषदि प्राङ्गमुखी लघुनाऽम्बुना।  
 आमथ्य मधुसर्पिष्यां लेहयेत् कनकं शिशुम्।

K.S.Su. 18/26

Keeping face towards east, gold should be rubbed on a clean stone with

a little quantity of water, churned with honey and ghrita and given to the child.

### Hemaadipraasana

हेम श्वेतवचा कुष्ठमर्कपुष्पी सकाज्चना।  
 हेम मत्स्याक्षकः शंखः कैडर्यः कनकं वचा॥  
 चत्वार एते पादोक्ताः प्राशा मधुघृतप्लुता।  
 वर्षं लीढा वपुर्मेधाबलवर्णकराः शुभाः॥ A.H.U. 1/47-48

Four groups of drugs mentioned by each quarter verse; consumed with honey and ghee, for a period of one year bestows good body growth, intelligence, strength, colour and goodness.

1. Hema, swetavacha and kushta
2. Arkapushpi and kaanchana
3. Hema, matsyaakshaka and sankha.
4. Kaidarya, kanaka and vacha.

### Benefits/effect of suvarnapraasana

सुवर्णप्राशनं ह्येतन्मेधाग्निबलवर्धनम्।  
 आयुष्यं मङ्गलं पुण्यं वृद्ध्यं वर्ण्यं ग्रहापहम्॥  
 मासात् परममेधाची व्याधिभिर्न च धृष्टते।  
 षड्भिर्मासैः श्रुतधरः सुवर्णप्राशनाद्भवेत्॥ K.S.Su.18/27-28

Feeding of gold increases intellect, digestive and metabolic power, strength and gives long life. It is considered as auspicious, virtuous, aphrodisiac, increases complexion and eliminates grahas. By feeding the gold for one month, the child becomes extremely intelligent and is protected from diseases. By using it for 6 months, the child is able to retain for a long time what ever he hears.

All the following claims are attributed to the therapeutic efficacy of the suvarna.

स्वादुहृदयं बृहणीयं रसायनं दोषत्रयापहं  
 शीतं चक्षुष्यं विषशोधनं च। S.S. Su. 46/326  
 भूतावेशप्रशान्तिकरं.... मेध्यं  
 ..... मेधाबुद्धिकरम्॥ Rajanighantu

### Why suvarna?

Suvarna is nirmala and best among the 4 sudha lohas. It is said to prevent grahabaadha, protects against visha and increases budhi, medha and smriti. By suvarnapraasa, Acharya might have intended the attainment of good intellect, immune power and longevity.

### Discussion

The use of elemental gold and different compounds like swarnabhasma, sidha makara dhwajam etc in Ayurvedic classics and in some ethnopractices, reveals the vrishya, rasaayana and medhya property of gold. We do not have sufficient convincing research data to prove this property of gold in front of the scientific community. Modern science believes that elemental gold as well as majority of its compounds are not absorbed from the GI tract. It is the need of the hour to have a long term perspective multi centered research to test whether the claims of Ayurveda acharyas were true or not. If proven, the mode of action should be traced out.

Administration of gold compounds in the form of injections are being used in different diseases in allopathic practice. DMARD (Disease Modifying anti rheumatic Drugs) is one such example. Chrysotherapy is the term used for the treatment of diseases with the gold. Mostly used and absorbable forms of gold are Aurothioglucose and gold sodium thiomallate.

### Hypothesis

The presence of gold and its compounds in the GI tract of humans along with the biological materials like herbal drugs may influence the different biochemical activities occurring in the body of baby.

### LEHANAM

This term is used synonymously with the concept of praasana. Lehana adhyaaya of Kasyapasamhita explains therapeutic drug administration and suvarnapraasa under the concept of lehanam. The word – Lehana – itself indicates its consistency i.e semi solid form (लिहत). The drugs for lehana should always be mixed with honey and ghrita. After 8 months of age the medium can be changed to plain water.

### Indications

अक्षीरा जननी येषामल्पक्षीराऽपि वा भवेत्।

दुष्टक्षीरा प्रसूता या धात्री वा यस्य तादृशी॥

दुष्टजाताभृशव्याधिपीडितायाश्च ये सुताः।

वातिका: पैत्तिका ये च ये स्युः कफवर्जिताः॥

स्तन्येन ये न तृप्यन्ति पीत्वा पीत्वा रुदन्ति च।

अनिद्रा निशि ये च स्युर्ये च बाला महाशनाः॥

अल्पमूत्रपुरीषाश्च बाला दीप्ताग्नयश्च ये।

निरामयाश्च तनवो मृद्घङ्गा ये च कर्शिताः॥

वर्चः कर्म न कुर्वन्ति बाला ये च अहात् परम्।

एवंविधाञ्छूनाह लेहयेदिति काशयणः॥ K.S.Su. 18/14 18.

The children of mothers having no breast milk, deficient milk or vitiated milk, of parturient mother, women who underwent difficult labour or are severely ill; the children who have predominance of vaata and pitta but not of kapha, who do not get satisfied with breast milk and cry in spite of repeatedly sucking; the children who do not sleep in the night, eat too much; pass scanty urine and faeces; children who have increased digestive power, though free from diseases yet scraggy, have delicate body parts and are emaciated do not pass urine and faeces even for 3 days, such children should be prescribed lehanas.

The lehana has been indicated mainly in-

- Vaatapitta prakriti.
- It act as brimhana (ये च कर्शिताः)
- Vaata paittika diseases and vaatapitta koshta.
- Atyagni of the child (स्तन्येन ये न तृप्यन्ति पीत्वा पीत्वा रुदन्ति च)
- Kaphakshaya and niraama avastha with sufficient agnibala.
- In the deficiency of breast milk.- (अक्षीरा जननी येषामल्पक्षीराऽपि वा भवेत्) act as a supplementary food.
- In the diseases originating from the intake of dosha vitiated milk (दुष्टक्षीरा).
- It increases intestinal motility(वर्चः कर्म न कुर्वन्ति बाला ये च अहात् परम्)

### Contra-indications of lehana

..... च मन्दानिजठरो जनः ।  
निद्रालुबहुविषमूत्रः स्वल्पो यो दृढगात्रकः ॥

कल्प्याणमातृकोऽजीर्णो गुरुस्तन्योपसेविता ।  
सूतः सर्वरसाशिन्या ऊर्ध्वजन्मुरुजान्वितः ॥

आमे ज्वरेऽतिसारे च कामलाशोथपाण्डुषु ।  
हृद्रोगश्वासकासेषु गुदवस्त्युदरामये ॥

आनाहे गण्डवैसर्पे छर्द्यरोचकयो ।  
..... हे सर्वग्रहेषु च ॥

न लेहयेदलसके नाहन्यहनि नाशितम् ।

न दुर्दिनपुरोवाते नासात्म्यं नातिमात्रया ॥ K.S.Su. 18/19-23

Those children with weak digestive power, sleepy, passing excessive stool, less urine, stout bodied, having indigestion, receiving guru breast milk, child of mother consuming all rasas, who suffer from diseases of head and neck, in aamaroga, fever, diarrhoea, jaundice, sotha, paandu, cardiac diseases, dyspnœa, cough, rectal diseases, urinary bladder diseases, abdominal diseases, flatulence, ganda, erysipeles, vomiting, anorexia, all graharogas and alasaka should not be prescribed lehana.

It should neither be given daily nor after taking meals, on an inauspicious day or a day with strong wind. Lehana alongwith non-congenial articles or its excess amount is not advisable.

The references of contraindications of lehana go hand in hand with the contraindications of snehana in the classics.

Broadly lehana has been contraindicated in following conditions:

- Aamaavastha
- Agnimaandyā
- Sleshmalaavastha
- Severe diseases
- Acute and chronic debilitating diseases

Drug used

Both single drugs and compound formulations have been prescribed by

## Acharya Kasyapa

ब्राह्मी मण्डूकपर्णी च त्रिफला चित्रको वचा ।  
शतपुष्पाशतावयौ दन्ती नागबला त्रिवृत् ॥

एकैकं मधुसर्पिभ्यां मेधाजननमध्यसेत् ।  
कल्याणकं पञ्चगव्यं मेध्यं ब्राह्मीघृतं तथा ॥ K.S.Su. 18/29-30

## Single drugs

Brahmi	ബ്രഹ്മി	Suc
Mandoonaparni	മുത്തിൾ	grin
Triphala	ത്രീഫലത്തോട്	▪ 1
Chitrakam	കൊടുവേലിക്കിഴങ്ങ	2
Vacha	വയന്ന്	1
Sataavaree	ശതാവരിക്കിഴങ്ങ	3
Dantee	നാഗദന്തിവേര്	4
Naagabala	ആനക്കുറുന്തോട്ടിവേര്	
Trivrit	ത്രീക്കോല്ലപ്രകാശ	

## Benefits of lehana

सुखं दुःखं हि बालानां दृश्यते लेहनाश्रयम् । K.S.Su. 18/4

Kasyapasamhita emphasizes the importance of lehana by stating that happiness and sorrow of children are dependent on lehanas. Lehana is a simple remedy for common diseases in curative aspect. The preparation also imparts sufficient potency for the prevention of different diseases. Moreover, the drugs used are easily accessible as well as administrable.

## PRETERM BABY (अचिरजातशिशु)

- Definition - A baby born before 37 completed weeks of gestation calculating from the first day of last menstrual period is defined as preterm baby.

In Ayurvedic classics very few references are available regarding the preterm delivery.

- o If vaayu is getting pathologically lodged in sukradhaatu, before conception, the preterm delivery may occur.
- o If garbha vridhi kaaranas (vritta saushtavam, upasneham, upaswedam, kaala, swabhaavam) are deficient during gestational

period, the result may be preterm delivery (Ch.Sa.4/29).

- o In Ashtangasamgraha, it is being noted that, the achirajaata baby can't suck the breasts in the sootikaagaara itself properly due to the poor sucking. They should be fed with following medicine .

गृहणानि सूतिकागारे न स्तनं चोत्स्पृशेत्तः।  
पथ्याधात्रीफलकणौर्जिहवां सधृतमाक्षिकैः॥

Such preterm baby should be given haritaki, aamalaki, pippali by grinding well and applying it over the tongue with ghrita and honey.

#### ▪ Features

- 1 Birth weight is usually less than 2500 Gms
- 2 Crown heel length and head circumferences are  $\leq$ 47cms and  $\leq$  33cms respectively (large head proportion in relation to chest).
- 3 There won't be any deep creases over the sole of foot.
- 4 In male babies the testis will not be in the scrotum, in female baby labia majora are widely separated to expose labia minora. The clitoris is hypertrophied.
- 5 Breast nodule is < 5mm in size.
- 6 Poor recoil of the ear cartilage after its flexion or cartilage is deficient.
- 7 Eyes are kept closed.
- 8 Abundant lanugo (Hairs) on the body
- 9 Nails may not grow up to the tip of the fingers.
- 10 Poor muscle tone can be noticed.
- 11 Soft skull bones with widened sutures and fontanel (especially posterior fontanalle)
- 12 Poor sucking and swallowing reflex
- 13 Subcutaneous fat will be less.
- 14 Absent or incomplete Moro's reflex.

#### ▪ Complications

- o Asphyxia
- o Pulmonary syndromes - Pulomanry edema, intra alveolar hemorrhage, idiopathic respiratory distress syndrome

- Cerebral hemorrhage
- Fetal shock
- Heart failure
- Oliguria, anuria
- Infections
- Jaundice
- Dehydration and its complications
- Anaemia
- Retinopathy of prematurity
- Retrobulbar fibroplasias
- Necrotizing enterocolitis.
- Care of preterm baby after birth
  - The cord is to be clamped quickly to prevent hypervolaemia. The cord length has to be kept long.
  - The baby should be kept warm by wrapping in a sterile towel or with the help of a radiant warmer so as to maintain rectal temperature between 96-99°F.
  - Clean the air passage off mucous and adequate oxygenation (not >35% interrupted) should be given and treat the acidosis if present.
  - Administration of Vitamin K is mandatory to prevent the hemorrhage.
  - Extremely gentle handling is needed.
  - Steps to prevent infections
    - Sites- Respiratory tract, GIT, skin and umbilicus
    - Restrict visitors
    - Doctors and nurses with nasopharyngeal infection are not allowed
    - Use sterile gowns, hands should be washed with antiseptic solutions.
    - Cord cleaning

- Aseptic administration of feeds
- Isolation of infected babies
- Steps to maintain nutrition
  - Early feeding within 2-4 hours of birth
  - 1-3 hourly intervals for feeds
  - Methods-tube, pipette, dropper, spoon, bottle
  - Baby placed on one side to prevent regurgitation
  - Caloric requirement-100-200 calories/Kg/day maximum up to 150-170 cal/Kg/day
  - Daily supplementation of Vit. A, Vit.D, Vit.C, Vit.B1 and iron is needed.

#### CARE OF POST TERM BABIES (Paschaat Jaata Sisu Paricharana)

A pregnancy continuing beyond two weeks of the expected date of delivery is called post maturity or post term pregnancy. When pregnancy exceeds the expected date, there is risk of placental insufficiency due to placental ageing. This will be resulted in to placental calcification and infarction. Following are the fetal complications that may occur during pregnancy as well as in labour.

- During pregnancy
  - Fetal hypoxia
  - Fetal distress
- In labour
  - Fetal hypoxia and acidosis
  - Meconium aspiration
  - Cord compression
  - Shoulder dystocia
  - Birth trauma
  - Chemical pneumonitis, atelectasis and pulmonary hypertension
  - Hypoglycaemia
  - Polycythaemia

## Management

Following points have to be kept in mind while dealing with a post mature baby.

- Gestational age
- Overall health
- Medical history
- Baby's tolerance to specific medications, procedures and therapies

Following are the principles and aims of management.

- 1 Treating the meconium aspiration syndrome
- 2 Checking and correcting hypoglycaemia
- 3 Administration of specific antibiotics

### 3. RAKSHOGHNA KARMAM (Protective Measures)

रक्षस् - Evils

ज्ञ - Kill

General protective and curative measures mentioned in various contexts like operative procedures in Salyatantra, acute neonatal disorders (grahabaadha), unmaada and apasmara and swasthavritta can be included under the term rakshoghna karma. The concepts of graham and bhoota are closely linked with Hindu mythology. In modern view, this can be compared with impacts on health due to unknown causes, infections or psychiatric disorders. The rakshognavidhi once again reveals the scientific sense of our ancient scholars regarding the nosocomial infections.

The aims of rakshognakarmas are:

- 1 Protection from grahabaadha
- 2 Prevention of mental disorders
- 3 Prevention of infections in post-natal period
- 4 Curative function
- 5 Reduction of intensity of manifested diseases.

Rakshaakarmas dealt in Kaumarabhritya can be summarized as below:

- The place should be surrounded by branches of adani, khadira, pilu

and parushaka. The seeds of mustard, linseed, rice and kanakanika should be scattered all over.

- Oblations should be performed regularly.
- A wooden pestle should be kept obliquely at the entrance of the house.
- A pottali containing vacha, kushtha, hingu, mustard, garlic and other drugs should be kept at the entrance and worn by the baby and mother.
- Brahmana expert in atharva veda should do enchantment of mantras.
- Mani prepared from horn of live rhinoceros and other animals should be tied to the body of the baby.

जीवत्खड्गादिशृङ्गोत्थान् सदा बालः शुभान् मणीन्। A.H.U.1/26

- Dhoopana of the kumaaraagaara should be done with guggulu, agaru, etc.
- A non-obedient child should not be threatened or frightened since this will cause grahabaadha.

त्रासयेन्नाविधेयं तं त्रस्तं गृहणान्ति हि ग्रहः॥ A.H.U. 1/41

### PREVENTION OF INFECTION IN THE NURSERY

The baby has emerged from a highly sterile environment in uterus to the external world. So the prevention of infections is a matter of concern in neonatology. This should be understood under following headings:

- Health standards for personnel- The individuals with respiratory, cutaneous, mucocutaneous, hepatic, gastrointestinal or other communicable infections should not have access to the nursery.
- Hand washing - Most of the nosocomial infections are well prevented by the scientific hand washing techniques. All rings, bangles, watches and even religious thread should be removed from the body of health worker.
- Dress code - Sterile, daily washed gowns and gloves should be used by the mother as well as health care professionals. A front open gown should be provided to mother to facilitate feeding.

- Cleaning environment - Cleaning is defined as the physical removal of organic materials or soil infested with micro organisms from the objects. Always use a vacuum cleaner for cleaning and mopping with a disinfectant-detergent solution. Special attention should be given to water tap, walls, windows, shelves and waste buckets.
- Cleaning and disinfection of baby beds-after the neonate is discharged, the unit used by the baby should be cleaned and disinfected thoroughly. If longer confinement is needed, clean and disinfect the beds at least once in a week.
- Disinfection and sterilization of patient care equipments.
- Disinfection of individual equipment.  
Thermometers, feeding utensils, suction apparatus, respiratory equipment.
- Special preventive techniques during special procedures like invasive procedures.

#### 4. NISHKRAAMANAM, UPAVESANAM

Refer in Samskaaras (Page No. 137, 138)

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## NAVAJAATASISUPAREEKSHANAM (Examination of New Born)

The Navajaata has to be examined at every stage after delivery. Special care has to be taken while handling a new born baby. This is well explained in Sushrutasamhita.

बालं पुनर्गत्रसुखं गृहणीयात् S.S.Sa.10/47

The child should feel comfortable while we handle him. Following points should be kept in mind while handling such child.

- 1 न चैनं तर्जयेत् -the child should not be scared.
- 2 सहसा न प्रतिबोधयेत् - the child should not be awakened suddenly. This will create fear in the child.
- 3 सहसा न अपहरेत् -don't snatch the baby suddenly from others hand.
- 4 सहसा न उत्क्षिपेत् - should not be lifted up suddenly. This will hamper proper functioning of vaayu.
- 5 नोपवेशयेत् - shouldn't be made to sit on the ground. This may lead to spinal deformities like kyphosis.(koubjya bhayaat).
- Examination to elicit the features of praana pratyagamanam.

Following are the features of proper praanapratyaagamana.

Uchwaasa(inspiration), niswaasa (expiration), prekshana & chetana(response to stimulus), sukha dukha jnaanam(grimace), pravatna(activity)

- Examination of longevity – Ayupareeksha
- Examination while conducting each samskaara
- Examination of diseased children.

### Aayupareeksha

Aayu pareeksha denotes certain physical parameters to assess the health and longevity of an infant. In adults, this can be done by anguli pramaana pareeksha (structural) and by assessment of saara (functional). Kasyapasamhita explains specific physical features to check the health status of the baby. Acharya Kasyapa underlines the fact that these traits can be assessed from external features. In the current era, these features are employed by sports medicine for the selection of candidates.

यथा वक्रं तथा वृत्तं यथा चक्षुस्तथा मनः।

यथा स्वरस्तथा सारो यथा रूपं तथा गुणाः॥

K.S.Su. 28/7

Nails	Stripped and long
Feet	Well formed with upwards lines.
Heels	Well rounded, smooth
Ankle	Well covered, small, hairless, without veins
Foreleg	Thin
Leg	Compact, without visible veins, hairless legs.
Knee	Well covered
Thighs	Fleshy with deep seated veins, smooth thighs.
Hips	Rounded, perpendicular, scarless, hairless, and buttocks of equal size.
Dimple of venus	Deep, without hair, well divided and equal ischial tuberosities.
Pelvis	Waist dimensions same as chest.

### Male reproductive organs

Testicles	Long and big testicles for the fair complexioned, black for the black, white for the red
Penis	Soft, long, erected penis with big coppery, uncovered glans, large prepuce and large meatus.

**Flow of urine** The urine which comes without obstruction, with thick stream, in good quantity and in straight direction with force

### **Yoni (Female reproductive organs)**

Cart shaped yoni is indicative of fertility

**Pubic hair** Should be directed towards centre from both the sides and not very dense.

**Abdomen** Well protuberant

**Umbilicus** Deep, slightly turned towards right side with rounded protuberant edges, free from hair, visible veins and folds.

**Anus** Similar to umbilicus.

**Flanks** Rounded, fleshy, smooth with absence of hair and visible veins.

**Back** Even, broader in upper side, without visible veins, hair, circles or folds.

**Shoulders** Emaciated and with hair.

**Axilla** Elevated, big, fleshy, well made.

**Arms** Thick, tapering downwards, long touching the knee joint, covered with veins.

**Scalp** Smooth, red, clean and free from wound.

### **Gait and other features.**

Gait like an intoxicated elephant, bull, lion, tiger, swan is of kings.

The persons having too fair complexion, too dark complexion, too large, too small, too emaciated, too obese, too hairy, without hair, too soft and too hard body are said to be inauspicious. [indicative of several endocrine disorders.]

Acharya also mentions deviations from this normal pattern indicating pathological status.

Eg. Flat heels – Adulterous

Big ankle – Loss of wealth.

## EXAMINATION OF NEW BORN

### History taking

#### Basic indicators

- Date of birth
- Gestational age
- Birth weight

#### Previous obstetrical history of mother

- Gravidity
- Parity
- History of abortions

#### Pre-pregnancy health status of mother

- Maternal systemic disorders
- Chronic undernutrition
- Blood grouping
- Tetanus toxoid vaccination

#### Course of pregnancy

- Adequacy and quality of antenatal care
- Ask for history suggestive of maternal rubella, cytomegalo virus and toxoplasmosis
- Detailed history of medications during pregnancy
- Dietary intake
- History of bleeding during pregnancy

#### Natal history

- Birth asphyxia
- Birth trauma
- Vaginal delivery/operative delivery
- Cephalo pelvic disproportion
- Cord around the neck
- Cord prolapse

#### Neonatal history

- Cry after birth
- APGAR score

- Feeding during first week
- Passage of first urine
- Passage of first stools
- History of jaundice or seizures
- History of present illness
- Family history
- Immunizations

### Physical examination

#### a Examination at birth

- APGAR scoring system- This scoring system was first described by Virginia Apgar in 1952. This examination should be done in a neonate in first and 5<sup>th</sup> minute to assess the neurological status. If the score is 6 or less in 5<sup>th</sup> minute, again the APGAR should be examined in 10<sup>th</sup>, 15<sup>th</sup> and 20<sup>th</sup> minutes(Extended APGAR score). A low APGAR score in 10<sup>th</sup> minute or later indicate poor prognosis. If the score is 3 or less in the 15<sup>th</sup> minutes or later, the chance of cerebral palsy and brain damage is >57%.

negalo

Acronym	Observations	0	1	2
A	Appearance (colour)	Blue or pale	Blue peripheries	Pink
P	Pulse rate (Heart)	Nil	<100	100 or more
G	Grimace (reflex with catheter in nostril)	No response	Grimace	Cry or sneeze
A	Activity (Tone)	Flaccid	Some flexion of limbs	Semiflexed; active Movements
R	Respiration	Nil	Slow, irregular	Crying

**Rating**

- |        |                        |
|--------|------------------------|
| 8 - 10 | Normal                 |
| 5 - 7  | Moderately asphyxiated |
| <4     | Severe distress.       |

- Birth weight and gestational age
- Single umbilical artery and palmar crease
- Hypoplasia of the depressor anguli oris muscle
- Orifice counting and their patency
- Evidence of respiratory difficulty
- Midline lesions on the back and front

**b First day examination****Vital signs**

- Heart rate
- Respiratory rate
- Blood pressure

**General behaviour**

- Colour
- Movements of limbs and posture

**Measurements**

- Birth weight
- Occipito-frontal head circumference
- Chest circumference
- Crown-heel length

**Examination of gestational maturity**

A thorough examination immediately after birth will allow us to reach to a conclusion of gestational age, though we are not aware about the menstrual history of the mother.

No	Feature	Premature baby	Mature baby
1	Skin texture	Smooth, medium thickness with superficial peeling	Thick with peeling and cracking over the hands and feet
2	Lanugo	Abundant lanugo on the back	Thinning of lanugo
3	Plantar creases	Not well developed, faint red marks over the anterior half of the sole	Deep creases on anterior half or 1/3rd of the sole
4	Breast nodule	Less than 5mm on one or both sides	5-10mm
5	Cartilage of the pinna	Recoil may not present, or week recoil	Instant recoil will be present.
6	Male genitalia	Testis will not be in scrotum or it may in abdomen or inguinal canal	At least one testes will be in scrotum
7	Female genitalia	Labia majora partly cover the minora, or widely open	Labia majora completely cover the minora
8	Posture	Arms and legs extended or partly flexed at arms, hips or at knees	Stronger flexion of legs and some flexion of arms
9	Popliteal angle	180-150 degrees	150-120 degrees
10	Head lag (with the infant lying in supine position baby is grasped at hands and slowly pulled from supine towards sitting position. The position of head in relation to trunk is noted).	Partial head control or complete head lag	Able to maintain head in line with the body

### Reflex examinations

- Moro reflex
- Stepping reflex
- Placing reflex
- Grasp reflex
- Asymmetric tonic neck reflex
- Parachute reflex

### Systemic examinations

Refer in aaturapareeksha (Page No. 183).

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## 6

# KUMAARAAGAARA (Nursery, NICU and Paediatric Ward)

### **Definition**

Kumaaragaara is the term coined by Ayurveda Acharyas to denote special premise intended for confining children after birth.

### **References**

Almost all classics denotes the idea of Kumaaraagaara but has been detailed by Ashtangasamgraha and Charakasamhita.

### **Construction details**

#### **Place**

The place chosen for Kumaaraagaara should be pleasant and properly ventilated. It is said to be constructed according to Vaastuvidya principles near to a water reservoir. The place should not be easily accessible to rodents and wild animals.

#### **Inevitable facilities**

According to our Acharyas provision for water (सलिलस्थानं), store room, toilet (मूत्रवर्चस्थानं), kitchen (महानसं) bathroom (स्नानभूमि) are to be equipped in separate rooms. The bed and seatings of the baby should be made with materials providing comfort in all climatic changes. Bali,mangalam,homam etc are to be performed regularly. Presence of

vriddhavaidya(veteran), anuraktajana(affectionate servant) and vriddha stree (old women) are necessary.

## Discussion

While designing the Kumaaraagaara, the vulnerable nature and thermal stability of children were minutely considered by our ancient scholars. Concieving these concepts, strict aseptic conditions were made sure, positively adding to the proper growth of the child. The nursery, NICU and paediatric ward are the modern attributes to the concept of Kumaaraagaara.

## **Neonatal Intensive Care Unit (NICU)**

NICU are highly specialized areas in a hospital that cater to the needs of all types of sick new born babies. Making an NICU needs to have multi disciplinary team cooperation which consists of hospital planners, architects, biomedical engineers, neonatal staff and nurses. NICU can be of three levels according to the level of care which is given to the neonates.

- 1 Level-1- primary health centre, home, maternity home.
  - 2 level-2- first referral units, district hospitals, private paediatric nursing homes
  - 3 Level-3- medical college hospitals, regional perinatal centres.

### **Location**

NICU should be in a distinct area with proper access to other services. There should be good visibility and should be sufficiently spacious. NICU should be near to the labour room.

Area

This should be decided according to the number of deliveries in a year and the level of neonatal health care provided by the institution. The present recommendation is that 1.5-2 intensive care beds and 2 special care beds should be provided for every 1000 births.

## **Mechanical requirements**

Mechanical requirements at each infant care bed, such as electrical and gas outlets should be organized to ensure the safety, easy access and

maintenance. There should be three outlets per bed each of air, oxygen and vaccum. There should be sufficient provision to transfer the data to a remote area. Ideally the head wall should include communication devices, supply storage and charting space, resulting in an efficient, organized and self contained workstation around the infant.

#### Ambient temperature and ventilation

The NICU should be designed to provide an air temperature of 22°C-26°C. Air delivered to NICU should be filtered with at least 90% efficiency.

**Laboratory** – a side laboratory is essential to an ideal NICU.

#### **Others**

- Adequate number of nursing staff
- Other motivated staff
- Resident doctor, other paediatric specialists
- Transient sounds should not exceed 70 db
- There should be sufficient provision of day light
- Properly designed lighting should be there with an NICU

#### **Equipments**

- Incubator
- Resuscitation sets
- Infusion pumps
- Open care systems
- Heart rate monitors
- Pulse oximeters
- Non invasive blood pressure
- Invasive blood pressure
- Neonatal ventilators
- CPAP system(Continuous Positive Airway Pressure)
- Phototherapy units
- Oxygen hoods
- Electronic weighing scale

- ECG monitor with defibrillator

## NURSERY

Nursery is a room within the house or a separate premise designed for the care of a young child or children.

### The Basic Requirements of a Nursery

- To start with, the most essential thing your baby's nursery will need is a crib. Ensure that the crib you invest in subscribes to safety standards. Ensure that the bars are not too wide apart—2 and 3/8 inches. The rails should be high enough to prevent your baby from crawling out. Also, buy a mattress and linen for the crib.
- A changing table will be another essential item for your baby nursery. Again, safety should be paramount—safety belts and a guardrail will prevent your baby from falling off. The changing table should always store clean diapers, powder, baby creams, and other accessories you require to change your baby's diapers. Having the garbage can (or diaper genie) for dirty diapers and a laundry hamper nearby will be convenient for you.
- Have a soft night-lamp in your baby nursery. Lamps with adjustable brightness are best as they allow you to brighten the light if required.
- A mobile hung, over the crib will not only keep your child engrossed, but also help to develop your baby's senses.
- You can decorate the walls of your baby nursery with bright pictures, toys, or stuffed animals.
- A glider chair will be an added asset to your baby's nursery. It can be used to rock the baby to sleep at night and is safer than a rocking chair.
- You can even buy special closets and baby coat hangers in the baby nursery to hang some of your child's clothes.

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## 7

# NAVAJAATASISUPOSHANA

## (Nutritional Aspects Including Neonatal Feeding)

### Specific Feeding Schedule

Food is the root cause of both health and disease in children. No wonder Acharya Kasyapa described Aahaara as mahaabheshajam. As per his verses no medicine will act as good as food for a given health challenge.

न चाहारसमं किञ्चिदभैषज्यमुपलभ्यते। K.S.Khi. 4/5

भैषजेनोपपत्रोऽपि निराहारो न शक्यते

तस्मात् भिषग्भिराहारो महाभैषज्यमुच्यते। K.S.Khi.4/6

Though one may be taking medicine, one can't exist without food. So food is otherwise called as mahabhaishajya.

The following regime of food have been explained by the acharyas.

### Ksheeraadan

- Navaneetam.
- Stanyam.
- Alternatives of breast milk in its deficiency or absence.
- Phalapraasam.
- Annapraasam.

### Ksheerannaadan

- Anna from annapraasam.
- Stanyam.

Children should be fed whenever they feel hungry. This prevents the illhealth or developmental retardation which may be caused by Adhyasana or Anasana.

तदात्मवान् हितमितं काले भुज्जीत षड्रसम् ॥ K.S. Khi. 4/13

Markers of nutrition (Ideal food) according to Kasyapa are :

तुष्टि पुष्टिर्थृतिर्बुद्धिरुत्साहः पौरुषं बलम् ।  
सौस्वर्यमोजस्तेजश्च जीवितं प्रतिभा प्रभा ॥ K.S.Khi. 4/11

तुष्टि	- Happiness	धृति	- Will power
बुद्धि	- Intellect	उत्साहः	- Enthusiasm
पौरुषं	- Well built	पुष्टि	- Proper development
सौस्वर्य	- Good sound	ओजः	- Energetic
तेजः, प्रभा	- Good looking	बलम् ।	- Good immune system

Acharya Kasyapa explained the following features in insufficient nutrition.

उत्साहवर्णस्वरदृष्टिहनिविषादकाश्यश्रमवाग्विकाराः ।  
भृशं च पीडा हृदयस्य जन्तोगर्लानिर्मुखस्यादतिबुधक्षितस्य ॥ K.S. Kalpa. 7/10

- Enthusiasm, complexion, voice and vision are reduced
- Emaciation
- Fatigue
- Abnormalities in voice
- Pain in cardiac region
- Unpleasant facies

If a person gets nutrition adequately, the features presented by him are

कान्तिर्बलस्मृतिमेधावयांसि प्रमोदसत्त्वस्थितिरङ्गवृद्धिः ।  
दृढन्द्रियत्वं स्थिरताऽयुषश्च सम्यगुणा भुक्तवतो नरस्य ॥ K.S.Kalpa. 7/21-22

- Lustre, strength, memory, intelligence and longevity are increased.
- Happiness.

- Physical and mental health.
- Sharp sensory organs.
- Longevity.

Kasyapa explains even the principles of nutrition based on the time, type and quality of diet.

If at all a child suffers from some nutritional insufficiency inspite of following the nutritional principles, Kasyapa strictly advocates the use of maamsarasa

#### **Energy requirements of infants**

Age	Kcal/kg
Up to 3 months	120
3-5 months	115
6-9 months	110
9-11 months	105

#### **Essential elements of a standard diet**

1 Carbohydrates

2 Fats

3 Proteins

Age	Protein (g/kg/day)
3 months	2.4
3-6 months	1.85
6-9 months	1.62
9-11 months	1.44

4 Minerals: calcium.

5 Trace elements.

Iodine, fluorine, zinc, magnesium, copper, chromium, selenium, cobalt, molybdenum.

6 Water.

## 2. STANYAM (Breast Milk)

### Introduction

The knowledge regarding the breast milk is unique in Ayurveda. A well studied narration of the physiology of the stanya is seen in every classic of Ayurveda. Following points regarding stanya should be known to every Ayurvedic scholar in physiological level.

- Physiology of stanya formation (Stanya nirmaana)
- Physiology of milk ejection(Stanya pravritti hetu)
- Qualities of ideal breast milk(Stanya sampat)

### Physiology of stanya formation

Ayurveda classics unanimously claim, the effective establishment of lactation occurs only after three days of parturition. Stanya is upadhaatu of Rasadhaatu.

रसप्रसादो मधुरः पवाहारनिमित्तजः

कृत्स्नदेहात् स्तनौ प्राप्तः स्तन्यमित्यभिधीयते S.S. Ni.10/18

When rasadhaatu is subjected to transformation in prasootaavastha in a female, its saara portion in the breast region is known as stanya. This physiology has been started since the time of conception. (One portion of the aahaara of garbhinee is meant for the stana as well as stanyapushti in a pregnant woman.)

The transformation of the food and water in to breast milk is well explained in Hareetasamhita.

यद्यदाहारजातन्तु रसं क्षीरसिरानुगम्।

रसो जलं च भुक्तं च तथा पित्तेन संयुतम्॥

पाचितं जाठरे वह्नौ पित्तेन सह मूर्च्छितम्।

पच्यमानं सिराप्राप्तं क्षीरतोयेन पुत्रक॥

तेन क्षीरमिति ख्यातमन्तिसोमात्मकं पयः।

अमृतं सर्वभूतानां जीवनं बलकृन्मतम्॥ H.S. 1/8

Seat of rasadhaatu is hridaya. Hridaya with its rasadhaatu is the prime centre of psyche(Mana) and soma (Sareera)coordination. References of

la. A well  
try classic  
known to

nidra, unmaada, apasmaara, hridroga, paandu, etc. reveal this fact. So the function of rasadhaatu and stanya has both psychic and somatic component. So stanyapravritti is a psychophysical phenomenon. Following references regarding stanya pravritti reveals this fact.

तदेवापत्यसंस्पर्शात् दर्शनात् स्मरणादपि  
ग्रहणाच्च शरीरस्य शुक्रवत् संप्रवर्तते  
स्नेहोनिरन्तरस्तत्र प्रस्त्रवे हेतुरुच्यते S.S. Ni.10/21-22

The milk is ejected from the breast by thought, touch,sight and physical contact of the baby. This physiology is almost similar to the one in ejaculation. Maintenance of lactation is mainly by the uninterrupted affection(स्नेहोनिरन्तर) towards the baby.

गर्भिण्यस्मीति तत्प्रीति प्रेम सङ्कल्प संभृतः  
प्रसुतो जायतेनार्यास्तेन स्तन्यं प्रवर्तते K.S.Khi.9/45-46  
शुक्रोध लंघनायासाः स्तन्यं नाशस्य हेतवः A.H.U. 1/17

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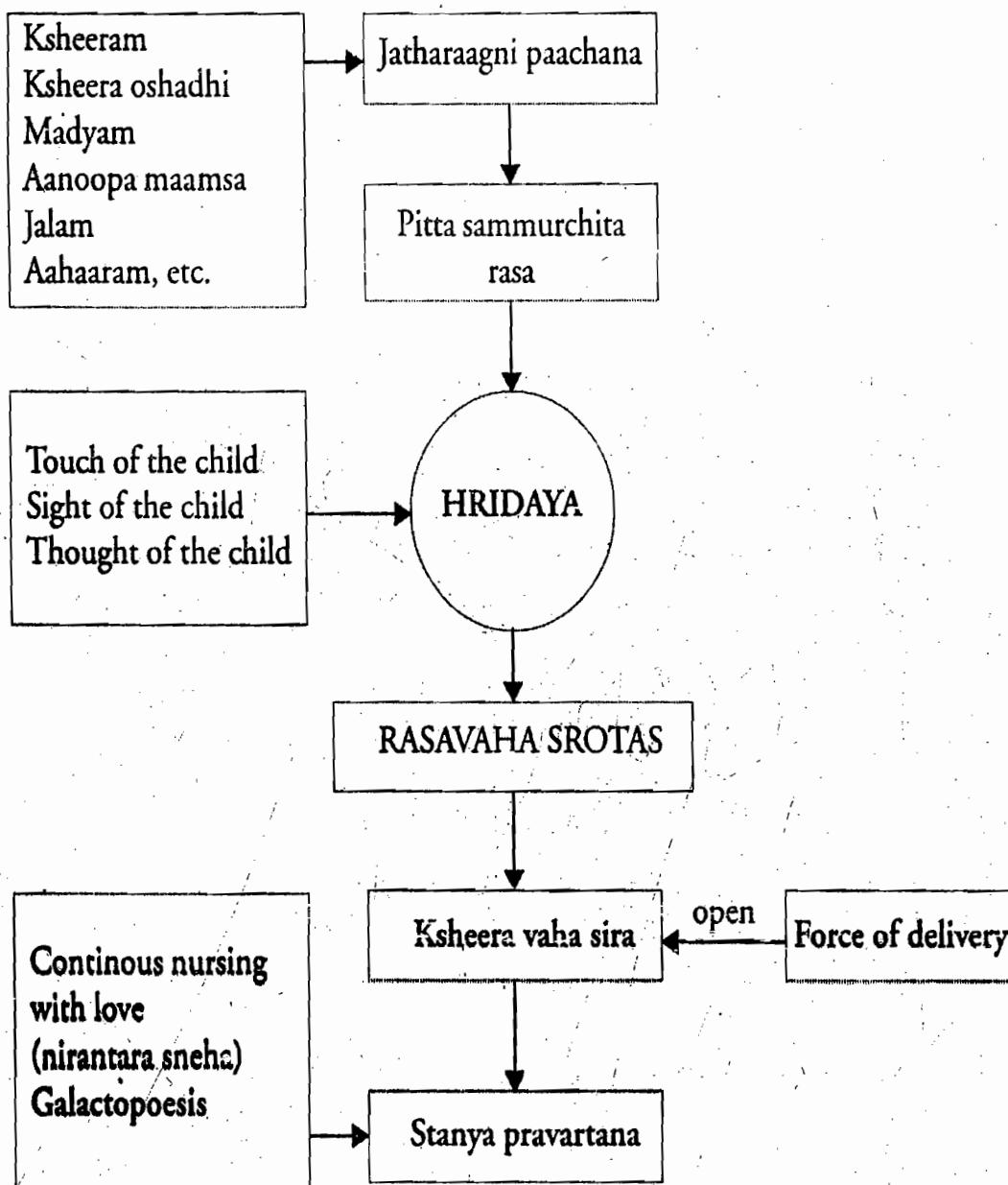
As per the modern physiology mainly two hormones are determining the effective lactation. They are:

- Prolactin from anterior pituitary for milk production
- Oxytocin from posterior pituitary gland for milk ejection (Let down reflex).

Of these prolactin is purely somatic component where as oxytocin is chiefly functioning according to the emotional status of the subject. A particular problem in nursing the baby comes from the fact that many psychogenic factors or even generalized sympathetic nervous system stimulation throughout the mother's body can inhibit oxytocin secretion and consequently depress milk ejection.

सिराणां हृदयस्थानां विवृतत्वात् प्रसूतिः  
तृतीयेऽह्निचतुर्थं वा स्त्रीणां स्तन्यं प्रवर्तते। A.H.U/1/11

The first three days of deficient lactation in a female after delivery is due to the lack of efficient opening of stanya vaahee siras which are attached to hridaya.



## 2. STANYA PAANAM (Breast Feeding)

### Techniques of breast feeding

Special care has to be taken not only in maintaining the quality of stanya but also in the techniques of feeding. Sushruta samhita (saareerasthaana) clearly explains the principles to be followed while feeding the baby. The breast feeding should be started at the earliest. Hence this is narrated with due importance in the Jaatakarma according to Charakasamhita.

ततः प्रशस्तायां तिथौ शिरःस्नातमहतवाससमुद्भुतं  
शिशुपुष्पवेश्य धात्रीं प्राङ्मुखीं चोपवेश्य दक्षिणं स्तनं  
धौतमीषत्परिस्तुतमभिमन्त्रा मन्त्रेणानेन पाययेत्॥ S.S.Sa 10/25

### Preparation of child

The baby has to be bathed and dressed with new clothes. The baby should be facing the north.

### Preparation of mother

Mother should be faced towards the east. A little milk should be expressed out before feeding the baby. Initially the right breast has to be given for feeding along with the enchantment of mantras. Charakacharya mentions the placement of a pot filled with pure water near the head of the baby.

- Select a best time (Astrologically) to start the feeding.
- Wear clean white garments.
- Apply fragrance on body.

An important term to be coined with breast feeding is 'rooming in'- which means the baby should be kept along the mother's side, day and night. A normal baby should be made in contact with the mother as early as possible after birth. This keeps the baby warm in addition to stimulation of oxytocin production in mother's body through her emotions.

### Position of baby and mother

Any position which is comfortable to the baby and mother can be adopted for breast feeding. There are so many techniques for positioning the baby for breast feeding. Indian method, cradle position, modified cradle position, side-lying position, supine position are some among them. The main points to be taken care of are:

- The whole body of the baby should face the mother.
- The head and neck should be facing the breast and should be supported in a straight line with his body.
- The baby should be properly attached to the breast i.e. not only the nipple but most of the areola should remain inside the mouth of the baby.
- The baby should be fed whenever he cries with hunger as long as he wishes to feed.

### Burping

All infants swallow some air while sucking. Holding the infant erect over the mother's shoulder, making him sit up on the mother's lap and patting or rubbing the shoulder helps the infant in expelling the wind. This should be done after every feeding. Otherwise, the swallowed air later causes abdominal cramps or regurgitation of milk. However, over burping is harmful to the baby.

### STANYA PAREEKSHANA (Examination of Breast Milk)

Growth and development of a child is mostly attributed to the quality and quantity of stanya given to the baby for at least a period of 6 months. Thus it is the essential duty of a paediatrician to confirm its purity. This can be done through:

- 1 Clinical tests.
- 2 Plain water tests.
- 3 Organoleptic tests.

#### Clinical tests

By observing the clinical features presented by both mother and baby which will be explained later.

#### Plain water tests

Take a cup of clean water in a clean glass vessel. Express the milk directly into this vessel and observe the different pathological patterns in

- Colour, consistency (Raajimat, Tantumat)
- Density(Apsu majjanam/Apsu plavanam)
- Spreading nature(Visarpati)

#### Organoleptic tests

This examination deals with those features of milk which can be perceived by the sensory organs

1. Eyes
  - a. विवर्णता (Altered colour)
  - b. फेनसंधातम् (Frothy)
  - c. हरितरक्तपीतावभासम् (Altered colour)

2. Nose - वैगस्थ्यम् (Altered smell)

3. Tongue (Altered taste)

- a. वैरस्थ्यम्
- b. कषायरसता
- c. अम्लमधुररसता
- d. कटुरसता

4. Skin

- a. उष्णं (Too hot)
- b. शीत (Less than body temperature)
- c. पैच्छिल्यम् (Slimy)

### Stanasampat

The physical fitness of an individual depends on the status of the dhaatus composing his body. The physical fitness is the measure of his ability to perform the activities. Here lies the relevance of the concept of Saara pareeksha. The examination of Saara is an indicative of the state of dhaatus of an individual. When these dhaatus are in their best state of excellence the individual is said to possess a well built body capable of performing all the challenging activities required for living. Based on this the recommended height, weight etc of each body part has been listed out in the context of pramaana pareeksha.

Likewise, the concept of stana sampat revolves around the state of health of the lady. The physiology of lactation involving formation, expression and maintenance of lactation can best be achieved only by a lady who is having the best of the dhaatus comprising the formation of stana as well as stanya. Only such a lady can be considered as ideal to carry out lactation in the child. So stana sampat refers to the state of physical fitness of the dhaatus involved in the formation of breast qualitatively and quantitatively which can be examined by the following features:

तत्रेयं स्तनसंपत् - नात्यूर्ध्वा नातिलम्बावनति कृशावनतिपीनौ युक्तपिण्डलकौ सुखप्रपानौ चेति

C.S. Sa. 8/53

The mentioning of these qualities is not merely for cosmetic purposes rather for the goodness of the child.

**STANYA SAMPAT\***  
**(Properties of normal breastmilk)**

**Features in Milk**

यददिभरेकतां याति न च दोषैरधिष्ठितम्।

तद्विशुद्धं पयो.....

A.H.U. 2/2

Vagbhatacharya opines that the milk which mixes completely in water forming a homogeneous mixture and that which does not have any dosha vitiation, is ideal for the baby.

अव्याहतबलाङ्गायुररोगो वर्धते सुखम्।

शिशुधात्र्योरनापर्तिः शुद्धक्षीरस्य लक्षणम्॥ K.S.Su. 19/26

Kasyapa, the father of Kaumarabhritya, has made it further clear. Unimpaired strength, body parts and longevity, sufficient growth and development in a disease free state along with comfortable state of child and mother are the features of pure milk. Growth and development indices(length, weight, behavioural development,etc) of the child, best measures the quality&quantity of the stanya from mother.

**Volume**

- 2 Anjali (द्वाज्जलि तु स्तन्यस्य)

**Colour**

- Sankhaavabhaasam, paanduram

**Taste**

- Madhuram, kashaayanurasam

**Smell**

- Madhugandhi

**Guna**

- Laghu

**Veerya**

- Seetam

**Vipaaka**

- Madhuram

**Karma**

- Vaatapittasamanam

**Plain water test**

- Formation of a homogenous mixture

**Clinical features**

- Helps in attaining proper growth and development for the child

\* स्तन्यसप्ततु प्रकृतिवर्णगन्धरसस्पर्शम् उदकपात्रे च

दुह्यमानमुदकं व्येति प्रकृतिभूतत्वात् तत् पुष्टिकरमारोग्यकरं चेति॥ C.S.Sa.8/54

यत् क्षीरमुदके क्षिप्तमेकीभवति पाण्डुरम्।

मधुरं चाविवर्णं च प्रसन्नं तद्विनिर्दिशेत्॥

S.S.Ni. 10/25

- 5 Dhaatudushti      Specially Rasadhaatudushti.  
 6 Pregnancy            Kaphadushti on stanyam.

### Stanyadushtisaamaanyaachikitsa

कषाय पानैर्वमनैर्विरेकैः पथ्य भोजनैः।  
 वाजीकरण सिद्धैश्च स्नेहैः क्षीरम् विशुद्ध्यति ॥  
 त्रिफला सत्रिकटुका पाठा मधुरसा वचा।  
 कोलचर्ण त्वचो जंम्बा देवदारु च पेषितम् ॥  
 सर्षप प्रसूतोन् मिश्रं पातव्यं क्षौद्रसंयुतम्।  
 एतत् स्तन्यस्य दुष्टस्य श्रेष्ठं शोधनमुच्यते ॥ K.S.SU.19/5-9

- Taking drugs in the form of kashaaya, churnam etc
- Sodhana chikitsa in the form of either vamanam or virechanam
- Samsarjanam and Pathyaacharanam in aaahaaras and vihaaras.
- Vaajeekaranaoushadha siddha snehapaanam
- Other samanoushadhas

### Stanyasodhanamahaakashaayam

Proposed by Charakacharya these are intended for the treatment, in general, of the stanyadushti.

पाठामहौषधसुरदारु मुस्त मूर्वागुडूचीवत्सकफल-  
 किराततिक्त कटुरोहिणी शारिबा इति दशेमानि  
 स्तन्यशोधनानि भवन्ति ॥ C.S.Su. 4/12

पाठा - पाठतत्त्वाण्णी, महौषधम् - चूळ, सुरदारु - डेवताठ, मुस्ता - मुत्ताळ, मूर्वा - वेलुंकुरुप, गुडूची - अम्बुत, वत्सकफलम् - कुटकपालयती, किराततिक्ता - कीर्यातत, कटुरोहिणी - कटुकुरेहीणी, शारिबा - निंगौलीडी.

## DOSHA DUSHTA STANYA

### Ashtaksheera dosha

This concept has been exclusively proposed by Charaka. Based on milk's physical characters, he had classified ksheera dushti into 8 major types. The clinical manifestations in the child and the symptoms in the mother have been discussed later (C.S.Chi.30).

अष्टौ क्षीरदोषाः इति वैवर्ण्यं वैगन्ध्यं वैरस्यं  
 पैच्छिल्यं फेनसंघातो रौक्ष्यं गौरवमतिस्नेहश्चेति ॥ C.S. Su. 19/3

Vivarnata (Altered colour), vaigandhyam(altered smell), virasata (altered or bad taste), pichilata (altered consistency-slimy), phenasanghaatam (frothy), rukshata (best experienced by features in baby by constipation), gouravam(Dense), atisneham(best experienced by features in baby by loss of appetite)

The above mentioned physical characters can be classified on basis of dosha.

Ksheeradushti	Dosha dominance
वैरस्यम् फेनसंघातम् रुक्षम्	वातिकम्
वैवर्ण्यम् वैगन्ध्यम् पैच्छिल्यम्	पैत्तिकम्
गौरवम् अतिस्नेहम्	कफजम्

Vaaghatacharya has classified stanyadushti purely on the basis of dosha dominance. All physical, chemical and clinical changes can be viewed on dosha basis according to him.

### Vaatadushtastanyam

..... वाताददुष्टं तु प्लवते ऽम्भसि ॥

कषायं फेनिलं रुक्षं वर्चोमूत्रविबन्धकृत् ।

A.H.U. 2/2

The features explained by the acharya can be discussed using 3 criteria.

- 1 Characters of milk- kashaaya in taste, frothy, Rooksha.
- 2 Plain water test-if a drop is added to a glass of clean water, it floats on the surface.
- 3 Clinical features in child
  - Constipation
  - Decreased urinary output

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- अतृप्तिकरम् (Unsatisfied child), कर्शनं (Unable to gain sufficient weight and height (C.S.Sa. 8/55)
- आध्मानकृत् (Which causes abdominal distension) (A.S.U. 2/4)
- विरसम् (Tasteless) (K.S. Kh. 15/7)

### Chikitsa

The baby is dependent solely on the mother for food requirements. Hence, the stanyaadushti lakshanas manifesting in him demands treatment for both mother and baby.

#### Treatment for mother

Acharya charaka has proposed तीक्ष्णशोधन as the treatment for mother. Sootika being in a stage of Prachalita Dhaatu is not considered suitable for the teekshna sodhana. The regimen given by Vaghbhata seems more appreciable and adoptable.

#### Samanoushadas

तत्र वातात्मके स्तन्ये दशमूलं त्र्यहं पिबेत् ॥  
 अथवाऽग्निवचापाठाकटुकाकुष्ठदीप्यकम् ।  
 सभाङ्गीदारुसरलवृश्चिकालीकणोषणम् ॥      A.H.U. 2/9-10

Dasamoola kwaatha is to be administered for 3 days. It gives sufficient kaphavaatahara action because vaata dushti is present in stanya which itself is predominant in kaphadosha. Alternative oushadha yoga has also been explained.

#### Snehanam

ततः पिबेदन्यतम् वातव्याधिहरं घृतम् ॥      A.H.U. 2/11

Then medicated ghee suitable for vaatavyaadhi is to be administered. Eg: Vidaaryadi ghritam, Mahaasneham. This is followed by achasuraapaana as anupaana.

#### Mrudusodhanam

Mruduvirechanam or vasti may be used as sodhana therapy in mother for stanya dosha.

The term swedaadi means swedanam, abyangam, matraavasti, etc.

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### Treatment for baby

General vaatahara chikitsa has to be adopted for the baby. In addition, the symptoms should be treated accordingly.

Eg:-vibandhahara treatment for vibandha

Specific medicine mentioned for vaata dushta ksheera janita vyadhi is Raasnadi choornam. This can be applied as a broad spectrum treatment for diseases originating after vaatadushita stanyapaanam.

रास्नाजमोदासरलदेवदारूरजोन्वितम्।

बालो लिह्यात् घृतं तैर्वा विपक्वं ससितोपलम्॥ A.H.U. 2/12

### Paittika stanyadushti

पित्तादुष्माम्लकटुकं पीतराज्यप्सु दाहकृत्॥ A.H.U. 2/3

- Caused by employing pitta vriddhikara nidaanas by mother.
- Characters of milk- ushna, amla, katu in taste.
- Plain water test-produces yellow lines when poured on water.
- Clinical features in child-burning sensation, heart burn during digestion(A.S).

[These two clinical features can't be expressed by a neonate. The same can be elicited in a child with sufficient language development]

Miliarial type of skin eruptions in breastfed children may be equated with pittadushta stanyaja vikaara (PSV), although marked skin eruptions are not mentioned in the references of PSV. This becomes evident from the clinical finding that the treatment of PSV goes well with this condition.

### Chikitsa

#### Treatment for mother

Treatment includes both sodhana and samana therapies.

Sodhana : virechana is the treatment of choice.

.....पित्तघ्नं च विरेचनम्॥ A.H.U.2/15

**Samana**

पित्तदुष्टेऽमृताभीरु पटोलीनिम्बचन्दनम्।

धात्री कुमारश्च पिबेत् क्वाथयित्वा सशारिबम्॥ A.H.U. 2/13

Both mother and child should be made to drink kwaatha of Amrita, Abheeru, Patola, Nimba, Chandānam and Saariba.

**Treatment for baby**

Samana oushadhas mentioned above (amritaabheeru...) should be used in paittikastyanyadushti. In addition, external application of seetaveerya drugs is also advised in the form of

- Abhyanga and
- Lepa.

शीतांश्चाश्यङ्गलेपादीन् युज्यात्। A.H.U. 2/15

**Kaphaja stanya dushti**

कफात् सलवणं सान्द्रं जले मज्जाति पिञ्छिलम्॥ A.H.U. 2/4

Characters of milk-salty, slimy(pichila) in taste and consistency.

Plain water test-sinks when poured in water, thready consistency.

**Clinical features of baby**

The features are well explained in Charakasamhita.

Slaishmika vikaaras like swaasa, kaasa, laalaalu (dribbling of saliva), sleeping baby are seen.

This concept should be kept in mind while treating the recurrent upper respiratory tract infections in first 4 months of baby.

**Treatment for the mother**

The clinical picture of kapha dushta stanya will be so severe because of तुल्य दोष दूष्य काल स्थानत्वम्।

- 1 Kapha is the vitiated dosha.
- 2 Stanya is the upadhaathu of rasa which is related to kapha.
- 3 Stana is a seat of kapha(urasthaanam).
- 4 Dushti is present in kapha predominant age.

5 All the nidaanas are kapha vardhakas.

Due to the above reasons the symptoms produced will be severe and incapacitates the mother and baby. All these factors make vamana inevitable in the treatment of mother for excessive kaphadushita stanyam.

### Treatment for the baby

- Snehnam- with yashtisiddha ghritam mixed with saindhava
- Vamana-is indicated for baby also. For this madanaphala kalka is to be applied around the nipples of mother or in mouth of the baby.

राठपुष्टैः स्तनौ लिम्पेत् शिशोश्च दशनच्छदौ। A.H.U. 2/17

Later samsarjana karma is to be followed with Vachadi gana for both baby and the mother.

Samsarga and sannipaataja stanyadushti  
संसृष्टलिङ्गं संसर्गात् त्रिलिङ्गं सान्निपातिकम्॥ A.H.U. 2/4

Samsargaja, sannipaatika dushta stanya shows features according to the doshas involved. Treatment also follows the same.

In Kasyapasamhita there are additional references of stanya dushti according to its physical variables.

बहु विष्मूत्रता स्वादौ, कषाये मूत्रविटग्रहः  
तैलवर्णे बली तुल्या धृतवर्णे महाधनः  
यशस्वी धूमवर्णे तु शुद्धे सर्वे गुणोदिताः K.S.SU.19/3-4

No	Type of milk	Features in child
1	Madhuram	Excessive urine and faeces
2	Kashaayam	Reduced out put of urine and faeces
3	Taila varnam	Good vigor and strength
4	Ghritavarnam	Become very rich
5	Smoke coloured	Become very famous

### GRAHA DUSHTA STANYAM

Graham dushti is a cause for stanya dushti several times. Most of such cases of stanya dushti are different types of infections. Only acharya Kasyapa has mentioned this type of stanya dushti. But full reference of

this context is not available.

..... शकुनी कटुतिक्के। स्कन्धषष्ठी ग्रहौ ज्येष्ठो व्यापत्रे सान्निपातिके  
पूतनास्वादु कटुके शेषाः संसृष्ट दोषजाः K.S.SU.19/1-2

No	Graham	Features in milk
1	Sakunee	Katu and tikta
2	Shashti graham	Sannipaatika Dushti
3	Skanda graham	Sannipaatika dushti
4	Putana	Madhuram and katu

### Abhigaataja stanya dushti

Abhigaataja stanya dushti is mentioned in Saarngadharasamhita as well as in Sushruta samhita and Maadhava nidaana. A detailed elaboration is not given in these two books regarding this disease. In Madhukosa vyakhyana of Maadhava nidaana the features of the abhigaataja stanya dushti is correlated to vaatika stanyadushtilakshanas.

अभिघातेनापि स्तन्यं दुष्टं संभवत्येव

किन्तु, तस्य वातिकस्तन्यलक्षणैरेव संग्रहणं कर्तव्यम्। M.N.67/7 Madhu.

### Pancha ksheera dushti

This is told by acharya Hareeta based on quantity and physical qualities of breast milk.

- 1 Ghana ksheera
- 2 Ushna ksheera
- 3 Amla ksheera
- 4 Alpa ksheera
- 5 Kshaara ksheera

The madhyama ksheera is the ideal and healthy one among the ksheeras.

पञ्चैव क्षीरदोषाश्च स्त्रीणाञ्च कथिताबुधः

घनक्षीरोष्णक्षीराम्लक्षीरा चैव तथा परा ॥

अल्पक्षीरा क्षारक्षीरा मृदुक्षीरा तथा परा ।

मृदुक्षीरा भवेत्सौख्या पञ्चान्या दोषकारका । HS. 3/2

## STANYAAPANAYANAM (Weaning)

The child should be taken off from the breast gradually to fed with other solid and nutrient food when his tooth eruption starts.

अथैनं जातदशनं क्रमेणापनयेत् स्तनात्। A.H.U. 1/38

Ancient method to detach the child from breast are

कुर्यादपस्तनं स्नेहसंक्रान्त्या स्तनलेपनैः  
बीभत्सैर्यावकासेककृत्रिमक्षतदर्शनैः॥ A.S. U. 1/41

- स्नेहसंक्रान्त्या (Attraction of love to other things)
- बीभत्सदर्शनम् (Horrible scenes)
- यावकासेकम् (Applying laakshaaraasa)
- कृत्रिमक्षतदर्शनम् (Showing artificial injuries)

Such child should be fed with modakas of preenana & jeevana in nature.

प्रियालमज्जमधुकमधुलाजसितोपलैः।  
अपस्तनस्य संयोज्यः प्रीणनो मोदकः शिशोः॥ A.H.U. 1/38

After the 12<sup>th</sup> month, the child should be given different types of food according to his desire.

शालीनां षाष्टिकानां वा पुराणानां विशेषतः।  
तण्डुलैर्निस्तुष्टैर्भृष्टैः क्षालितैः साधिता द्रवाः॥  
सस्नेहलवणा लेह्या बालानां पुष्टिवर्धनाः। K.S. Khi. 12/19-20

In this context, food is advised to be mixed with lavana. Lavana rasa is known to enhance appetite and remove srotorodha ensuring maximum bioavailability of nutrients. Lehya has been indicated so that the food is given in the semi solid form for better deglutition.

For a baby with predominance of pitta in constitution mridweeka with honey and ghrta should always be given. Similarly, in predominance of vaata, an appreciable amount of maatulunga rasa and salt should be used.

At least 8-10% of energy should be obtained from proteins. Animal

- Updated

fed with

proteins like milk, egg, meat should be given. Dark leafy vegetables are given to add iron. Well-cooked gruel is another ideal food which can be given during weaning. Mashed bananas cooked in milk alongwith mashed pulses can also be given .

By 8-9 months, the child should be able to consume cooked food similar to that of adults.

### **Frequency of feeding**

Regular intake of food is advised after 12 months. The factors influencing the frequency of feeding are:

- 1 Desam-Regional practice
- 2 Agnibalam-Digestive capacity
- 3 Balam-Activity
- 4 Kaalam-Season

In spite of all these parameters, the ultimate criteria to determine the frequency of feeding should be the HUNGER of the child alone. (demand schedule).

### **Weaning**

Since human milk or cow's milk is not sufficient to meet the energy and proteins requirements for the growth of infants, it is necessary to provide nutritional supplements by the age of 4 months.

#### **Definition**

Wenian (English) means 'to accustom'. Weaning means accustoming the infant to nourishment other than mother's milk.

Weaning foods should be

- Culturally acceptable
- Adequate
- Locally available& inexpensive
- Easily prepared at home
- Clean & hygienic
- Physiologically stable, suitable, easily digestible and nourishing

**Time**

Weaning should be gradual. It should be begun at the age of 4 months and completed by 9 months of age.

**Method**

- The amount of new foods given should be gradually increased (paadaamsika krama can be adopted).
- Before introducing a new type of food, any one type should be given for several days.
- Gradual process helps the infant to accept new food without upsetting the GIT.

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## DHAATRI (Wet Nurse)

In deficiency of breast milk, the concept of dhaatri— a wet nurse —to feed the baby gains its relevance. This is due to the fact that baby should not only be supplemented with food but also be provided with an affectionate, experienced and nurturing support.

### Characters of dhaatri

As the milk fed by the dhaatri plays an important role in the growth and development of the baby, acharyas have given due importance to the qualities of dhaatri.

स्तन्यधात्रावुभे कार्यं तदसंपदि वत्सले।  
 अव्यड्गे ब्रह्मचारिण्यौ वर्णप्रकृतिः समे॥  
 नीरुजे मध्यवयसौ जीवद्रत्से न लोलुपे।  
 हिताहार विहारेण यत्नादुपचरेच्च ते॥ A.H.U. 1/15-16

अतो धात्रीपरीक्षामुपदेक्ष्यामः। अथ ब्रूयात् - धात्रीमानय  
 समानवर्णा यौवनस्थां निभृतामनातुरामव्यड्गामव्यसनामविरूपाम्  
 अजुगुप्सितां देशजातीयामक्षुद्रकर्मणीं कुले जातां  
 वत्सलामरोगां जीवद्रत्सां पुंवत्सां दोष्मीमप्रमत्तामनुच्चार-  
 शायिनानीमनन्त्यावसायिनीं कुशलोपचारां शुचिमशुचिद्रेषिणीं  
 स्तनस्तन्यं संपुरेतामिति॥

The features attributed to dhaatri are :

1. Samaana varnam— Refers to same race and caste. This implies similar socio-cultural backgrounds with the family which facilitates easier mingling with kid as well as family members.
2. Youvanastha – Implies that the lady should be in reproductive age (proper hormonal balance), healthy, should have a breast fed baby and stanasampat.
3. Physical attributes
  - a. Avyanga
  - b. Avirupam
  - c. Should have stanyasampat
  - d. Free from ashta dehadoshas(ati deergham, atihraswam, atisthula, etc- indicatives of abnormal hormonal status)
4. Psychological attributes
  - Avyasanam (with a pleasant mood).
  - Ajugupsam (should not have habit of concealment).
  - Apramatta (should be free from greed).
  - Akshudra pravartini (should perform only righteous activities).
5. Habitual attributes
  - Suchi (hygienic).
  - Asuchi dweshee(aversion to unhygiene).
  - Kusalopachaaram (skillfull in service).
  - Anuchaara sayinee (not having habit to sleep on excreta).

### Dhaatri Dosha

The lady showing the features explained as dhaatri dosha should be strictly exempted while selecting a dhaatri for the baby. They are:

Those having

- Depressive mood.
- Hunger.

- Exertion.
- Diseases.
- Unstable mind.
- Pregnant women.
- Not taking pathya food.
- Obese / lean.

### Dhaatri chikitsa

The health status of dhaatri is a matter of prime concern for a paediatrician as every fluctuation in her health reflects upon the baby. The well being of dhaatri has to be considered in both preventive as well as curative aspects.

न च क्षुधितशोकार्त्तं श्रान्तं प्रदुष्टधातुं गर्भिणी ज्वरितातिक्षीणा-  
तिस्थूलविदग्धभक्तविरुद्धाहारर्त्तपितायाः स्तन्यं पाययेत् ॥ S.S.Sa. 10/31

#### Preventive aspects

हिताहारविहारेण यत्नादुपचरेच्च ते ॥ A.H.U. 1/17

- Food given to dhaatri should not cause ajeerna.
- Viruddhaahaara should be avoided.
- Situations causing grief, anger etc. should be avoided.

#### Curative aspects

In case of ailments, management has to be done according to the presenting symptoms.

For eg:

- Deepana in case of agnimaandyam.
- Pathyasevanam in vishamaagni.
- 'Meenatalam' - Prepared from the decoction of fish is indicated for vaatikavikaaras in dhaatri – K.S. Chi 18/45.

Panchakarmas and even siraavedha has been indicated in dhaatri chikitsa as per the references of Kasyapasamhitam.

#### Conclusion

When one compares the current socio cultural background of the human as a whole, the concept of dhaatri is not relevant in a civilized society. But

need of real human breast milk is the ultimate option for the problem of the lactation failure. Therefore, the concept of breast milk banking is now emerging from the west wherein the breast milk is stored using localized preservation methods.

### The concept of breast milk banking

#### Definition

A human milk bank is a service established for collecting, screening, processing, storing and distributing donated human milk.

#### History

Donation of breast milk from one woman to an unrelated infant has a long history. Before this century, the infant would have been directly breastfed by the woman who was referred to as a "wet nurse". Rules governing wet nursing have been around since 1800 BC. Wet-nursing itself has had periods throughout history when it has fallen from favor. For example, in the 15th century, wet nursing became very unpopular due to the spread of syphilis. Human milk banking has had similar peaks and troughs. In the early half of this century, milk banking saw resurgence in popularity, but around the 1970s, this began to change. The first reason for this loss of interest in human milk was the heavy promotion of infant formula, including formulas specially designed for preterm infants. Later, a fear of transmission of viruses, including HIV, in body fluids led to an anxiety about donation of body fluids, including breastmilk. WHO and UNICEF, made a joint statement in 1980: "Where it is not possible for the biological mother to breast feed, the first alternative, if available, should be the use of human milk from other sources. Human milk banks should be made available in appropriate situations."

#### Collection

This varies from milk bank to milk bank. For some centres, hospital patients are the major source of donations, while others will ship milk from interstate donor's home. Donors are educated regarding the most hygienic way to express milk. Hand expression is the best method for collection; however some centres will allow certain types of hand pumps to be used. Drip milk (milk that drips from the unused breast during feeding or expressing from

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the other breast) has a lower caloric content and is more susceptible to contamination, but is acceptable to some centres.

The type of container used for collection also varies according to what is most readily available. Polythene bags are associated with a decrease in the IgA content of milk, while glass is linked to a loss of leucocytes. The current recommendation is that glass is best, but world wide many different types of materials are used. In India steel utensils / containers are used.

The concept of wet nurse described in Ayurveda comprises supplementing the real breast milk with love and affection to a child. The concept of giving the real breast milk is near to this concept of breast milk banking however it lacks the important part of this feeding i.e.love.

## 9

## BAALAVRIDDHI VIKAASA KRAMA (Growth and Development of the Child)

### **Garbhaviddhi vikaasa krama (Foetal growth and development)**

As per the science, the achievement of purushaartha was the ultimate aim of the human life and for attaining this aim the procreation of an ideal progeny was considered as the best tool. In this purview, acharyas gave utmost concern to the factors related to this including selection of the ideal partner, auspicious dates and times for involving into coital act, pre and post coital regimes etc. Likewise only, after conception the changes taking place in the foetus through the 10 months of gestation had been a subject of grave curiosity among the acharyas. As a result, they tried to study these changes related to intra uterine growth and development of the foetus. These studies were, however, conducted by different acharyas, at different places, in humans of varying genotypes and phenotypes. This difference is well evident in the observations quoted in different classical textbooks. Though there are several similarities in the monthwise growth and development of the foetus as stated by different acharyas, still the areas of contradiction are also many. In nutshell, the fact to be appreciated here is that even in those centuries they made a noble effort with the then available techniques to study the monthwise foetal growth and development.

The following are some of the important notes on the monthwise growth and development of foetus.

Month	Features in the foetus
1 <sup>st</sup>	Avyaktam, kalalam
2 <sup>nd</sup>	First morphological differentiation as Ghana, pesi or arbuda
3 <sup>rd</sup>	All indriyas develop, organogenesis completes (sarvaanga avayava) Gaatra panchakam, Sukha-dukha gyaanam
4 <sup>th</sup>	Sthiratvam, Niraamayatvam to mother
5 <sup>th</sup>	Maamsa sonita upacaya (C.S.), Development of manas (S.S.), Development of chetas (A.H.)
6 <sup>th</sup>	Balavarnopacaya (S.S.), Kesa roma nakha asthi snaayu (AH), Ojas (K.S.)
7 <sup>th</sup>	Development of all bhaavas, Fully formed foetus (sarvaanga pratyanga vibhaagam)
8 <sup>th</sup>	Asthira ojas(alternative episodes of dormancy and activity)

**Saaririkavridhhi, maanasika evam Saamaajikavikaas (physical mental and social growth and development of child)**

Growth and development is a journey from the juvenile stage to the status of a complete organism. Medical fraternity considers this journey in two aspects:

- 1 **Growth:** implies a net increase in the size or mass of tissues and occurs due to multiplication of cells and increase in the intracellular substance.
- 2 **Development:** it is defined as maturation of functions. Depends on maturation and myelination of the nervous system and denotes acquisition of a variety of competencies for optimal functioning of the individual.

Why dealt in Paediatrics?

Assessment of growth and development, its progression, factors influencing it are the responsibilities residing in a paediatrician. This

ideology was known to our ancient scholars too which is clear from the definition of baala, अल्पकायता, अपरिपक्वधातु, अजातव्यञ्जनम्, etc.

### **Factors affecting growth and development**

Factors affecting growth and development can be broadly classified into-

Genetic factors and Environmental factors.

#### **A. Genetic factors**

- Phenotype
- Parental characteristics
- Race
- Sex
- Biorhythm & Maturation

#### **B. Environmental factors**

##### **1. Prenatal period**

- Maternal malnutrition
- Multiple pregnancies
- Illnesses of mother (HTN, DM etc.)
- Maternal infections
- Drugs taken in pregnancy
- Irradiation in pregnancy
- Maternal stress

##### **2. Post natal period**

- Neonatal hypoxia
- Neonatal convulsions
- Low birth weight babies
- Nutrition
- Infections and Infestations

### **SATVOTPATTIKRAMAM** (Mental development of child)

The total mental development of a child is dependent on his input through panchajnaanendriya being expressed through his panchakarmendriyas. A mediation of both these is constituted by his

manas i.e. the ubhayendriya. Moulding of manas is chiefly contributed by the sensory inputs. Style of moulding (development) is influenced by several factors like

- Genetic constitution
- Nutrition
- Diseases etc. as mentioned earlier.

The manas is subjected to different mouldings in its actions chinta, vichaaram, uham, dhyeyam and sankalpa and final governing faculty the buddhi is executing its development through its 3 attributes-dhee, dhruti and smriti. These attributes are expressed finally through the karmendriyas.

So ultimate development means development of buddhi in its three attributes and of manas in its actions.

In modern psychiatry, these are mentioned as cognitive skill, social skill, emotional skill, psychosexual skill and moral skill. All these are attained by the maturation of central nervous system which occurs by gene regulated, orderly appearance of certain morphological structures, brain development and synaptic maturation.

### **Cognitive development**

This includes ability of a child to find his ways to understand, to remember, to solve problems and to organize their environment.

### **Social development**

Once the child has formed a sense of himself, he can think about and interpret his experiences in other situations.

### **Emotional development**

A child should develop an ability to perceive, recognize and use the emotions in an appropriate manner.

### **Psychosexual development**

This is the ability of a child by which he appropriately understands himself and others in terms of gender.

### **Moral development**

The capacity of a child to acquire some internal standards that guide his observable actions or behaviour is attained by moral development.

Acharya Kasyapa mentioned satwa of baala is of three types.

No	Basic feature	Type of different constitution
1	Kalyaanapraakaasakam(ideal but not dynamic)	1 Braahma satwa 2 Prajaapatya satwa 3 Aarsha satwa 4 Eindra satwa 5 Yaamya satwa 6 Vaaruna satwa 7 Koubera satwa 8 Gaandharvasatwa
2	KrodhaPravartakam (most dynamic personality)	1 Aasura satwa 2 Raakshasa satwa 3 Paisaacha satwa 4 Saarpa satwa 5 Yaaksha satwa 6 Bhutasatwa 7 Saakuna satwa
3	MohaNiyaamakam (lazy personality)	1 Paasava satwa 2 Maatsya satwa 3 Vaanaspatya satwa

### Periods of Growth and Development

Growth and development of an organism begins from the moment of conception. The definition of Kaumarabhrtya in Harita Samhita emphasizes the above statement. The monthwise development of foetus is explained in detail in all the classics.

The various stages of growth and development-  
Gross motor

Age	Milestone
3 months	Neck holding
5 months	Sitting with support
8 months	Sitting without support
10 months	Walking with support

11 months	Crawling
12 months	Standing without support
13 months	Walking without support

- Neck holding capacity and sitting without support indicates maturation of vertebral column and adjacent stabilizing structures. This is assessed by upavesana samskaara.
- A child becomes able to walk by 1 year. If this milestone is not attained, Ayurveda consider it to be a disease called phakka.

### Fine Motor

Age	Milestone
4 months	Grasps a rattle or ring when placed in hand.
5 months	Holds objects with both hands – Bidextrous grasp.
7 months	Holding objects with crude grasp from palm -Palmar grasp.
9 months	Holding small objects between index finger and thumb , Pincer grasp.

### Language

Age	Milestone
1 months	Turns head to sound
6 months	Monosyllables
9 months	Bisyllables
1 year	2 words with meaning
2 years	Simple sentence
3 years	Telling a story

### Personal and Social

Age	Milestone
2 months	Social smile
3 months	Recognizing mother
6 months	Smiles at mirror image
9 months	Waves 'bye bye'
1 year	Plays a simple ball game.

- Development of facial musculature and adaptive behaviours is attained only by the age of five. This may be the reason why kabala is contra indicated below 5 years.

### Sexual maturity

Sexual maturity is also a part of growth and development.

### Age of sexual maturity according to different classics

	Male	Female
Ashtanga Hridaya	20 yrs	16 yrs
Ashtanga Samgraha	24 yrs	16 yrs

### Cessation of Growth and Development

Views differ according to different Acharyas.

Shaarngdhara Samhita:	20 years
Susrutha Samhita :	20 years
Ashtanga Samgraha :	16 years
Charakasamhita :	30 years
Kasyapasamhita :	34 years.

In short, the work done by vaata on the substratum of kapha with the help of pitta ultimately result in growth and development.

### ANTHROPOMETRY - Measurement and their interpretation

The anthropological measurements are very much needed in usual paediatric examination. It has both diagnostic and prognostic value in clinical paediatrics. These are also very much needed for the calculation of drug dosage also. The following measurements are highly inevitable in anthropological examination usually.

#### 1 Weight

- a It is measured by unclothing the child.
- b Beam balance scale with counter balanced weight is the best method
- c Check the zero level before taking the weight.

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d Drug dose in a child = weight of the child in pounds x adult dose/ 150

e Details of the weight calculation are mentioned in appendix-1

## 2. Height/length

a. Child has to stand for taking height. Shoes should be removed and place the feet together against the wall or a special measuring board. Infantometer can be used for a child who can't stand.

b. The height is a parameter to assess the nutritional status. Below 6 months of age the reduction of height will not be caused by the nutrition.

c. Details of the height calculation are mentioned in appendix-1

## 3. Head circumference(HC)

a. Head circumference has to be measured by using a tape as occipitofrontal diameter.

b. When the HC is less than third percentile for that age and sex, it is called microcephaly. If the HC is more than 97<sup>th</sup> percentile it is called macrocephaly.

c. Head circumference should not exceed crown rump length in first year of life.

d. Formula for head circumference up to 1 year  
(Length in Cms./2+9.5) ±2.5 Cms.

## 4. Chest circumference(CC)

CC can be measured by a tape across the nipples anteriorly and inferior angle of scapula posteriorly. At birth HC is greater than CC, later in 7-10 months the measurement becomes equal and CC exceeds the HC after that.

## 5. Mid arm circumference(MAC)

a The MAC is taken at the midpoint of the distance between tip of acromion process and olecranon process of ulna while the arm is hanging by the side.

- b It is one of the best indicators of PEM. When the MAC is less than 13.8cms. it indicates malnutrition.
- c Quack stick, Shakir's tape for MAC, bangles (a bangle with inner diameter of 4 cms) can be used for the measurement of MAC.
- d If the height of the child is more than the height expected for the measured MAC, the child is considered to be malnourished.

#### 6. Skin fold thickness (SFT)

The thickness of the skin fold at the triceps muscle area or at subscapular area by using Herpenden's calipers is to be measured as an indicator of nutritional status of the child. SFT less than 6mm is indicative of malnutrition. Normally it is 10mm or more.

### GARBHOPADRAVAM

The definitions of healthcare systems of children in Ayurveda (Kaumarabhritya) as well as in biomedical science (Paediatrics) cover the care of the growing fetus also. In paediatric context the term 'Garbhopadrava' implies the whole health issues of the fetus. [The complications (Upadravas)- to the fetus (Garbha)]. In Sharngadhara samhita the term 'Garbhaja vikaara' is used to denote eight types of diseases. They are: i.Upavishtaka garbha, ii Naagodaram, iii Makkala, iv Moodhagarbha, v Vishkambha, vi Goodhagarbha, vii Jaraayudosha, viii Garbhapaatam

According to Hareetasamhita 'garbhopadravas' are the clinical conditions of mother which are caused by the garbha(conception). According to him there are eight upadravas caused by garbha [गर्भस्य उपद्रवः]. But these are mainly issues related to obstetrician.

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## IMPORTANCE OF KREEDAABHUMI, KREEDANAKA AND KUMAARADHAARA

### Kreedaabumi

Kreedaabumi should be even, devoid of sharp edged stones and sprinkled with solution of vella, ushna, kana or nimba with a view to maintain strict aseptic conditions.

क्रीडाभूमि समा कार्या निश्चस्त्रोपलशकर्करा ।

वेल्लोषण कणाम्भोधि: सिक्ता निष्पोदकेन वा ॥ A.S.U. 1/47

Acharya was very cautious about the septic conditions that may occur. So uses of well known rakshoghna drug have been mentioned.

### Kreedanakaani (Toys)

क्रीडनकानि खलु कुमारस्य विचित्राणि घोषवन्ति अभिरामाणि

चागुरुणि चातीक्षणाग्राणि चानास्यप्रवेशीनि

चाप्राणहराणि चावित्रासनानि स्युः ॥ C.S.Sa. 8/63

The toys given to child are to be good looking, sound producing, pleasing, light weight, not too sharp, not too small to enter the mouth, not harmful to the baby, and not causing any fear to the baby.

### Discussion

Early stimulations like visual, auditory, proprioceptive and interactive can

be attained by the toys explained. Now a days puzzles, squares, building blocks, coloured beads etc are being actively implemented for attaining hand co-ordination. The same is said by Kasyapa acharya in khilasthaana.

Generally speaking, a good toy should challenge a child at his level of development. If it's too sophisticated, it frustrates the child; if it's too simple, it bores the child. A good toy requires the child to actively play with it; if the toy does the playing, it won't interest the child for very long.

### **Infants: Birth to 1 Year**

The major safety concern during this period is choking and suffocation. Make sure stuffed toys are nonflammable, non-toxic, and washable. Stuffed animals that are all one piece are best; all limbs should be securely attached. Features should be painted or embroidered, and the toy should not have embellishments, such as glass eyes or whiskers, that children can pull off and swallow. Small, lightweight toys are easier for infants to hold and cuddle.

Rattles and teething rings must be unbreakable and washable, have no loose parts, and have rounded stems. No part of a rattle should be small enough to fit in a baby's mouth. To test this, draw an oval that is 1 3/8 inches x 2 inches on a piece of paper and cut it out. If the rattle or any part of it can pass through the hole to a depth of 1 3/16 inches or more, the rattle could choke your child. Be sure the size and weight are compatible with your child's ability to grasp it in one hand.

Crib and playpen exercisers: usually stretch across the crib or playpen and enhance pulling and grasping. Remove them before babies are big enough to use them to pull themselves up.

Special balls that make noise and have moving pieces inside provide motor, visual, and aural stimulation and help develop eye movement, crawling, and gross motor skills.

Mirrors delight infants. But make sure they are unbreakable, have no sharp edges, are light enough for your baby to pick up, and are large enough not to be swallowed.

### **Toddlers: 12 to 18 Months**

At this point, babies can stand and sit but may not yet walk by themselves. They enjoy moving objects, such as push-pull toys that make sounds, toys that open and close and involve turning knobs and dials. At this age, children

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enjoy blocks, but be sure to get large blocks that have no sharp corners. Just a few blocks will suffice; too many confuse a baby. Blocks covered with soft fabric and light, foam-filled vinyl blocks are ideal. Sorting toys teach children about colour and size and enhance manual dexterity, but make sure they are unbreakable and pieces are too large for your child to swallow. Riding toys are dangerous for children who can't yet walk. But children who can walk enjoy them. Make sure your child can climb on and off the toy easily and maneuver it alone. Also make sure it has no sharp edges. Push-pull toys are best for kids who are already walking, too. Make sure the ends of the handles are covered with large safety balls and all the parts are unbreakable.

### Toddlers: 18 to 24 Months

Children at this age are talking and are interested in learning about size and placement.

Large blocks in a variety of shapes interest children at this age. Start out with a small set and move on to a large set as the child's interest develops. Avoid blocks with sharp edges. Blocks that come in canisters are easiest for a child to put away when play is through. Blocks are a good investment; they hold children's interest for a long time. They are usually appropriate from the age of 18 months to 8 years.

Telephone toys give children an opportunity to engage in an adult activity, and children like the noise they make. Some of these toys even talk. Those shaped like cartoon characters help maintain interest. Be sure bell parts cannot be removed and swallowed.

Shape-recognition toys that require children to fit pieces in appropriately shaped holes help develop hand-eye coordination, matching skills, and shape recognition. However, if the toy has too many pieces, the child will be frustrated. Watch for pieces of swallowable size and holes that can pinch or trap fingers.

Action toys, such as a push-pull bus with removable people, are very popular with children at this age, as are push-pull train sets with removable accessories. Make sure all parts are swallow-proof.

Pounding toys teach hand-eye coordination and enhance gross and fine motor skills. Hammers, if any, should be very soft, so the child isn't injured by it.

Riding toys come in two types: those the child moves by pushing with her feet and those with pedals. The latter are more difficult for children to use. All riding toys should be stable and easy to mount. They are usually appropriate for children 18 to 36 months of age. Always supervise a child using a riding toy outdoors, particularly near sidewalks or streets.

Activity toys are those that children either crawl or climb on or use to develop manual dexterity. Climbing toys should have railings and other safety features. Toys that enhance dexterity should be suited to your child's abilities; they should be challenging but not frustrating.

### Toddlers: 2 to 3 Years

At this point, children are more creative. They employ make-believe and fantasy in their play. Their attention spans are longer. They enjoy adult-like activities, and realistic toys stimulate hours of creative play. This age group enjoys toys that require movement as well as those that involve dexterity.

Talking toys and dolls are very appealing. Make sure the dolls speak their phrases clearly, and the pull ring is securely attached.

Toy dashboards are popular, too. The more features the dashboard has, the more interest the child has in it. Just make sure it's easy to use. Avoid toys with knobs or decals the child can easily pull off.

Trucks are good toys for indoors and outdoors, especially for the sandbox. Trucks that have moving parts are especially appealing, but be sure there are no sharp edges and the metal is rust-proof. Choose trucks that are stable and maneuverable with wheels securely attached.

Push or wind-up trains are popular. Your child should be able to easily place the train on its tracks, though an adult usually needs to assemble the tracks. Make sure wind-up mechanisms are easy to use, and avoid toys with sharp edges.

Check for durability of toy kitchens and realistic tool toys. Make sure these toys are manageable for your child, or they won't sustain interest. Also be sure that large items are stable and won't fall on your child during play. Tool benches should provide a variety of activities without being overwhelming.

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Puzzles can be an excellent purchase. They strengthen hand-eye coordination, matching skills, and shape recognition, and sustain interest if matched to your child's skill level. Puzzles suitable for all ages are available. Pieces should not be so small as to encourage your child to pop them in his mouth.

Play scenes provide a child with the opportunity to use her imagination. These toys often have more appeal if the scenes are familiar, so a city child may enjoy a toy parking garage more than a farm scene. (Still the farm scene might be an excellent way to introduce your city child to life on a farm.) The toys should be easy to assemble, have storage for individual pieces, and have moving features. Also, be sure your child isn't overwhelmed by a multitude of pieces.

Occupation toys, such as a doctor's kit, inspire creative play. A child familiar with the occupation it represents will appreciate the toy.

When choosing a toy for a child your first concern should be that the toy is safe. But, apart from just not causing harm, toys should also help your child grow and develop. A child's play is vitally important to their creativity and imagination. (Courtesy- web site of 'how stuff works')

### Kumaáradhaara (care taker)

This term was used to denote the person who take care of the child.

अभियुक्तः सदाचारो नातिस्थूलो न लोलुपः।  
 कुमारधारः कर्तव्यस्तत्राद्यो बालचित्तवित्॥  
 अधार्मिकं दुराचारः स्थूलो विकटगामिनम्।  
 करोति लोलुपो बालं घस्मरत्वेन रोगिणम्॥ A.S.U. 1/44

Kumaaradhaara should be very careful in holding the child, well mannered, not too stout, and not too desirous of food. The careful kumaaradhaara will identify the longings of the child and behave accordingly. He should also have good morale otherwise the child under his guidance will be having poor morale. An obese person will guide the child to walk improperly. If he is too desirous of food, the child will be afflicted with the diseases from overfeeding.

## POSHANA (Nutrition)

### Normal requirements of nutrients for newborn, infant and children

The infants show a dramatic rate of growth in the 1<sup>st</sup> year of life. It continues further, though at a comparatively lower level, after the age of 1 year upto the adolescence. During this stage of growth there occurs marked developmental change in the organ structure and function. Owing to their higher metabolic rates and nutrient turnover rates, as compared to adults, failure to provide adequate nutrients during this period adversely effects the growth and development of the child.

The recommended intake of different essential nutrients is as listed below:

Nutrient	0-6 month (6 kg)	7-12 month (9kg)	1-3 year (13kg)	4-8 year (22 kg)
Energy (kcal/24 hr)	550	720	1074	-
Fat (gm/24 hr)	31	30	-	-
Linoleic acid(gm/24 hr)	4.4	4.6	7	10
$\alpha$ -Linoleic acid(gm/24 hr)	0.5	0.5	0.7	0.9
Carbohydrate(gm/24 hr)	60	95	130	130
Protein (gm/24 hr)	9.3	11	-	21

### Electrolytes and minerals

Nutrient	0-6 month (6 kg)	7-12 month(9kg)	1-3 yr (13kg)	4-8 yr (22 kg)
Calcium (mg/24 hr)	210	270	500	800
Phosphorus (mg/24 hr)	100	275	460	500
Magnesium(mg/24 hr)	30	75	80	130
Sodium(mg/24hr)	120	200	225	300
Chloride(mg/24hr)	180	300	350	500
Potassium(mg/24hr)	500	700	1000	1400
Iron(mg/24hr)	0.27	11	7	10

### Vitamins:

Nutrient	0-6 month (6 kg)	7-12 month (9kg)	1-3 year (13kg)	4-8 year (22 kg)
Vitamin A( $\mu$ g/24hr)	400	500	300	400
Vitamin D ( $\mu$ g/24hr)	5	5	5	5
Vitamin K ( $\mu$ g/24hr)	2	2.5	30	55
Vitamin C(mg/24hr)	40	50	15	25
Thiamine(mg/24hr)	0.2	0.3	0.5	0.6
Riboflavin(mg/24hr)	0.3	0.4	0.5	0.6
Vitamin B6( $\mu$ g/24hr)	0.1	0.3	0.5	0.6
Vitamin B12( $\mu$ g/24hr)	0.4	0.5	0.9	1.2

### Saatmya and Asaatmya aahaara (compatible and incompatible diet)

Since infancy and childhood is the age of maximum growth and development, the most saatmya aahaara at this age is those having Madhura rasa, Snigdha guna and Bramhana karma. Contrarily, this age group being a kapha predominant one the aahaara having above mentioned properties can lead to diseases in the child. This paediatric age group generally presents with kapha-vaata diseases. The diet has a major role to play in causation of such diseases. Such food items in present day include:

- 1 Fast foods
- 2 Chocolates, biscuits etc
- 3 Fried items eg- chips etc.

Such dietary items cause maximum kapha-vaata predominant diseases in the children. So, all such stuffs has to be avoided from the diet of the child.

While classifying the dravyas acharyas mentioned 3 classes- samana, kopana and swasthahita. The dravyas coming under the swasthavritta group comprises the saatmya or the hita-aahaara while the others are the asaatmya aahaara.

समांशचैव शरीरधातुन् प्रकृतौ स्थापयति विषमांश्च  
समीकरोति, इत्येदत् हितं विद्धि विपरीतं त्वहितमिति। C.S.Su.25/33

Some examples quoted in the classics are as follows:

**Asaatmya aahaara:** This group includes the 18 types of virudhha or incompatible food stuffs that lead to many diseases.

**Saatmya aahaara:** those foods which are free from the 18 incompatibilities as mentioned above and thus do not produce diseases on consumption falls under this group, especially on the basis of guru-laghu guna virudhha.

हिताहार उपयोग एक एव पुरुष वृद्धिकरो भवति,  
अहिताहारोपयोगः पुनः व्याधि निमित्तमिति। C.S.Su. 25/31

Here, those foods which are not so guru are satmya for the child as Saali, shaashtika, godhuma etc.

शीलयेत् शालिगोधूम यव षाष्टिक जांगलम्।  
सुनिषण्णक जीवन्ती बालमूलक वास्तुकम्॥  
पथ्यामलक मृद्वीक पटोली मुद्गशर्कराः।  
घृत दिव्योदक क्षीरक्षौद्रदाढिमसैन्धवम्॥ A.H.Su. 8/42-43)

### Common food sources

1. Proteins
  - a Animal origin-milk, meat,egg,cheese,fish etc
  - b Vegetable sources- pulses, cereals, beans, nuts, oil seed cakes
2. Fats
  - a Animal fats-ghee, butter, milk, cheese,eggs, fat of fish and meat etc.
  - b Vegetable fats-ground nut, mustard, sesame, coconut, etc.

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| 3. Carb  | • V  |
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|          | • ii |
| 5. Mind  | • V  |
|          | • i  |
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|          | • C  |
|          | • i  |

3. Carbohydrate

Cereals, roots, tubers, fruits, sugars

4. Vitamins

- Vitamin A
    - i Animal-liver, egg, butter, cheese, whole milk etc.
    - ii Green leafy vegetables, papaya, mango, pumpkin etc.
  - Vitamin D
    - i Sunlight
    - ii Only in foods of animal origin-liver, egg yolk, butter and cheese.
  - Vitamin E
    - Vegetable oils, cotton seed, sunflower seed, egg yolk and butter.
  - Vitamin K
    - Fresh green vegetables, cow's milk, fruits
  - Thiamine
    - Whole grain cereals, wheat, gram, yeast, pulses, ground nut
  - Riboflavin
    - Milk, egg, liver, kidney and green leafy vegetables
  - Niacin
    - Liver, kidney, meat, poultry, fish, legumes, ground nut
  - Vitamin B<sub>6</sub>
    - Milk, liver, meat, egg yolk, fish, whole grain cereals, legumes and vegetables
  - Pantothenic acid
    - All foods contribute to dietary intake
  - Folate
    - i Leafy vegetables
    - ii Liver, meat, egg, fruits
  - Vitamin B12
    - Liver, kidney, meat, fish, eggs, milk, cheese.
  - Vitamin C
    - i Fresh fruits, green leafy vegetables,
    - ii Germinating pulses.
5. Minerals
- Calcium
    - i Milk and milk products

- ii Eggs and fish
- iii Millet, ragi
- Phosphorus
  - All vegetable foods
- Sodium
  - Added in food as sodium chloride
- Iron
  - i Liver, meat, poultry and fish (haem iron)
  - ii Green leafy vegetables, legumes, nuts, oil seeds (non haem iron)
- Iodine
  - i Sea foods
  - ii Cod liver oil

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## 12

# SAMSKAARAS (Cultural Ceremonies)

The important cultural events in an individual's life from birth to death are grouped under the term 'samskaaras'. The number of samskaaras varies in different communities. The customary samskaaras are 16 in number which were put forward by Maharshi Dayananda.

All the samskaaras are not medically important; rather they possess much of a socio-cultural dimension. Only the medically important ones are dealt by the ancient medical scholars.

### Important Samskaaras/Shodasasamskaaras

- 1 Garbhaadaanam
- 2 Pumsavanam
- 3 Seemantonnyayanam
- 4 Jaatakarmam
- 5 Naamakaranam
- 6 Nishkraamanam
- 7 Annapraasanam
- 8 Choodaakaranam
- 9 Karnavedhanam
- 10 Upanayanam
- 11 Vedaarambhham
- 12 Samaavartanam

- 13 Vivaaham
- 14 Vaanaprastha
- 15 Sanyaasam
- 16 Swargaaroham

### **JAATAKARMA (Birth Ceremony/Immediate care of new born)**

Prevalent from the times of 'chaturvarnya', jaatakarma was performed in diverse manners by different groups. The first reference of jaatakarma is seen in 'aschalayanasutra'. Retaining the socio cultural aspects and adding on matters of medical importance, acharya Charaka has explained jaatakarma as below.

- 1 **Praasam:** The baby is given to ingest a combination of honey and ghee processed with mantras
- 2 **Stanapaanam:** The right breast should be advanced to be suckled.
- 3 **Udaka kumbha sthaapanam:** Water pot processed with mantras should be kept along the side of his head.

According to Vagbhata

प्राजापत्येन विधिना जातकर्मणि कारयेत्। A.H.U. 1/11

The first feeding with madhu and ghrta gives sufficient stimulation to gastro intestinal intrinsic nerve plexus, so as to pass meconium at the earliest. This procedure might also have assisted the Acharyas to assess the patency of gartointestinal tract.

### **NAAMAKARANA SAMSKAARA (Naming Ceremony)**

It is the sociocultural programme of 'Naming the baby'.

#### **Time of Naamakarana**

According to Ashtanga Samgraha naamakarana can be done either on the 10th or 12th day. Kasyapasamhita and Ashtanga Hridayam mentions 10th day as appropriate for naamakarana.

#### **Preparation of the baby**

Mother and the baby having taken bath in water mixed with aromatic drugs, wearing light and clean cloth and ornaments should worship deity and receive blessings from braahmanas. Then the baby is made to sit over a pad of clothes with the head towards east or north .There after, the father

of the baby should utter that the child is offering salutation to the deity and braahmanas. Having said so, the child should be given two names.

### Characters of names

Of the two names, one is based on the constellation present at the time of birth and the other should be a popular name for day to day use. The popular name should begin with 'ghosha' alphabets and end with 'antastha' alphabets. There should not be a letter with vridhhi or parvam. The name should not be newly established. It should be similar to that of the preceding generation. The name should be denotable with baby's star or devotee.

### NISHKRAAMANAM (Outing Ceremony)

It is the ceremony of taking the baby out of the Kumaaraagaara. This samskaara enables the baby to acclimatize with the external environment

#### Time of Nishkraamana

Kasyapa and Vaghbata considers 4th month as the appropriate time for niskraamana karma.

#### Preparation of baby

The baby having bathed, adorned and worn new clothes and possessing the rakshoghna oushadhas like siddhaartaka, honey, ghrita and gorochana on his body, should be brought out.

#### Nishkraamana vidhi

The baby along with the mother should be taken out of the Kumaaraagaara and made to enter the temple. After worshiping the burning fire, braahmana, God Vishnu, skanda and receiving their blessings should re-enter their own house. Having entered, the physicians should chant mantras for offering prayer.

It is for the first time during Nishkraamanakarma that the child is exposed to some sort of 'external environmental' stimuli, mainly visual and auditory. This karma helps the physician to confirm the proper functioning of the sense organs especially the eye and the ear.

According to modern view, macular fixation and pupillary adjustment is attained during the same 4th month. During the early weeks eye movement and coordination may not be perfect. However, proper coordination should be achieved by 3-6 months.

### UPAVESANAM (Sitting Ceremony)

Upavesana is a ceremony of making the baby sit without support in a proposed manner to ensure the activity, growth and development of the baby.

#### Time of Upavesana

Kasyapasamhita says upavesana at the age of 6th month. Ashtanga Samgraha mentions the same at 5th month.

षष्ठे मासि पुण्याहेऽभ्यर्च्य..... K.S.Khi. 12/6-9

#### Preparation of child

The baby should be bathed, adorned and dressed in intact cloths. Before the ceremony, worshiping of gods and satisfying the braahmanas by diets and donations has to be performed.

The site where the baby is to be seated has to be smeared with cowdung. Toys used by the baby are to be placed nearby.

The baby should be made to sit for a muhurta (48min.) at a time facing eastwards in the middle of the site. After completion of a muhurtha, the child should be carefully lifted up. The whole procedure has to be repeated everyday.

#### Precautions

- The duration of sitting should not be too long.
- The child should always be assisted and never left alone.
- This need not be performed while the baby is ill.

#### Complications of prolonged sitting

स्तैमित्यं कटिदौर्बल्यं पृष्ठभड्गः श्रमो ज्वरः।  
विष्मूत्रानिलसंरोधाधानं चात्युपवेशनात्॥ K.S.Khi. 12/10

Fixing, weakness of hip, hunch back, tiredness, fever, retention of feces, urine and flatus develop due to sitting for longer duration.

#### Complications of early sitting

आसीनस्यातिबालस्य सततं भूमिसेवनात्।  
आसनान्येव दुःखानि निर्धातं गात्रभेदनम्॥  
निर्धाताज्जर्जराड्गत्वं वेदना ज्वरसंभवः।  
ततो न वृद्धिर्बालस्य कठोराड्गत्वमेव च। K.S. Khi. 12/11-12

If the baby is made to sit prior to the prescribed age, vitiation of vaata occurs which leads to fever, pain hardness of body parts and even arrest of further growth and development.

### KARNAVEDHANAM (Ear piercing)

Karnavedana is one of the important samskaaras with medical and socio-cultural relevance.

कर्णव्यधे कृते बालो न ग्रहैरभिभूयते ।

In addition to the cosmetic value [karnaabhushana], it was believed that karnavedhana protects the baby from untoward health complications like grahas. However, this is not medically proven. Medical effect( both preventive and curative) if any, may be solely attributed to the metals or gems used as karnaabhushana.

कर्णवेधं प्रशंस्यन्ति पुष्ट्यायुर्शीविवृथ्ये

#### Time of karnavedhana

षट्सप्तमाष्टमोसेषु नीरुजस्य शुभेऽह्नि ।

कर्णो हिमागमे विधेद्वात्रङ्कस्थस्य सान्त्वयन् ॥ A.H.U 1/28

During 6th, 7th or 8th month of age, in the sisira ritu on an auspicious day, in the morning, karnavedhana has to be done.

According to gruhyasutra, karnavedhana has to be done in the 3rd or 5th month.

#### Pre-operative measures

After poojaadikarmas and enchantment of mantras, the baby is seated on the mother's lap, made happy with sweet words, desired toys etc, and the ear is punctured.

#### Procedure\*

The right ear should be punctured first in case of a male child and left ear

प्रापदक्षिणं कुमारस्य भिष्यावामं तु योषितः ॥

दक्षिणेन दधत्सूचीं पालिमन्येन पाणिना ।

मध्यतः कर्णपीठस्य किञ्चिद्गण्डाश्रयं प्रति ॥

जरायुमात्रप्रच्छन्ने रविरश्म्यवभासिते ।

धृतस्य निश्चलं सम्यगलक्तकरसांडिकते ॥

विधेद्वैवकृते छिरं सकृदेवर्जु लाघवात् ।

नोर्धं न पार्धतो नाधः सिरास्त्र हि संश्रिताः ॥ A.H. U. 1/29-32

in a female child, the physician holding the puncturing needle with his right hand and the ear lobe with the other. The site of the puncture should be in the middle of the ear lobe (दैवकृते छिद्रे), slightly towards the cheek, where there is maximum translucency from the light source. This spot is marked by the colour of laksha rasa. The puncturing should be done with a single and straight stroke; it should be neither high up, sideward nor downward.

If the ear lobe is thicker, Aara sastra should be used instead of needle.

### Inference

By puncturing the correct site, there will not be severe pain, bleeding and immediate inflammatory reaction (रुग्रागादि सम्भवः) local rise of temperature, swelling and redness.

### Post operative measures

A cotton thread soaked in oil should be drawn through the puncture and the site bathed with unprocessed oil. On each 3<sup>rd</sup> day the thread should be replaced with thicker ones for widening of the puncture. Daily fomentation, massage, bathing with oil and nourishing foods should be adopted repeatedly.

स्नेहाकं सूच्यनुस्थूतं सूत्रं चानु निधापयेत्।  
आमतैलेन सिञ्चेच्च बहलां तद्वदारया॥  
विधेत्पार्ली हितभुजः संचार्याऽथ स्थवीयसी।  
वर्त्तिस्थ्यहात्ततो रूढं वर्धयेत् शनैः शनै॥ A.H. U. 1/35-36

### Precaution

The puncture should be at the correct site (Daivakrita chidra-point of maximum translucency against sunlight), be neither high up, sideward nor downward, since siras known by the names kaalika, marmari and rakta are situated there.

### Complications

Following are the complications produced by injury to the above said siras.

तत्र कालिकायां ज्वरो दाहः श्वयथुर्वदना च भवति;  
मर्मरिकायां वेदनाज्वरो ग्रन्थयश्च ; लोहितिकायां  
मन्यास्तम्भापतानकशिरोग्रहकर्णशूलानि भवन्ति॥ S.S.Su 16/5

- Kaalika Jwaram,daaham,sopham,ruk
- Marmari Jwaram, ruk, granthi
- Lohitika Manyaagraham, apataanakam(tetanic symptoms), sirograham, karnasula

Here the jwara may be local (inflammation) or generalised (infection). The lohitika may be a site of nerve. However, so as to cause a clinical feature like manyaagraham this sort of nerve injury is never sufficient.

### Discussion

Puncturing ear may help to activate immune mechanism so as to bring a secondary immunity against several infections (Kumar et al 1999). Unfortunately, this practice has lost its medical relevance after the establishment of sophisticated vaccination technology.

### PHALAPRAASANAM

Kasyapa is the only acharya who has explained phalapraasana (feeding fruits/fruit juices to baby). Up to 6 months of age, the child is fed exclusively with breast milk. There after, prior to the introduction of solid food, so as to make the gastro intestinal tract accustomed to it, liquid food is given. Among them, fruit juices are considered ideal. Besides, fruits are best sources of vitamin C and fibrous material.

**तस्मिन्नेव मासि (षष्ठे)विविधानां फलानां प्राशनं भिषगनुतिष्ठेत ॥ K.S.Khi. 12/15**

The baby who is accustomed with madhura rasa alone will experience difficulty to adjust with rasas like katu, tikta,etc. At this stage, phalapraasana helps the baby to adapt with other rasas through madhura amla rasas of fruits.

Kasyapa considers dental eruption as the endpoint of phalapraasana.

**दन्तजातस्याऽप्राशनम् । K.S.Khi.12/15**

Initially, central incisors erupt during 6-7th month. Eruption of teeth is indicative of GIT maturity to digest, absorb and assimilate nutrients. The gastro-intestinal functions varies markedly with the maturity of the infant. A proper coordination of oral and pharyngeal muscles is inevitable for the proper swallowing mechanism of solid food. Otherwise, chances of aspiration are high. The current concept of introduction of solid food at 6 months of age is strictly on the basis of nutritional requirement of the baby.

Here the consideration of the maturation of the GIT function is not at all that relevant.

### ANAPRAASANA (Feeding Ceremony)

It is the samskaara related to feeding of solid food for the first time to the baby.

अथैनं जातदशनं क्रमशोऽपनयेत् स्तनात्  
पूर्वोक्तं योजयेत् क्षीरमत्रं च लघुबृहणम् ॥

A.S. U. 1/40

After teeth eruption, the child should be gradually taken away from breastfeed. At the same time, the child should be given ksheera [पूर्वोक्तं क्षीरं] i.e. goat milk (सत्त्वाभावे पयश्चाग) alongwith laghu and brimhana aahaara. It is evident from this reference that the weaning is not at all a novel concept. However, this does not mean that the baby should be totally devoid of breast milk from the age of 8 months (i.e.age of teeth eruption). Ayurveda generally advices breast feeding up to 2 years of age. (ksheerannaada-up to 2 years).

#### Time of annapraasana

According to Kasyapa, 10th month is the appropriate time for annapraasana.

तद्द्विदन्तजातस्यऽन्नप्राशं दशमे वा मासि  
प्रशस्तेऽह्नि । K. S. Khi. 12/15

In Ashtanga Samgraha, Vaghbata opines 6th month to be the time for annapraasana.

षष्ठेऽन्नप्राशनं मासि क्रमात्तच्च प्रयोजयेत् । A.S.U. 1/37

Sushruta also comments

षष्मासं चैनमत्रं प्राशयेल्लघु हितं च । S.S.Sa 10/49

#### Procedure

Annapraasana should be done on an auspicious day in prajaapatya constellation after fulfilling the following conditions viz,

- Worshiping gods and braahmins by cereals with meat and donations.
- Reciting mantras.
- Smearing the site with cow dung, spreading darbha.

- Decorating with fragrances and garlands and signs of swastika in four places.
- Preparing all the articles for making toys.

Next, the physician gets seated facing east and the child (adorned wearing intact garments) facing west.

After igniting fire, a delicious diet comprising of cereals and drinks made from meats of laavaka, kapinjala, tittiri, charanaayudha should be first offered as oblations to fire alongwith enchantment of mantras. After oblation, the remaining food made soft by mashing, is given to the child (3/5 times) in a quantity equal to that of a thumb (angushta maatra).

#### **Paschaatkarma**

After feeding, the baby should be cleaned.

13

## DANTOTPATTI EVAM DANTARAKSHAAVIDHI (Dentition and Dental Care)

Dentistry has been explained in Saalaakyatantra of Ayurveda as 10 dantarogas and several associated rogas in mukha roga prakaranam. Kasyapasamhita considers teeth as an index of good health. Contemporary sciences also relate teeth as an indication of age and health. Dentistry has gained more recognition because of its cosmetic value. Moreover, the pain and discomfort caused by dantarogas affects the whole head. Hence the important aspects dealt in Ayurvedic dentistry in children is briefly explained below :

### Dental formula

Adult dental formula - 2123  
2123       $\times 4 = 32$

Incisors - 2, Canines - 1, Premolars - 2, Molars - 3

### Kasyapa's dental formula

- Raajadantam R (central incisors) 4
- Bastadantam B (lateral incisors) 4
- Damshtraadantam D (canines) 4
- Swarudhadantam S (Premolars) 8
- Haanavyadantam H (molars) 12

RBDSH - 11123  $\times 4 = 32$

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दन्तमूलेषु  
मज्जस्थित  
मलांश्च द्रु  
अभिनिर्वत्त

### DANTA SAMPAT (Ideal Teeth )

Dental eruption should begin in the eighth month. The erupted teeth must possess the following qualities:

तथाऽष्टमे मासि सर्वगुणसम्पन्ना भवन्ति।  
 पूर्णता समता घनता शुक्लता स्निधता  
 श्लक्षणता निर्मलता निरामयता  
 किञ्चिदुत्तरोत्तरता, दन्तबन्धनानां च समता  
 रक्तता स्निधता बृहदधनस्थिरमूलता चेति  
 दन्तसम्पदुच्यते॥

K.S.Su. 20/8

- Completeness, Evenness, Compactness, Whiteness
- Snigdhata, Smoothness, Cleanliness, Disease free state, Slight elevation of upper row, Evenness
- Redness, Unctuousness, Compactness and stakeness of roots.

### Dantotpattiprakriya (Physiology of teeth eruption\*)

This has been clearly explained by Vaghbhata in Ashtanga Samgraha

तत्राऽस्थिमज्जानौ दन्तोत्पत्तिहेतू।  
 तदा च तयोरसम्पूर्णवीर्यत्वात् पुनः  
 कालान्तरेण दन्तानां पतनमापूर्यमाणधातुत्वाच्च  
 पुनरुत्थानमत एव च वृद्धानां न पुनः  
 दन्तोत्पत्तिः॥ A.S.U. 2/15

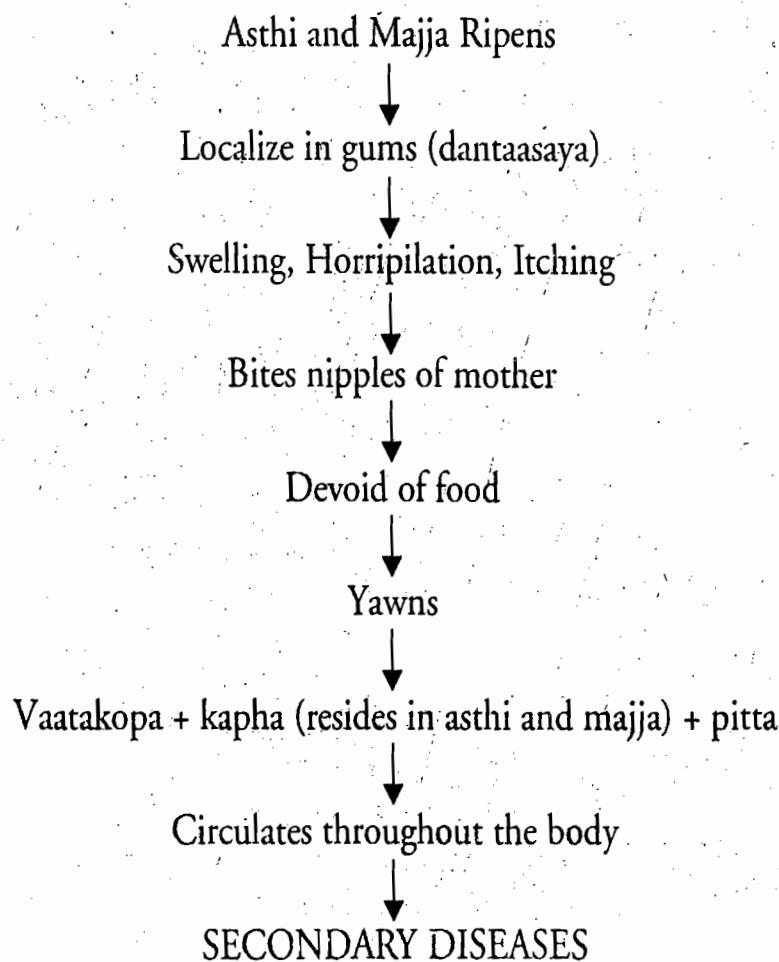
Teeth originate from Asthi and majja dhaatus. Since they are of incomplete strength during first four months of life, the teeth fall off and new teeth erupt very late. Again, there is no eruption of new teeth in the aged because of the inadequacy of these dhaatus.

तौ तु धातू कालक्रमेण पच्यमानौ यदा  
 दन्ताशयमनुप्रयोगे तदाऽस्य किञ्चिदुत्सेधनो-  
 र्धाधोदन्त मांससङ्घटनाददृग्गहर्षो जायते।  
 तदगतेन च श्लेषणा कण्ठस्या चूचुकं दश्यते।  
 यद्यदालभते तत्तदास्यमानयति। मारुतश्चास्य  
 दन्तमूलेषु मूर्छति। ततः स कफानुविद्धोऽस्थि-  
 मज्जस्थितः सर्वतो विसरन् सह पित्तेन  
 मलांश्च दूषयन् विविधान्यथोदितानुपद्रवान्  
 अभिनिवर्तयति॥

A.S.U. 2/17

Asthi and Majja undergo ripening in time and get localized in the gums (dantaasaya). As a result slight swelling occurs. Horripilations appear in the body due to rubbing of upper and lower gums. The presence of sleshma at the site causes itching and the child bites the nipples of mother. When he does not get anything, child yawns. Vaata gets aggravated and localizes in the roots of the teeth. It gets accompanied by kapha, gets localized in asthi and majja, moves in the whole body along with pitta, vitiates other dhaatus and malas and causes different secondary diseases.

### SAMPRAAPTI OF DANTODBHEDA JANYAROGA



### Factors affecting Teething

- Lingabheda: Sex-Female children show early and easy eruption than male child.
- Jaati visesha
- मातापित्रोरनुकरणम् -Hereditary and genetic aspects.
- Swabhaavam-Natural/unknown

the gums appear in fleshma  
er. When localized in  
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- स्वकर्मविशेषम् -Nutrition before and after birth
- Other health and growth factors like recurrent infectious diseases and drugs

### Eruption status of deciduous teeth in south India

#### Maxillary Arch

Name of the teeth	Male	Female
Central incisor	11-14	10-14
Lateral incisor	12-15	14-16
Canine	19-24	22-24
First molar	18-20	16-20

#### Mandibular Arch

Name of the teeth	Male	Female.
Central incisor	10-12	10-12
Lateral incisor	12-14	11-14
Canine	20-24	20-24
First molar	18-20	18-20
Second molar	26-30	26-32

#### Types of dentition

Dentition is classified on the basis of colour, mobility, dental hygiene and associated clinical features which may manifest in the child. As per the school of Kasyapa, they are of four types.

चतुर्विधं तु दन्तजन्माचक्षते सामुद्रं, संवृतं,  
विवृतं, दन्तसंपदिति। तत्र सामुद्रं क्षयि, नित्यसंपातात्,  
संवृतमधन्यं मलिष्ठं, विवृतं वीतमनित्यलालोपहतम-  
संछन्दन्तत्वादाशुदन्तवैवर्ण्यकरमासन्नाबाधमिति॥

K.S.Su.20/7

- Saamudgam - falls off easily
- Samvritam – Inauspicious – not good looking, dirty
- Vivritam – worn out, Invariably affected with salivation, gets easily discoloured, Easily afflicted with diseases

- Dantasampat – Ideal dentition (refer below)

### **Aprasasta Danta (Pathology in Dentistry)**

Acharya Kasyapa considers 8 types of inauspicious teeth.

तत्र सदन्तजन्म च, पूर्वमुत्तरदन्तजन्म च,  
विरलदन्तजन्म च, हीनदन्तता च, अधिकदन्तता च,  
करालदन्तता च, विवर्णदन्तता च, स्फुटितदन्तता  
चामङ्गल्या भवति ॥

K.S.Su. 20/6

1. Sadantajanma	Natal teeth (Eg. congenital syphilis).
2. Poorvamut्तरादान्तजन्मा	Early and late eruptions? First eruption of upper teeth.
3. Viraladantajanma	Scattered teeth.
4. Heenadantata	Presence of less number of teeth.
5. Adhikadantata	Presence of more number of teeth
6. Karaala dantata	Terrible teeth
7. Vivarnadantata	Discoloured teeth
8. Sphutitadantata	Cracked teeth

These are indices of negative health as they happen due to following reasons

1. Infections
2. Malnutrition
3. Febrile conditions
4. Abnormal hormonal stimulations
5. Hypovitaminosis
6. Genetic aberrations
7. Toxins

### **Complications of early eruption of teeth**

Teeth which erupt during 8th month possess best qualities. Those which erupt prior to it cause complications as explained below:

- 4th month-The teeth will be weak, decay early and are afflicted with many diseases.
- 5th month- They are shaky, with morbid sensitivity and easily afflicted with various diseases.

- 6th month- They are inverted, dirty, discoloured and susceptible to dental caries.
- 7th month- They are with two pockets, split, stripped, broken, dry, irregular and protuberant.

### Dantodbhedajanya vikaara (Diseases associated with teething)

By and large, a high incidence of diseases is seen in children at the time of dental eruption ie 5-8 months of age. Modern dentistry does not relate these diseases with dental eruption. These are assumed to be simple coincidences.

During the period of dental eruption (at 8th month of age), the baby has a tendency to take every object to the mouth. This may cause trauma or lead to further infections. Furthermore, the pain during eruption may force the child to swallow the food without proper chewing. This is another possible cause for several digestive disturbances.

This mechanism can satisfactorily explain the cause of manifold diseases during dantotbheda.

दन्तोत्भेदश्च रोगाणां सर्वेषामपि कारणम्।

विशेषाज्ज्वरविड्भेदकासच्छर्दिशिरोरुजाम्।

अभिष्वन्दस्य पोथक्या विसर्पस्य च जायते। A.H.U. 2/26-27

Diarrhoea	Fever	conjunctivitis
Vomiting	Visarpa	Painful eye disease with eruptions
Thirst	Cough	Headache
	Dyspnoea	Vertigo(A.S.)
		Kukunaka (A.S.)

From the references in Ashtangahridaya and Ashtangasamgraha, it is obvious that dantotbheda is a painful condition.

पृष्ठभड्ने बिडालानां बहिणां च शिखोदगमे।

दन्तोत्भेदे च बालानां न हि किञ्चित्प्रदूयते॥ A.H. U. 2/28

Text book of paedodontics(The branch of dentistry which deals with tooth problems of children) by Sobha Tandon narrates the following diseases as coincident with teething. General irritability and crying, Loss of appetite, Sleeplessness, Increased salivation, Insanity, Meningitis,

Increased thirst, Circum oral rash, Fever, Convulsions, Diarrhoea, Vomiting, Bronchitis, Cholera, Tetanus and Infantile paralysis.

### Chikitsa

The treatment can be grouped as saamaanya and visesha.

Saamaanya chikitsa aims at:

- Speeding up dental eruption
- Preventing secondary infections
- Healing the injured parts
- Enhancing immunity

### Principle of management

यथादोषं यथारोगं यथोद्गेकं यथाभयम्।

विभज्य देशकालार्दीस्तत्र योज्यं भिषण्जितम्॥ A.H.U. 2/29

दन्तोद्भवेषु रोगेषु न बालमतियन्त्रयेत्

स्वयमप्युपशास्यन्ति जातदन्तस्य यत् गदा: A.H.U. 2/43

The drugs and treatment has to be adopted according to the following condition of the patient.

- Laborious treatments are not needed for the diseases originating after dantotbheda
- Most of the diseases are self limiting. So most of them doesn't need any treatment.
- According to the Dosha predominance
- According to the type of the disease
- According to the status of the disease
- According to the age of the child
- According to the place, time etc of the patient.

#### 1. Pratisaarana

दन्तपालीं समधुना चूर्णे प्रतिसारयेत्।

पिप्पल्या धातकीपुष्पधात्रीफलकृतेन वा॥

A.S.U. 2/22

The gums should be massaged either with the powder of pippali or dhaatakipushpa or dhaatri phala mixed with honey.

thoea,

The powder of dried meat of laava, tittiri, vallura enhances the appearance of the teeth of children.

## 2. Ghritapana

Vachaadi or samangaadi ghrita can be used.

समङ्गाधातकीलोध्रकुटन्नबलाद्वयैः।  
महासहाक्षुद्रसहामुद्गविल्वशलाटुभिः॥  
सकार्पासीफलैस्तोये साधितैः साधितं घृतम्।  
क्षीरमस्तुयुतं हन्ति शीघ्रं दन्तोत्भवोत्भवान्॥ A.H.U.2/41-42

## 3. Maamsarasasevanam

लावतिरिवल्लूररजः पुष्परसद्रुतम्।  
द्रुतं करोति बालानां दन्तकेसरवन्मुखम्॥ A.S.U. 2/22

### Viseshachikitsa

Visesha chikitsa deals with the symptomatic treatment, which will be discussed later.

### KRIMIDANTAM

Krimidantam is one among the dantarogas explained in mukharogavijnaaneeyam.

समूलं दन्तमाश्रित्य दोषैरुल्बणमारुतैः  
शोषिते मज्जि सुषिरे दन्तेऽन्नमलपूरिते।  
पूतित्वात् कृमयः सूक्ष्मा जायन्ते जायते, ततः  
अहेतुत्रार्तिशमः ससंरभोऽसितशचलः।  
प्रलूनः पूयरक्तसुत् स चोक्तः कृमिदन्तकः॥ A.H.U. 21/18-19

The tridoshas with predominance of vaata reaches the gums and teeth and dries up the majja. As a result the teeth becomes porous. These pores get filled with the annamala if left uncleanned. Due to the above reason, foul smell develops which in turn give birth to 'krimi'.

Symptoms : unconditional aggravation and subsidence of pain

Black, loose, brittle teeth with pus and exudation of blood.

### Chikitsa

Chikitsa is described for both अचलदन्तम् and चलदन्तम्.

### Treatment for achaladanta

- Swedanam
- Visraavanam

### Treatment for chaladanta

- Aalepam
- Gandoosham
- Nasyam
- Aahaaram

जयेत्विसावणैः स्विन्नमचलं कृमिदन्तकम्।

स्निग्धैश्चालेपगण्डूषनस्याहरैश्चलापहैः॥ A.H.U. 22/19

The pores are advised to be filled with guda or madhuchista and the vicinity has to be subjected to daahakarma.

Krimisoola can be reduced by filling the pores with arka or saptachadaksheera. Pressing a small pottali containing churna of hingu, katphala, kaasisa, swarchika, kushta and vella immediately relieves teeth ache. Gandoosha with taila made of the same yoga also relieves pain.

If this treatment fails to relieve the teeth ache, kshaaraprayoga has to be done at the root of the teeth and the teeth has to plucked out using a samdamsayantra or honey mixed with yashtichurna is the best measure to be done. Vidaaryaadi nasya prayoga is to be done next to gandoosha.

## DENTAL CARIES

### Aetiology

- Tooth decay is initiated by the demineralization of the outer tooth surface due to the formation of organic acids during bacterial fermentation of dietary carbohydrates.
- Organism implicated : Streptococcus mutans
- Incidence of caries increases with increasing frequency of carbohydrate intake especially those that are retained orally for a long time.
- Use of fluorides has reduced the incidence.

### Clinical features

- Initially there are opaque white spots, followed by loss of tooth tissue and cavitation
- It begins as pits and fissures on occlusal surface of molar teeth. Probing elicits pain. Next site is contact surfaces between the teeth. Rarely neck of the root is involved.
- Baby bottle tooth decay is an extensive form of tooth decay due to sleeping with a nursing bottle.

### Complications

- Local pain, infection
- Pulpitis
- Dental abscess, periapical abscess
- Sepsis and facial space infection
- Disruption of normal development of permanent teeth

### DANTARAKSHAAVIDHI (Pediatric Dental Care)

Healthy teeth are important for total health of the baby. The dental care of the children should start from the very beginning after birth.

- Microbial accumulation is the chief concern in pediatric group. So daily cleaning of the gum of the kid with cotton pad is inevitable.
- Avoid prolonged bottle feeding especially at night. This is one of the major reason for the development of carries.
- Nocturnal feeding may be avoided in susceptible cases.
- Mother's diet should be fortified with more minerals to maintain health of kid's teeth.
- Brushing habit should be encouraged well at least twice in a day. Of these night time brushing is more important as saliva secretion is not there at night time to cleans the oral cavity.
- Chocolates and other carbohydrate accumulation in the teeth and oral cavity are the chief causes of dental damage and should be avoided maximum.

- The orthodontic problems of the children are well prevented by avoiding some habits like thumb sucking, tongue thrusting, mouth breathing, etc.
- Proper nutritional supply and preventing genetic diseases are needed to avoid developmental anomalies of dentition.
- Prevention of injuries are important in pediatric dental care.
- AAPD (American Academy of Paediatric Dentistry) suggests that first visit to dentition should be made within 6 months of eruption of first primary teeth.
- The fluoride is a matter of controversy among the scientific community to day. Scientific evidences suggest following recommendations today.

No	Age	Frequency of fluoride tooth pasting
1	Below 4 years	Not recommended
2	4-6years	Once daily
3	6-12 years	Twice daily

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## VYAADHIKSHAMATVA

General concept of bala (immunity)

प्राकृतस्तु बलं श्लेष्म तदैव बलमुच्यते।

The sleshma in its state of normalcy (prakrutha avastha) is known as the Bala.

Vyaadhikshamatva

व्याधिक्षमत्वं नाम व्याधिबलविरोधित्वं  
व्याध्युत्पादकप्रतिबन्धकत्वमिति।

Vyaadhikshamatva of a person is his capability to resist against the vyadhibala (strength of the already occurred disease) and to prevent the occurrence of other diseases.

Balaviddhikarabhaava

The factors increasing the Bala of an individual include:

- 1 Born in a place where all individuals posses good bala (balavat purushe dese janma).
- 2 Born at time wherein all individuals are bestowed with bala (balavat purushe kaale) i.e in visarga kaala.
- 3 The season being in its best state i.e free from heena, mithya, atiyoga of kaala (sukhascha kaala yoga).

- 4 The beeja (sukra) and the kshetra (garbhaasaya) possessing the best attributes (beeja kshetra guna sampat).
- 5 Well nourishing diet (ahaara-sampat).
- 6 Well-built body (sareera sampat).
- 7 Getting habituated to only congenial things (saatmya sampat).
- 8 Good mental make-up (satva sampat).
- 9 All the deeds in previous birth and this birth being in the righteous manner (swabhaava samsiddhi).
- 10 The state of youthfulness (yauvana).
- 11 Practising vyayaama, etc. to promote strength (karma).
- 12 Mental pleasure (samharsha).

The following processes have been said to be possessing the ability to boost the immunity of a child in paediatric practice.

- 1 Praasam
- 2 Rakshaakarma
- 3 Mantram
- 4 Lehanam
- 5 Karna vedham

### Balapareeksha

The bala of an individual is inferred with the help of anumaana pramaana by examining his ability to perform physical activities (balam vyayaama saktyaa).

### Bala v/s immunity

Bala of an individual is his ability to resist the diseases and to carry out the body functions in the best manner. The modern analogue of this is the innate capability of the body to resist the disease i.e the Immunity.

### Types of immunity

The immunity is basically classified into two types:

- 1) Active immunity: it includes : a) Humoral immunity, b) Cellular immunity c) Combination of above

2) Passive immunity: it includes: a) Normal human Ig, b) Specific human Ig, c) Animal antitoxins / antisera

### Peculiarities of immune system in children

- Immunoglobulins:

- IgG is transferred actively from mother to the foetus though it falls rapidly after birth, eg- type specific IgG antibodies to GBS are found to be 1.0, 0.5 and 0.3 (cord : maternal serum concentration) at term, 32 week and 28 week of gestation respectively.
- Trans-placental transfer of other immunoglobulins does not take place.
- IgA and IgM can be synthesised by foetus in response to IU infections.

- Complement:

The complement system mediates the bactericidal activity and helps in carrying out phagocytosis of the bacteria. Trans-placental passage of complement system is not seen, but its synthesis starts in the foetus in the first trimester itself.

- Neutrophils:

- The neutrophil system in a new born is deficient both quantitatively and qualitatively.
- They have decreased adhesion, aggregation and deformability which slow down the response to infection.

- Monocyte-macrophage system:

This comprises of circulating monocytes and macrophages, especially in liver, spleen and lungs, that brings about immune modulation. The mass or function of the macrophages is diminished in newborns. Though the number of circulating monocytes is normal but they have an impaired chemotaxis.

- Natural killer cells:

The number of NK in cord blood is comparable to that in adult but they have a decreased cytotoxic activity which predisposes the infant to infections.

- Cytokines/inflammatory mediators:

The amount of pro-inflammatory cytokines is elevated in the newborns. As

a result, with an exposure to an infection the exacerbation of the immune response and the appearance of inflammation occurs at markedly faster rate.

### National immunization schedule

Age	Vaccines
Birth	BCG, OPV <sub>0</sub> (for institutional deliveries)
6 weeks	DTwP1, OPV1, Hep B1 <sup>1</sup> , Hib1 <sup>2</sup> (BCG if not given at birth)
10 weeks	DTwP2, OPV2, Hep B2, Hib2
14 weeks	DTwP3, OPV3, HepB3, Bib3
9-12 months	Measles
16-24 months	DTwPB1, OPV4, MMR <sup>3</sup>
5-6 years	DT <sup>4</sup>
10 years	TT <sup>5</sup>
16 years	TT
Pregnant women	TT1 (early in pregnancy) TT2 (1 month later) TT booster (if vaccinated in past 3 years)
Vitamin A	9, 18, 24, 30 and 36 months

1 & 2. HepB, MMR and Hib are available in some districts only

3. A second dose of DT vaccine should be given at an interval of one month if there is no clear history or documented evidence of previous immunization with DTwP

4. A second dose of TT vaccine should be given at an interval of one month if there is no clear history or documented evidence of previous immunization with DTwP, DT or TT vaccines.

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### Baalarasaayananam (Rasaayana in children)

Each drug has its own affinity towards one or more dhaatus. No single drug is sufficient to carry out its Karma on all seven dhaatus. (eg. Manjishta mostly act on rakta dhaatu). Rasayaana drugs stands exempted from this general rule. They possess pronounced effect on all seven dhaatus, besides the thrust action on one or two dhaatus in particular.

लाभोपायो हि शस्तानां रसादीनां रसायनम् A.H.U. 39/2

Thus, Rasaayana drugs are administered for three purposes:

- 1 Intentional (काम्यम्) – to attain a particular quality of a specific dhaatu. eg. Praanakamyam, medhyam.
- 2 Therapeutic (नैमित्तिकम्) – to repair one or more dhaatu dushti caused by doshadushti. eg. bhallaatakam
- 3 Preventive (आजस्रिकम्) – to healthen all seven dhaatus.

Among the three, Kaamyam and Aajasrika Rasaayanam are best indicated for Kumaaras because they are in a condition of Aparipakwadhaatu. Application of these preparations, promotes the health of their dhaatus from the very beginning. That is why Vaghbata commented as

पुर्वे वयसि मध्ये वा.....। A.H.U. 39/3

Naimittika Rasaayana drugs are strictly contraindicated in Atibaalyaavastha as they cannot tolerate the metabolic and digestive activities initiated upon their administration. (अतिबाल्यातिक्रान्तमात्रे-अरुणदत्तम्) Still some Kaamya Rasaayanas like vacha (medhaakaamym) are prescribed to be administered as lehana in Atibaalyaavastha. Aajasrika drugs can be used indiscriminately in all age groups.

In inevitable conditions, the application of Naimittika rasaayana is advised. Rasaayanas are also applicable in chronic diseases like Baalakushta. (eg. guluchi in paediatric skin diseases). Such Naimittika rasaayanas should not be of sodhana type (In Dalhana's view, there are two types of Rasaayana, namely, one which does sodhana eg. Tuvaraka tailam and one which does samana eg. Guluchi). It is obvious that Kutipraavesika rasaayana alone cannot be indicated in children.

### Baala chaturbhadra Rasaayanam

घनकृष्णारुणाशृङ्गी चूर्ण क्षौद्रेण संयुतम्  
शिशोज्वरातिसारघं श्वासकासवपीहरं ॥ B.R.

This compound is a widely used naimittika rasaayanam.

Other examples are:

1. Pippali Rasaayanam-swaasam, kaasam
2. Guluchi Satwam - Kushtam
3. Brahmi Rasaayanam - Mandabuddhitwam.

## 15

# KNOWLEDGE OF NATIONAL PROGRAMMES RELATED TO CHILD HEALTHCARE

After India became independent, the several health programme had been launched with following aims.

- 1 Control and eradication of communicable diseases
- 2 Improvement of environmental sanitation
- 3 Improvement of nutrition
- 4 Control of population
- 5 Rural health.

Of these the programmes with paediatric importance are dealing in this topic.

### Reproductive Child Health (RCH) Programme

In order to effectively improve the health status of women and children and to fulfil the unmet need for Family Welfare services in the country, (especially the poor and under served by reducing infant child and maternal mortality and morbidity), Government of India during 1997-98 launched the RCH Programme for implementation during the 9th plan period by integrating Child Survival and Safe Motherhood (CSSM) Programme with other Reproductive and Child Health (RCH) services. In addition, a new component for management of Reproductive Tract Infection (RTI) and

Sexually Transmitted Infection (STI) has also been incorporated. The RCH Programme is partly funded by World Bank, UNICEF, UNFPA and European Commission etc. Reproductive and Child Health Programme is currently operational in entire country in fifth year of its operation. The programme follows a differential strategy with inputs under the programme linked to the needs of the area coupled with the capacity for implementation. The programme was reviewed extensively not only in context of achievements during mid-term stage, but also in context of National Population Policy. Efforts were made to strengthen the routine immunization as well as PPI by launching a project for Immunization Strengthening with the World Bank assistance. The ongoing activities were accelerated and new schemes on Financial Envelope, Dais' Training, RCH Camps and RCH out reach services were started to address the felt gaps. The implementation of EC assisted Sector Investment Programme has geared up, especially State/District level activities and urban RCH component.

Currently the initiatives that are being implemented by the Department of Family Welfare to achieve these goals are:

- 1 Control of deaths due to acute respiratory infection,
- 2 Control of deaths due to diarrheal diseases.
- 3 Provision of essential new born care
- 4 Vitamin-A supplementation to children between the ages of 6 months to 3 years.
- 5 Iron Folic Acid supplementation to children under five years of age.
- 6 Implementation of Exclusive breast feeding upto to the age of 6 months and appropriate practices related to complementary feeding.
- 7 Integrated Management of Neonatal and Childhood Illnesses(IMNCI): It offers a comprehensive package for the management of the most common causes of childhood illnesses i.e sepsis, measles, malaria, diarrhoea, pneumonia and malnutrition. It is supported by appropriate strengthening of the health care system and promotion of positive health care practices of the community

### NUTRITIONAL PROGRAMMES IN INDIA

Currently the major nutritional supplementation programmes in India are:

1. Integrated Child Development Services Schemes (ICDS)- children below

The RCH NFPA and programme is . The programme mentation. hievements ion Policy. ll as PPI by World Bank themes on ch services C assisted strict level

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6 years , pregnant and lactating mothers and women aged 15-44 years are the beneficiaries of this programme.

2. Mid- day meal programmes (MDM) – intended for the children attending primary school.
3. Special Nutrition Programmes(SNP)- preschool children, pregnant and lactating mothers
4. Wheat based Nutrition Programme (WNP)- preschool children, nursing and expectant mothers.
5. Applied Nutrition Programmes (ANP)- children between 3-6 years, pregnant and lactating mother.
6. Baalwadi Nutrition Programme(BNP)- Preschool children between 3-5 years.
7. National Nutritional Anaemia Prophylaxis Programme (NNAPP) children in 1-5 age group, pregnant and nursing mothers, female acceptors of terminal methods of family planning and IUDs
8. National Programme for Prevention of Blindness due to Vitamin A deficiency
9. National Goitre Control Programme (NGCP)- whole children

#### **OTHER IMPORTANT PROGRAMMES IN INDIA**

- National tuberculosis control programme
- Iodine deficiency control programme
- National programme for prevention of visual impairment and control of blindness
- Diarrheal disease control programme
- Universal immunization programme
- Child survival and safe motherhood programme(CSSM) integrated management of childhood illness(IMCI)strategy



## PART B

SAAMAANYA CHIKITSA  
SIDDHANTA AND BAALAROGA  
(General Principles of Treatment and  
Management of Paediatric Disorders)

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# BAALAROGA

## SAAMAANYACHIKITSA SIDDHAANTA

### (General Principles of Treatment in Children)

Seven folded classification of Rogas according to its root cause proposed by Acharya Sushruta.

- 1 Aadibala Pravrutta (Sahaja Rogas) Eg-Kushtha, Arshas
- 2 Janma Bala Pravrutta(Garbhaja Rogas) Eg-Vaamanatwa, Jadatwam

Both these diseases can be termed as congenital and hereditary disorders.

The reasons of these disorders are mentioned in Charakasamhita as broad spectrum Nidaana & Sampraahti.

बीजात्मकर्माशयकालदाष्टैर्मातुस्तथाऽहारविहारदोषैः।  
कुर्वन्ति दोषा विविधानि दुष्टाः संस्थानवर्णन्द्रियवैकृतानि॥ C.S.Sa. 2/29

- Beeja dosha (Aartava/beeja dosha)
- Aatma karma dosha-Effects of hereditary transmission
- Aasaya dosha- Due to the defective environment in womb.
- Kaala dosha- Doshas in relation with time of conception to the total confinement.
- Maturaahaaram-Diet of pregnant women
- Matu vihaaram - Activities of pregnant women.

### 3 Dosha Bala Pravrutta (Jaataja Rogas)

These are the diseases originating after having mithyaahaara and vihaaras.  
Eg. Jwara, Rakta pitta, etc.

### 4 Sanghaatabala Pravrutta (Peedakruta Rogas)

These are traumatic disorders. This can be birth injuries or the injuries and its consequences after birth.

### 5 Kaala Bala Pravrutta (Kaalaja Rogas)

These are the diseases produced due to seasonal changes. These can be prevented by adopting proper aahaara vihaara according to the ritucharya vidhi.

### 6 Daiva Bala Pravrutta (Prabhaavaja Rogas)

These are idiopathic diseases where, no direct conspicuous nidaanas are identified.

### 7 Swabhaava Bala Pravrutta (Swabhaavaja Rogas)

These are really not diseases. The hunger, thirst etc when produced after abstinence of food and drink are grouped under this heading.

## SAAMAANYA CHIKITSA SIDDHAANTA (General Guidance of Paediatric Therapeutics)

The effective management of paediatric disorders basically requires the understanding of two main principles both of which have to be tackled in a unique manner:

### 1 Understanding the diseases of children

The clinical presentation of a disease in children is in sharp contrast with that of the adults. Even among children with similar doshadoosha involvement (A.H.U. 2/30), the nature of the disease varies according to age. The clinical skill of a physician should be highly competent enough for performing darsana, sparsana and prasna pareeksha in children as they are with dosha-doosha-mala alpata (immature) and vakcheshtayorasaamarthyam (hence interview with the patient is not possible). Also the poorvaroopa and lakshana may be different because the nature of sampraapti is variable in children.

दोषदूष्यमलाश्चैव महतां व्याधयश्च ये।

त एव सर्वे बालानां मात्रा त्वल्पतरा मता॥

C.S. Chi 30/282

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भेषजं स्वल्पमात्रं तु यथाव्याधि प्रयोजयेत्॥

C.S. Chi 30/284

## 2 Application of therapeutics

- i) The dose of a drug should be strictly in accordance with the age. So the principles of posology should be accurately kept in mind while prescribing medicine for children.
- ii) The administration of sodhana drugs should be avoided upto a possible limit except in emergency conditions (आत्यधिक व्याधि). In all other cases, samanaoushadha is the best choice.
- iii) It is better to use drugs of madhura rasa which are usually of mridu veerya and the most ideal therapeutic form (kalpana) is ksheerapaakam.

मधुराणि कषायाणि क्षीरवन्ति मृदूनि च।

प्रयोजयेत् भिषक् बाले मतिमानप्रमादतः॥ C.S.Chi. 30/285

न त्वेव बालस्य विशोषणं हितं नैवातिसंशोधनरक्तमोक्षणे।

स्निग्धैः सुशीतैर्मधुरैरदाहिभिस्त्रोपचारोऽशनलेपसेचनैः॥ K.S.Su. 27/66

- iv) The following pharmacodynamical properties of drugs are unsuitable for administration in paediatric cases.

- 1 Atisnidham – कफप्रकोपभयं
- 2 Atirooksham – Impairs growth and development
- 3 Atyushnam/Atyamlam – These are intolerable and cause dhaatupaakam
- 4 Katuvipaakam – causes Vidaaha
- 5 Atigurutwam – causes ajeerna

अत्यर्थस्निग्धस्त्रक्षोषणमम्लं कटुविपाकि च।

गुरु चौषधपानान्नमेदत् बालेषु गर्हितम्॥ C.S. Chi 30/286

- v) The general guidelines of pathyaapathyā in each disease advocated for adults are to be followed in paediatric cases also.
- vi) The drugs should be administered in divided doses especially in children below 12 years.

ऊनद्वादशवर्षाणाम् नैकान्तेनावचारयेत्

अवचारितमेकान्तेनाहन्यहनि चौषधम् K.S.KHi.3/58

vii) Sodhana of dhaatri is to be performed when ksheerada or ksheeraannaada gets diseased.

शिशोव्याधौ समुत्पन्ने धात्रीणामेव शोधनम्। K.S.Si. 3/6

This sodhana aims at

- Removing the practical difficulty of applying sodhana therapy to children.
- As the causative factor is stanyadushti, stanya sodhana is to be done.

viii) व्याधेर्यद्यस्यभैषज्यं स्तनस्तेन प्रलेपितः  
स्थितो मुहूर्तं धौतोऽनुपीतस्तं तं जयेतादम्। A.H.U.2/77

For a given disease in children, (if the child is ksheerapa in age or early neonatal period), the medicine should be prescribed same as to the adults explained in the samhitas. But those medicines should be administered in a different manner that, they should be made in to a paste and apply it on the breast of the feeding mother for a duration of one muhurta, and then after the baby can be allowed to suck the breast.

ix) ग्रहैरपि हि जायन्ते प्रच्छन्नैव्याधयः शिशोः  
कर्मशस्तमतस्तेषु दैवयुक्त्याश्रयं सदा। A.S.U. 2/57

There are several hidden diseases(Sub clinical features) in children caused by grahas. So all the diseases (physical )of children should be treated by both yuktivyapaastraya as well as daivavyapaastrayachikitsas.

x) क्षीरपस्यौषधं धात्र्या: क्षीरान्नादस्य चोभयोः।  
अन्नेन वा शिशौ देयं भेषजं भिषजा सदा॥ B.R. 71/2

The administration of drugs in paediatric therapeutics should be in the following way

- For the diseases of ksheerapa, drugs should be given to mother only
- For the diseases of ksheeraannaada drugs should be given to both the baby as well as mother
- For the diseases of annaada, the drugs should be given to the baby only.

xi) मात्रया लड्घयेद्वात्रीं शिशोर्नेष्टं विशोषणम्।  
सर्वं निवार्यते बाले स्तन्यं तु न निवार्यते॥ B.R.71/3

Langhana (upavaasa) should not be performed in a ksheerapa in any of the

clinical conditions. If it is needed, controlled langhana can be administered to the mother. Soshana karma is not at all suitable to an infant.

- xii) तेषु यथाभिहितं मृद्धच्छेदनीयमौषधं मात्रया।  
क्षीरपस्य क्षीरसर्पिषा संयुक्तं विद्ध्यात्॥ S.S.Sa.10/37

The drugs for the ksheerapa should be mridu in nature and should not be chedaneeya (should not reduce the kapha dosha and medas below safe limit) in action.

- xiii) शीघ्रं विपाकमुपयाति बलं न हन्यादन्नावृतं न च मुहुर्वदनान्तरिते।  
प्रागभुक्तसेवितमौषधमेतदेव दद्याच्च वृद्धशिशुभीरुवराङ्गनाभ्यः॥ H.S. 3/2

The ideal bheshaja kaala for the drug administration to the kid is praakbhaktam according to Haritasamhita (Sabhaktam in A.S.)

### BASICS OF PAEDIATRIC THERAPEUTICS

According to Indian Academy of Paediatrics following are the steps to be kept in practice while applying a therapy in the diseases of children.

#### 1 Reach an initial working diagnosis

It is not necessary to have a specific and accurate diagnosis especially in some life threatening conditions. The paediatrician can start the treatment on a working diagnosis. Then after reaching a specific diagnosis one can change the treatment scheme accordingly.

#### 2 Define therapeutic objectives

In this step the treating doctor should specify what he/she intends to achieve through therapy and in what time interval. It might include symptomatic treatment, therapy directed toward cause of illness and even steps to prevent or treat complications.

#### 3 Assess effectiveness of therapies

Good number of variables may come to vary the therapeutic efficacy for a given therapy itself. So assessment of efficacy of a prescribed treatment has to be done continuously and protocol can be changed accordingly.

#### 4 Assess risk to the patient

Assessment of risk to the patient has to be done especially when multiple pharmacological agents are used.

## 5 Plan strategies to ensure compliance

Compliance from the patient as well as the care taker is inevitable for a good therapeutic practice. Flavor of the drug, mode of administration, frequency of administration, cost of the drug are the important area to be considered to assure the compliance.

## 6 Enquire about previous experience

Another consideration in choosing a drug is to know what has failed with this patient in the past. This includes questions about hypersensitivity, adverse reaction, non compliance and non effectivity.

## 7 Special aspects of paediatric pharmacology

Children are not small adults. According to their physiological difference, size and stage of development the drug has to be studied and evaluated specially with reference to drug absorption, drug distribution, drug metabolism and drug excretion.

## 8 Paediatric drug dosages

By understanding a drug's behavior in the body of a kid doctor should prescribe the medicine instead of going for a mere approximation of paediatric dosage by calculation from an adult dose.

## 9 Methods of drug delivery and paediatric formulations

- Drops, suspensions, dry syrup, dispersible tablets, tablets and capsules are used usually for oral administration. Children over 8-12 years can be taught to take capsules or tablet form.
- Parenteral administration have to be resorted

## 10 Drugs and breast feeding

Several drugs are excreting through breast milk, which may cause harmful effect to the baby. So when a nursing mother is prescribed a medication, its safety measures has to be kept in mind properly.

## BAALAROGAPAREEKSHAAVIDHI (Paediatric case taking)

Paediatric case taking should be done in a particular pattern, which differs from that of the adults. Subsequent to history taking, the following scheme is employed for assessment.

- Ob
- List
- Pla
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- Observe
- Listen
- Play
- Palpate
- Conduct specific clinical examinations.
- Conduct other tests

### Scheme of physical examination of child

- Feet
- Hands
- Face
- Head
- Neck
- Abdomen
- Chest
- Neurological examination
- Eyes - fundoscopy
- Genitalia
- Groin
- Anus
- Other invasive clinical tests.

### VEDANAADHYAAYAM

The term 'vedana' here refers to the knowledge of signs and symptoms in a child which are indicative of a particular disease. Though Ashtanga Hridaya and Charakasamhita show a few glimpses of these references, Acharya Kasyapa has dealt them with sufficient importance. All the clinical features mentioned under this heading are short cases with spot diagnostic value (requires minimum clinical examination and interaction with the informer).

Majority of the symptoms pertain to neonates rather than a child with sufficient language development. In Kasyapasamhita, a total of 34 clinical conditions have been enlisted in Vedanaadhyaya of Sutrasthaana. Most of the signs and symptoms mentioned here are prodromal rather than full blown diseases.

### 1. Head ache

भृशं शिरः स्पन्दयति निमीलयति चक्षुषो।  
अवकूजत्यरातिमानस्वप्नाशच शिरोरुजिः॥

K. S. Su. 25/6

#### The baby

- Rolls the head too much.
- Closes the eyes frequently
- Moans
- Becomes dull and insomniac.

### 2. Earache

कर्णो स्पृशति हस्ताभ्यां शिरो भ्रमयते भृशम्।  
अरत्यरोचकास्वप्नैर्जनीयात् कर्णवेदनाम्॥

K.S.Su. 25/7

#### The baby

- Touches ears with both the hands. It is a common finding that the child will frequently touch the area where it is affected with disease.
- Rolls the head too much
- Dullness
- Anorexia
- Insomnia

### 3. Diseases of mouth

लालास्त्रवणमत्यर्थं स्तनद्वेषारतिव्यथाः।  
पीतमुद्गिरति क्षीरं नासाध्वासी मुखामये॥

K.S.Su.25/8

- Excessive salivation
- Aversion to breast
- Dullness
- Pain
- Regurgitation
- Nasal breathing

#### 4. Kanthavedana

पीतमुदिगरति स्तन्यं विष्टम्भिश्लेष्मसेवनम् ।  
ईषज्ज्वरोऽरुचिर्लानिः कण्ठवेदनयाऽदिते ॥

K.S.Su. 25/9

- Regurgitation of breast milk.
- Constipation on taking sleshma predominant food items.
- Mild fever
- Loss of appetite
- General weakness
- Neck pain.

#### 5. Adhijihvika

लालास्त्रावोऽरुचिर्लानिः कपोले श्वयथुर्व्यथा ।  
मुखस्य विवृतत्वं च जानीयादधिजित्विकाम् ॥

K.S.Su. 25/10

- Excess salivation
- Loss of appetite
- Tiredness
- Swelling and pain in cheeks
- Opening of mouth

#### 6. Galagraha

ज्वरारुचिमुखस्त्रावा निष्टनेच्च गलग्रहे ॥

K.S.Su. 25/11

- Fever
- Loss of appetite
- Salivation
- Sigh

#### 7. Kandasotam

कण्डूके श्वयथुः कण्ठे ज्वरारुचिशिरोरुजः ।

K.S.Su. 25/11

- Itching and inflammation in throat
- Fever
- Loss of appetite
- Headache

## 8. Fever

मुहुर्नम्यतेऽङ्गानि जृम्भते कासते मुहुः।  
धात्रीमालीयतेऽकस्मात् स्तन्यं नात्यभिनन्दति ॥  
प्रस्त्रावोष्णत्ववैवर्ण्ये ललाटस्यातितप्तता।

अरुचिः पादयोः शैत्यं ज्वरे स्युः पूर्ववेदनाः ॥ K.S.Su. 25/12-13

- The baby flexes the body parts frequently

- Yawning

- Cough

- Suddenly clings to mother

- Does not take breast milk.

- Salivation, fever, discolouration

- Excessive warmth in forehead

- Anorexia

- Cold feet

## 9 Diarrhoea

देहवैवर्ण्यमरितमुखग्लानिरनिद्रता।

वातकर्मनिवृत्तिश्चेत्यतीसाराग्रवेदनाः ॥

K.S.Su. 25/14

- Discolouration of body

- Uneasiness in mouth

- Fatigue

- Insomnia

- Absence of functions of vaayu (flatus)

## 10 Colic

स्तनं व्युदस्यते रौति चोत्तानश्चावभज्यते।

उदरस्तथा शैत्यं मुखस्वेदश्च शूलिनः ॥

K.S.Su. 25/15

- Rejects breast milk

- Excessive cry

- Sleeps in supine position

- Stiffness of abdomen

- Cold

- Perspiration of face.

## 11 Vomiting

अनिमित्तमभीक्षणं च यस्योदगारः प्रवर्तते ।

निद्राजृम्भापरीतस्य छर्दिस्तस्योपजायते ॥

K.S.Su. 25/16

- Causeless, repeated eructation
- Excessive sleep and yawning.

## 12 Swaasa (Dyspnoea)

निष्टन्त्युरसाऽत्युष्णं श्वासस्तस्योपजायते ।

K.S.Su. 25/17

Sighs hot breath from chest

## 13 Hiccough

अकस्मान्मारुतोदगारः कृशे हिक्का प्रवर्तते ॥

K.S.Su. 25/17

- Sudden airy eructation

## 14 Trishna (Thirst)

स्तनं पिबति चात्यर्थं न च तृष्णिति रोदिति ॥

शुष्काष्ठतालुस्तोयेऽप्सुर्दुर्बलस्तृष्णायाऽर्दिति ॥

K.S.Su. 25/18

- Not satisfied even on taking too much breast milk.
- Dry lips and palate
- Desirous of water
- Weak.

## 15 Anaaaha

विशालस्तब्धनयनः पर्वभेदारतिक्लमी ।

संरुद्धमूत्रानिलविट् शिशुरानाहवेदनी ॥

K.S.Su. 25/19

- Wide opened, still eyes
- Arthralgia
- Dullness
- Exhaustion
- Retention of urine, flatus and faeces.

## 16 &amp; 17 Epilepsy and insanity

अकस्मादट्टहसनमपस्माराय कल्पते ॥

प्रलापारतिवैचिन्त्यैरुन्मादं चोपलक्षयेत् ।

K.S.Su. 25/20

- Sudden loud laughing produces epilepsy.
- In insanity, delirium, dullness and instability of mind should be looked for.

### 18. Dysuria

रोमहर्षोऽग्नहर्षश्च मूत्रकाले च वेदना।  
मूत्रकृच्छ्रे दशत्योष्ठौ बस्ति स्पृशति पाणिना॥ K.S.Su. 25/21

22

- Horripilation
- Shivering of bodyparts
- Painful micturition
- Biting of lips
- Touches the area of urinary bladder.

### 19 Prameha

गौरवं बद्धता जाङ्घमकस्मान्मूत्रनिर्गमः।  
प्रमेहे मक्षिकाक्रान्तं मूत्रं श्वेतं घनं तथा॥ K.S.Su. 25/22

23

- Heaviness, stillness, dullness of the baby.
- Sudden excretion of urine
- Liked by flies.
- White and concentrated urine.

### 20 Ardas

बद्धपवपुरीषत्वं सरक्तं वा कृशात्मनः।  
गुदनिष्ठीडनं कण्डू तोदं चार्शसि लक्षयेत्॥ K.S.Su. 25/23

24.

- Emaciation
- Stool: well formed or mixed with blood
- Anal pain
- Itching and pricking pain

### 21 Mootraasmari

सशर्करातिमूत्रत्वं मूत्रकाले च वेदना।  
प्रततं रोदिति क्षामस्तं ब्रूयादशमरीगदम्॥ K.S.Su. 25/24

- Excessive micturition with gravel

looked

- Dysuria
- Constant weeping
- Weak

## 22 Visarpa

रक्तमण्डलकोत्पत्तिस्तृष्णा दाहो ज्वरोऽरतिः।  
स्वादुशीतोपशायित्वं विसर्पस्याग्रवेदना॥ K.S.Su. 25/25

- Red patches
- Thirst
- Burning sensation
- Fever
- Discomfort
- Palliation with sweet and cold articles.

## 23 Visuchika

दह्यतेऽङ्गानि सूच्यन्ते भज्यन्ते निष्टन्त्यपि।  
विसूचिकायां बालानां हृदि शूलं च वर्धते॥ K.S.Su. 25/26

- Burning sensation in body parts.
- Pricking sensation
- Feeling of being broken
- Difficult respiration
- Increased pain in chest.

## 24. Alasakam

शिरो न धारयति यो भिद्यते जृम्भते मुहुः।  
स्तनं पिबति नात्यर्थं ग्रथितं छर्दयत्यपि॥  
विषादाध्मानारुचिभिर्विद्यादलसकं शिशोः।  
विसूचिकालसक्योर्दुर्जाने लक्षणौषधे॥ K.S.Su. 27-28

- Drooping of head
- Repeated yawning
- Does not suck breast for long
- Vomits clotted material
- Gloom and anorexia.

It is indeed difficult to differentiate the features and treatment of visuchika and alasaka.

## 25 Diseases of eyes

दृष्टिव्याकुलता तोदशोथशूलाश्रक्तता: ।  
सुप्तस्य चोपलिप्यन्ते चक्षुषी चक्षुरामये॥ K.S.Su. 25/29

- Difficulty in looking
- Pricking pain
- Inflammation
- Pain
- Excessive lacrimation
- Redness
- Eyes get smeared with thick discharges during sleep.

## 26 Itching (Dry and wet)

घर्षत्यङ्गानि शयने रोदितीच्छति मर्दनम् ।  
शुष्ककण्डवर्दितं विद्यात्ततश्चार्द्रा प्रवर्तते ॥  
सुखायते मृद्यमानं मृद्यमानं च शूयते ।  
शूनं स्रवति सस्योढामार्दायां शूलदाहवत् ॥ K.S.Su. 25/30-31

### Dry itching

- Scratching of body during sleep
- Weeps
- Desire for rubbing

### Wet itching

- Gets pleasure with rubbing
- Swelling and discharge
- Increased pain
- Burning sensation

## 27 Ama

स्तैमित्यमरुचिर्निद्रा गात्रपाण्डुकताऽरतिः ।  
रमणाशनशाय्यादीन् धात्रीं च द्वेष्टि नित्यशः ॥

suchika

अस्नातः स्नातरूपश्च स्नातश्चास्नातदर्शनः।

आमस्यैतानि रुपाणि विद्याद्वैद्यो भविष्यतः॥

K.S.Su. 25/32-33

- Stiffness
- Anorexia
- Excessive sleep
- Paleness of body
- Dullness
- Aversion to play, food, sleep and mother.
- Appearance of bathed when unbathed and unbathed when bathed.

### 28 & 29 Paandu and Kaamala

नाभ्यां समन्ततः शोथः श्वेताक्षिनखवक्रता।

पाण्डुरोगेऽग्निसादश्च श्वयथुश्चाक्षिकूटयोः॥

पीतचक्षुर्नखमुखविण्मूत्रः कामलादितः।

उभयन्न निरुत्साहो नष्टाग्निरुधिरस्पृहः॥ K.S.Su. 25/34-35

### Paandu

- Swelling around umbilicus.
- Pale conjunctiva.
- Deformity of nails.
- Loss of appetite
- Peri orbital edema.

### Kaamala

- yellowness of eyes, nails, face, faeces and urine.

In both the conditions the child becomes apathetic and loses digestive capacity and desire for food.

### 30 Madaatyaya

मूर्छाप्रजागरच्छर्दिधात्रीद्वेषारतिभ्रमैः।

वित्रासोद्वेगतृष्णाभिर्विद्याद्बाले मदात्ययम्॥ K.S.Su. 25/36

- Loss of consciousness
- Insomnia

- Vomiting
- Aversion to mother
- Dullness
- Giddiness
- Fear
- Excitement
- Thirst

### 31 & 32 Peenasa and Uroghaata

मुहुर्मुखेनोच्छवसिति पीत्वा स्तनं तु यः।  
 स्वतो नासिके चास्य ललाटं चाभितप्यते ॥  
 स्रोतांस्यभीक्षणं स्पृशति पीनसे क्षौति कासते ।  
 उरोधाते तथैव स्यान्निष्टन्त्युरसाऽधिकम् ॥ K.S.Su. 25/37-38

- Mouth breathing
- Running nose
- Hot forehead
- Always touches orifices
- Sneezing
- Cough

Similar symptoms with excessive thoracic respiration are found in injury to chest wall.

### 33 Insect bite

स्वस्थवृत्तपरो बाली न शोते तु यदा निशि ।  
 रस्कबिन्दुचिताङ्गश्च विद्यातं जन्तुर्कर्दितम् ॥ K.S.Su. 25/39

When a healthy child does not sleep well at night and red spots appear over the body, should be considered as having bite by an insect.

## EXAMINATION OF A DISEASED CHILD

Examination of diseased child is essential primarily for diagnosis of the disease and secondarily for determining the prognosis and planning the treatment protocol. This chiefly comprises of two domains namely general physical examination and the detailed systemic examination.

General physical examination can be done in 4 steps:

**Step 1: General appearance**

Certain diseases like Down's syndrome have their specific general appearance. Examine whether the child looks healthy or sick.

**Step 2: Head to foot examination**

It includes examination of the head, anterior fontanelle, posterior fontanelle, hair, eyes, ears, nose, oral cavity, neck, upper arm, palm, chest, abdomen, external genitalia, lower limb, and feet.

**Step 3: Vital signs**

These are pulse, BP, respiratory rate and temperature.

**Step 4: Anthropometry**

This includes 2 chief criteria –

Age dependent criteria: weight, height, upper segment ratio, head circumference, chest circumference, arm span.

Age independent criteria: Mid arm circumference, skin fold thickness, Rao's index, Dugdale index, Maclaren Kanawati index.

### Systemic examination

#### Gastrointestinal tract and abdomen

- 1 General physical examination: include appearance, restlessness, nutritional status, anaemia, cyanosis, evidence of vitamin deficiency, scratch marks etc.
- 2 Inspection: Distension, localised or generalised, umbilicus, peristaltic waves, engorged veins, spider nevi, external genitalia, hernial orifices.
- 3 Palpation: feel of abdomen, tenderness, oedema of abdominal walls, flow of blood in the engorged veins, enlargement and characteristics of liver, spleen, kidneys and any other mass, renal angles, fluid thrill.
- 4 Percussion: shifting dullness, percussion over various organomegalias and masses, upper border of liver, obliteration of hepatic dullness, liver span.
- 5 Auscultation: peristaltic sounds (normal, increased, decreased or absent),

friction sound over the masses, bruit over the hepatic areas and renal vessels.

### Respiratory system

- 1 General physical examination: comfortable, tachypneic or dyspnoeic, audible sounds during breathing, temperature, pulse, respiration, etc.
- 2 Inspection: Describe findings in accordance with the standard format of clinical areas of chest on front, sides and back. Shape of chest, localised bulge (costal or intercostal spaces) or retraction, deformities (exclude spinal deformity), chest movements on breathing, expansion of chest, position of trachea, and apex beat.
- 3 Palpation: Assess movements on two sides, tenderness, crepitus, rhonchus, crackles, friction rub and tactile fremitus on two sides, trachea, apex beat.
- 4 Percussion: Describe character and intensity of percussion notes over different sites on two sides, rising dullness in the axilla, and shifting dullness on change of position.
- 5 Auscultation: Describe character and intensity of breathe sounds, adventitious sounds and their character and various diagnostic clinical signs whenever indicated such as Hippocratic succession, coin test, Friction test etc.

### Cardiovascular system

- 1 General physical examination: Comfortable, skeletal deformity, pulse, temperature, respiratory rate, cyanosis, clubbing splinter haemorrhages, Osler nodes, Janeway lesions, etc.
- 2 Inspection: Precordial (pulsations over the precordium), neck vessels, suprasternal area and epigastric pulsation, carotids and trachea.
- 3 Percussion: Outline cardiac borders, dullness beyond apex beat, dullness or impaired percussion note over the aortic area, manubrium sterni and pulmonary area on sitting up.
- 4 Auscultation: Describe the findings in a systematic manner over all the cardiac areas- pulmonary area, neck vessels, sides and back of chest and thyroid gland. Heart sounds- intensity, single or split, variable or fixed splitting of S2, third heart sound, gallop rhythm, and fourth heart sound.

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Heart sounds produced by opening of the diseased valves, i.e. opening snap and ejection clicks. Cardiac murmurs- site of maximum intensity, grade, timing, character, conduction, pitch, respiratory variation. Describe any functional cardiac and extra cardiac murmurs including pericardial and pleuro-pericardial rubs.

#### Central nervous system examination

- 1 General physical examination: general appearance, level of consciousness, skull size, shape, symmetry, swelling, spine for deformities, meningocele etc.
- 2 Higher functions: level of consciousness, orientation in time and place, memory, emotional status, delusions and hallucinations, speech.
- 3 Cranial nerves: describe abnormal findings pertaining to involvement of cranial nerves unilateral or bilateral, upper motor or lower motor neuron type. Examine all cranial nerves in detail.
- 4 Motor system: describe findings of upper limbs, trunk, lower limbs, posture of limbs, abnormal movements, fasciculation and twitching, wasting, muscle tone, power, strength in various groups of muscles. Coordination, deep tendon jerks, deep tendon reflexes.
- 5 Superficial reflexes like corneal, abdominal, plantar etc.
- 6 Primitive reflexes like Glabellar tap, Hoffman's sign etc.
- 7 Neonatal reflexes like Moro reflex, plantar, palmar grasp, stepping, placing, rooting, etc.
- 8 Sensations: superficial, deep and cortical sensations.
- 9 Cerebellar signs: decrease in tone, nystagmus, skew deviation, incoordination, ataxic gait, pendular jerks.
- 10 Autonomic dysfunction like sphincter disturbance, instability and wide fluctuations of vital signs, changes in salivation, lacrimation, and sweating.
- 11 Signs of meningeal irritation like neck stiffness, Kerning's sign, Brudzinski's sign.
- 12 Carotid pulsation
- 13 Skull and spine, Mac Evan's sign.

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# AUSHADHI MAATRA NIRDHARANA (Posology in Children)

Kasya

The action of a drug or a procedure based therapy is greatly influenced by its maatra i.e. dose. The dose of a drug depends on:

- The aim of the treatment i.e. sodhana or samana, poorvakarma or paschaatkarma.
- Kalpana (Therapeutic form).
- Age of the patient.
- The nature of the drug used.
- The nature of the disease.
- Bala of the patient.

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### Posology according to different achaaryas

#### Shaarngdhara

बालस्य प्रथमे मासि देया भेषजरत्तिका।  
 वर्धयेत्तावदेकैकां यावद्भवति वत्सरः ॥  
 माषैर्वृद्धिस्तदूर्ध्वं स्याद्यानत्पोडशवत्सरः।  
 ततः स्थिरा भवेत्तावद्यावद्वर्षाणि सप्ततिः।      Sh. Sa. 6/14-16

Dosage in the 1<sup>st</sup> month is 1 Ratti- 125 mg. This dose is increased by 1 ratti in successive months, upto 12 months when it reaches two maasha-1.5g (12 ratti= 2 maasha)

Next, the dose is increased by 1 maasha every year which reaches 17 maasha at 16 years. This constitutes the adult dose. The whole computation of the dose for the children above one year can be summarized as:

**Child dose = Age of the child in years + 1 masha**

### Sushruta

तत्र मासादूर्धं क्षीरपायाङ्गुलिपर्वद्यग्रहणसम्मितां  
औषधमात्रां विद्यात्, कोलास्थिसम्मितां कल्कमात्रां  
क्षीरान्नादाय, कोलसम्मितामन्नादायेति।

S.S.Sa. 10/38

Ksheerapa      a pinchful

Ksheerannaada    kolaasthi maatra

Annaada        kolasammitam.

### Kasyapa

विडङ्गफलमात्रं तु जातमात्रस्य देहिनः।  
भेषजं मधुसर्पिभ्यां मतिमानुपकल्पयेत्।  
वर्धमानस्य तु शिशोः मासे मासे विवर्धयेत्।  
अथामलकमात्रन्तु परं विद्वान्न वर्धयेत्॥ K. S. Su. 18/12-13

Dosage schedule of drugs according to the age and physical condition of individual was constituted by Kasyapa. He is the only achaarya who advised administration of medicine to jaatamaatra.

For a new born child, drug should be prescribed in the quantity of one vidanga with honey and ghrita in unequal quantities. In case of a growing child, it should be increased gradually every month. The quantity of one aamalaka is the maximum dose allowed.

### Dose of ghrita

Jaatamaatra	कोलास्थि सम्मितं
Upto 20 nights	कोलार्धसम्मितं
Upto one month	कोलसम्मितं
In second month	It can be little more to kolamaatra
At three months of age	2 kolam
At 4th month	शुष्कामलकमात्रं
5th & 6th month	आर्द्रामलकमात्रं

### Dose of Churna

This is based on the aim of therapeutics.

दीपनीयम्	- 1 pinch
जीवनीयम् संशमनम्	- Double the quantity (2 pinches)
वमनम्, विरेचनम्	- $\frac{1}{2}$ pinch

### Dose of Kashaaya

वातपित्तकफहरम्	- 2 प्रसृतं
जीवनीयम्, संशमनम्	- 4 प्रसृतं
वमनम्, विरेचनम्	- 3 प्रसृतं

### Dose of Kalka

दीपनीयम्	- 1 अक्षम्
जीवनीयम्, संशमनम्	- 2 अक्षम्
वमनम्, विरेचनम्	- $\frac{1}{2}$ अक्षम्

### Dose of Vasti

According to Charaka, the dose of vasti at 1 year of age is 1 pala which is increased by 1 pala every year reaching a dose of 12 palas at 12 years. There after, the dose is increased by 2 palas every year, which reaches the adult dose of 24 palas at the age of 18 years.

The conversion table for the child dose from an adult dose of the drug can be derived from the following equations in general.

$$\text{Young's formula} \quad \text{Child dose} = \frac{\text{Adult dose} \times \text{age}}{\text{Age} + 12}$$

$$\text{Cowling rule} \quad \text{Child dose} = \frac{\text{Adult dose} \times (\text{age} + 1)}{24}$$

$$\text{Dilling's formula} \quad \text{Child dose} = \frac{\text{Adult dose} \times \text{age}}{20}$$

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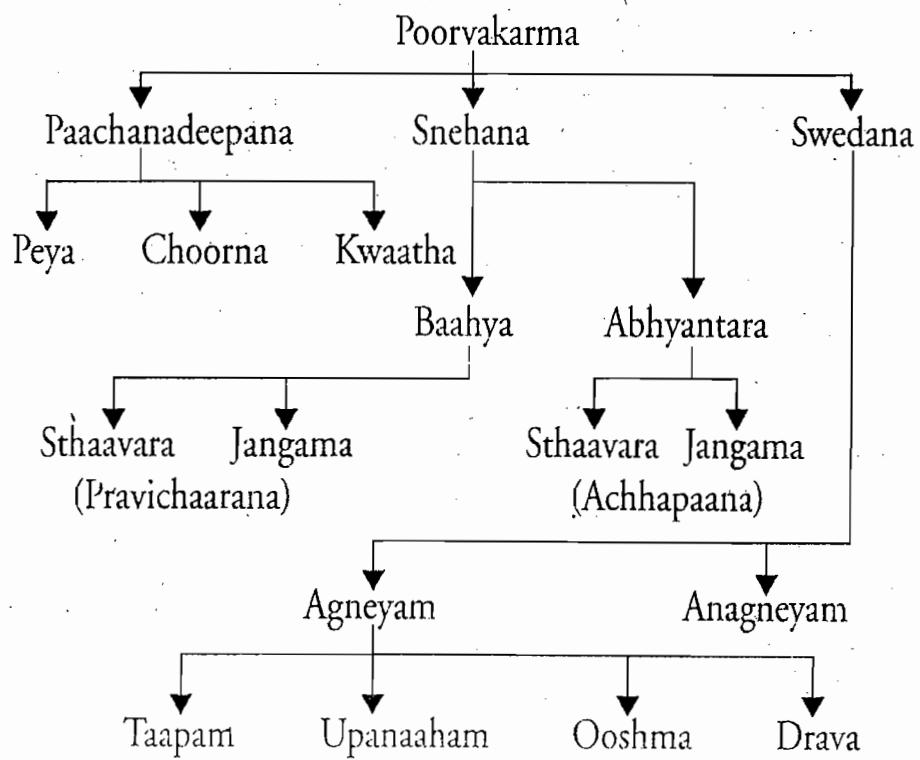
### 3

## SPECIFIC THERAPEUTIC PROCEDURES IN CHILDREN

### Panchakarma procedures specific to paediatric age group

Majority of the paediatric diseases are samanoushadha saadhya. Even drugs with mridu and madhyama veerya act very effectively in children. This can be attributed to their mridukaayata and alpaveeryata. Those diseases which persist even after Samanachikitsa have to be treated with sodhana chikitsa.

#### 1. Poorvakarma



### Snehanam

Snehana aims at increasing the abhishyanda quality (वृद्धभिष्यन्दनात्) helping in koshthaagama of saakhaagata doshas.

Generally snehana is of 2 types :

- 1 Sounana poorvakam (achapaanam)
- 2 Samana prayoga (vichaarana)

Achapaana is mostly advocated in diseases affecting baahya and madhyama roga maarga, when remains unrelieved by samanoushadha prayoga.

Snehana is optional in ksheeraada and ksheerannaada children as they always remains snigdha by constant use of ghrita and ksheera.

स्निधं एव सदा बाला घृतक्षीरनिषेवणात् ॥ A.H.U. 2/31

If at all snehana becomes essential as in lactation failure, feeding difficulties, etc it can be applied as follows:

#### 1 Achapaana

बृहणो रसमद्यादैः सभक्तोऽल्पः हितः स च ।  
बालवृद्धपिपासार्त्तस्नेहद्विष्टमद्यशीलिषु ॥  
स्त्रीस्नेहनित्यमन्दाग्निसुखितकलेशभीरुषु । A.H.Su. 16/19-20

Hrasva maatra of sneha equivalent to brimhana maatra is advised for children as they are snehanitya.

#### 2 Vichaarana

Can be administered as abhyanaga, maatra vasti, sabhakta sneham, nasyam, gandoosham, moordhatailam, karnapooranam and akshyaschytana.

The easy and instant method of administration of sneha ie sadyasnehakara yoga (A.H. Su. 16/40-42) is well applicable in paediatric age group.

### Swedanam

Swedana aims at paaka of doshas (A.H. Su. 13/28). Like the former, swedana is of two types.

- 1 Sodhana poorvakam
- 2 Samana prayoga

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The fundamental principle of swedana is the transfer of heat energy to the body for a specified duration using materials of different calorific value in a state of solid, semi-solid, liquid or gas. In paediatric practice, swedana should be of lesser duration with materials of lesser calorific value (अल्पोष्णाता) for both sodhana and samana.

बालानां कृश मध्यानां स्वेद आवस्थिको हितः  
शीतव्याधिशरीराणां बालानां च विशेषता । K.S.SU.23/8:

Primarily sweda karma is indicated for the children of krisa and Madhya balavaan. Sweda is indicated if the disease is originating from the seeta guna nidaanaas.

Keeping these considerations in mind, Achaarya Kasyapa proposed 8 types of sweda.

जन्मप्रभृति बालानां स्वेदमष्टविधं भिषक् ।  
प्रयुज्जीत यथाकालं रोगदेहव्यपेक्षया ॥  
हस्तस्वेदः प्रदेहश्च नाडीप्रस्तरसङ्कराः ।  
उपनाहोऽवगाहश्च परिषेकस्तथाऽष्टमः ॥ K.S.Su. 23/25-26

- 1 Hastaswedam
- 2 Pradehaswedam
- 3 Naadiiswedam
- 4 Prastaraswedam
- 5 Sankara swedam
- 6 Upanaaha swedam
- 7 Avagaaha swedam
- 8 Parisheka swedam

These are 8 swedas which are mridu in nature. As the age advances the all other types of swedakarmas can be employed.

निवर्त्तमाने बालस्य सौकुमार्यं यथाक्रमम्  
प्रवर्त्तमाने काठिन्ये तेषां स्वेदं प्रवर्द्धयेत् । K.S.SU.23/28

Swedana should be performed only after covering the eyes with leaves of kumuda, utpala and padma or a soft cloth. The cardiac region of child should be constantly touched with mukta, chandrakaanta or hand dipped in cold water or with a pot filled with cold water.

### Hastaswedam

This is the mildest form of swedana used mainly for samana purpose. It can be performed from birth up to four months of age, in a non-windy place by heating the hand gradually with smokeless fire and then placing it on his body.

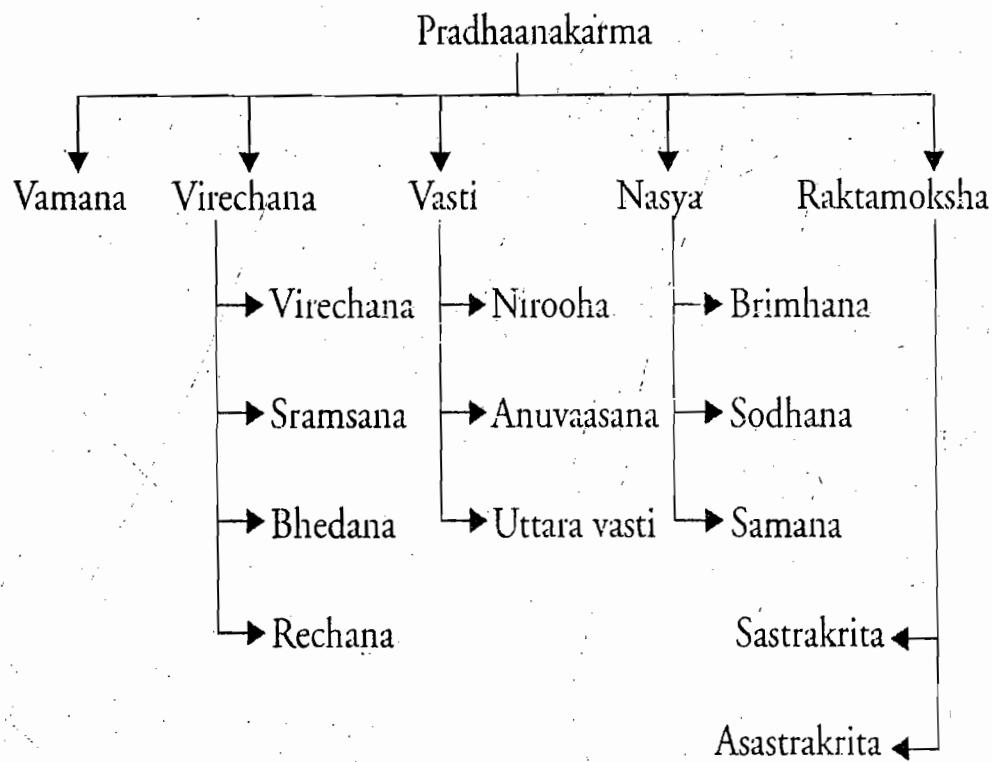
जातस्य चतुरो मासान् हस्तस्वेदं प्रयोजयेत्

अप्रमादी निवातस्थो विधुमान्यूष्मणा शनैः। K.S.SU.23/27

### Pata swedam

It is a unique sweda karma proposed by Kasyapasamhita. Here transfer of heat energy is mediated by cotton cloths and is indicated upto 6 years.

### Pradhaanakarmam



### Vamana

Generally vamana is contra indicated in children. Despite this fact, plenty of references can be cited in classical texts as well as in Kasyapasamhita indicating vamana in children. Kasyapa warns that vamana is contraindicated below 6 years of age. In cases of vamana being the only option, sadyavamana (sadyasnehana + mriduvamana) is indicated.

स्निग्धं एव सदा बाला घृतक्षीरनिषेवणात् ।

सद्यस्तान्वमनं तस्मात्पाययेन्मतिमान् मृदु ॥ A.H. U. 2/31

Prior to vamana, the stomach of the baby should be filled with breast milk (in ksheeraada and ksheera annaada). In annaada, laghu and tanu peya with ghee can be used instead of stanya.

स्तन्यस्य तृप्तं वमयेत् क्षीरक्षीरान्नसेविनम् ।

पीतवन्तं तनुं पेयामन्नादं घृतसंयुताम् ॥

A.H.U. 2/32

The ideal drug for vamana is madanaphala as it is apt for sukumaaras. Madanaphalapippali as well as madanapushpa can be used, by making into a paste and applying on the breast of mother.

Kabaladhaarana is more advisable in children as an alternative method for vamana. Kabaladhaarana with suitable drug has kaphahara property upto some extent. The only disadvantage is that it is applicable only after 5 years of age.

Children especially ksheeraada, vomits spontaneously even in the presence of a small doshadushti. Hence they require no forced vomiting.

स्वयं छर्दयते यस्तु पीतं पीतं पयः शिशु ।

न तं कदाचित् बाधयेत्र व्याधये ॥

### Virechanam

Virechana should be performed in children as a last resort; all other alternatives failing to cure a disease. This karma should be administered with extreme caution as there lies a potent danger of dehydration which the children are highly prone to. However, mridu virechanoushadha like 'trivrit' or sukhavirechanoushadha like 'chaturangula' can be logically applied. Classical references point certain inevitable indications for virechana eg. Krimi. Vasti acts as an alternative for virechana .

वस्ति साध्ये विरेकेण । A.H.U. 2/33

### Vasti

In general of all sodhana chikitsa, vasti is supreme as

वस्तिकर्मकृतं काले बालानाममृतोपमम् ।

Vasti can be used liberally in children, keeping in mind the specifications in dose. Nevertheless, a difference of opinion persists about the age for administration of vasti. Brihatrayis permit the administration of vasti from 1 year of age. In Kasyapasamhitā, this has been discussed in an elaborate manner.

Acharya	Age for administration of vasti	Reason to do so
Gaargya	From birth onwards	
Maatara	After 1 month	Child becomes more stable
Atreya Punarvasu	4th month onwards	
Some others	1 year onwards	child becomes capable to tolerate it
Paraasara	3 years	
Bhela	6 years	
Kasyapa	crawling stage	

### Nasyam

Nasya is usually contraindicated in paediatric practice, particularly in age group below 8 years. In addition, nasya with virechana and sodhana properties cannot be used. Consequently pratimarsa nasya is advisable in children.

..... मर्शन प्रतिमर्शनम् ॥ A.H.U. 2/33

Advocating the use of nasya to children above 8 years of age, might have been done on the basis of understanding the development of para nasal sinuses.

- Development of paranasal sinuses continues throughout childhood.
- At birth, only maxillary, ethmoidal and sphenoidal sinuses are formed.
- Radiological presence of frontal sinus appears at 6 years.

- Ethmoidal sinus completely develops by about 17 years of age.
- Summing up, the paranasal sinuses attain full development after puberty.

### Raktamoksham

Raktadhaatu has been attributed the function of 'Jeevanam'. Raktamoksha, the process of letting out this raktadhaatu, is highly contraindicated in children as they have not attained dhaatupushti. In unavoidable conditions, localized raktamoksha methods like kuttana, prachhaana and lekhana can be advocated eg: diseases like Neelika, mukhapaakam, charmadala.

The most safe and comfortable mode of raktamoksha in children is jaloukaavacharanam.

eg. Gudapakam

रागकण्डूत्कटे कुर्याद्रक्तस्रावं जलौकसा । A.H.U. 2/75

Siraayedha is again strictly contraindicated in children below 16 years of age as they are composed of aparipakwadhaatu.

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# PRASAVAKAALEENA ABHIGHAATA (Birth Injuries)

Birth injuries are defined as those sustained during labour and delivery. The difficulties dealt by the baby from the initiation of first stage of labour to the delivery can be termed birth injuries in Ayurveda. The following references are available about birth injuries-

- 1 Upaseershakam
- 2 अकालप्रवाहणात् बधिरं मूकं कुञ्जव्यस्तहनु  
मूर्धाभिधातिनं कासश्वासशोषोपद्रुतं  
विकटं वा जनयति ॥ S.Sa. 10/9

### Upaseershakam

The whole process of parturition is troublesome to the baby because of chances of vaatakopa. This vaatakopa is physiological and is called prasootiklesa. If this vaatakopa makes sthaanasamsraya in the siras, results in a condition termed upaseershakam.

A swelling is seen on the head at the time of birth. On examination, the swelling has the same colour of scalp and is non-tender.

The underlying clinical conditions are :

- Cephalohaematoma
- Sub gallial hematoma
- Caput succidaneum

### Chikitsa

Vaatavyaadhi chikitsa is advocated in the initial stages. The features usually subsides with siropichu and parishekam with bala taila explained in normal regime of new born. Still if it remains unrelieved, then management of vidradhi have to be adopted.

### Caput succedaneum

This is an area of edema over the presenting part of the scalp during normal delivery. It is seen immediately after the delivery and disappears in a few days. The swelling is diffuse and skin over it may be bruised. It may be exaggerated in vacuum delivery. This condition doesn't need any treatment.

**Cephalohaematoma** is defined as subperiosteal collection of blood secondary to rupture of blood vessels between the skull and periosteum; its extent is well delineated by suture lines over days.

### Differential diagnosis-

- Caput succidaneum
- Encephalocele

### Complications

- Anaemia
- Hypotension
- Secondary hyperbilirubinaemia
- Infection
- Associated skull fractures

**Resolution:** Slow resolution occurs over 1-2 months. Some times residual calcification may happen.

शिरस्यभिहते मन्यास्तम्भादितचक्षुर्विभ्रम-  
मोहोद्वेष्टन चेष्टानाशकासश्वास हनुग्रह मूक-  
गद्गदत्वाक्षिनीलनगण्डस्पन्दन जृंभण-  
लालासावस्वरहानि वदनजिह्वत्वादीनि ॥ C.S.Si. 9/6

### Baadhiryam

Deafness can result either from ear injury or any intra cranial lesion resulting in vidhura marma abhighaata, the root cause being akaala pravaahanam.

Common ear injuries during birth are:

- Haematoma of external pinna
- Cauliflower ear
- Cartilaginous laceration
- Temporal bone injury
- Haemotympanum
- Ossicular disarticulation,

Only the last mentioned condition will lead to deafness.

### Mookatam

Mookatva may result from akaalavaahanam or siroabhigaatam.

Recurrent laryngeal nerve injury characterised by bilateral vocal cord palsy has many similar features. But it is usually associated with asphyxia.

### न्यस्तहनु, हनुग्रह, मन्यास्तम्भः

Mandibular dislocation and facial or mandibular fractures are characterised by facial asymmetry, ecchymosis and oedema results in these condition. In unrecognised or untreated facial bone fractures, craniofacial deformities are evident.

### Kaasa, Swaasa

Origin of kaasa and swaasa is of two types:

- 1 Cardiovascular and central nervous system.
- 2 Respiratory system.

- Siroabhigaata – Intra cranial haemorrhage leads to pallor, respiratory distress, shock etc. associated with swaasa and kaasa.
- Brain contusion resulting from skull bone fracture leads to swaasa and kaasa.
- Cervical nerve root injury causing phrenic nerve ( $C_3, C_4, C_5$ ) palsy presenting with respiratory distress with ipsilaterally diminished breath sounds.
- Intra abdominal injuries – ie rupture or subcapsular haemorrhage into liver, spleen or adrenal gland.

All these are considered as birth injuries.

### Respiratory causes

Aspiration of amniotic fluid and mucous (refer praanapratyagamana vidhi) leads to respiratory distress. The aspirated fluid if unremoved from gastro intestinal tract leads to ulbakam.

### Kubjatvam

Synonymous conditions are snaayu vikaaras like kunitwa, stabdhata, kubjata. These are produced either by hypoxic ischaemic encephalopathy or by peripheral nerve lesions. Deuchenne Erb's paralysis ( $C_5 C_6$ ) and Klumpke's paralysis ( $C_7, C_8$  &  $T_1$ ) are classical examples of trauma to kakshadrik marma by prasava kriya.

### Vikatam

विषमम्, ग्रन्थितम्।

These are swellings either by long bone injuries, epiphyseal displacement, sternocleido mastoid muscle injury etc.

### Ardita, Akshinimeelana

Two features of ardita Nidaana, namely

- Abhigaata (शिरसा भारभरणात्)
- Malpositioning of head (विषमादुपधानाच्च)

are associated with breech delivery.

This causes hyper extension, traction and overstretching and simultaneous rotation of head leading to facial palsy.

## ENUMERATION OF BIRTH INJURIES

### 1 Head and neck injuries

- a Cephalohaematoma
- b Sub galeal haematoma
- c Caput succidaneum
- d Vacuum caput
- e Intra cranial haemorrhage
- f Skull fractures
- g Facial/mandibular fractures
- h Ocular injuries

- i Ear injuries
  - j Sternocleidomastoid (SCM) muscle injury
2. Cranial nerve, spinal cord and peripheral nerve injuries
- a Cranial nerve injury
    - i Facial nerve injury
    - ii Recurrent laryngeal nerve injury
  - b Spinal cord injuries
  - c Cervical nerve root injuries
    - i Phrenic nerve palsy
    - ii Injuries to brachial plexus
      - 1 Deuchenne-Erbs Paralysis
      - 2 Klumpke's paralysis.
3. Bone injuries
- a Clavicular fracture
  - b Long bone injuries eg-femur, humerus
  - c Epiphyseal displacements
4. Intra abdominal injuries-Rupture /subscapular haemorrhage in to liver, Spleen or adrenal gland.
5. Soft tissue injuries
- a Petechiae and echymosis
  - b Aberrations and lacerations
  - c Subcutaneous fat necrosis.

### DEUCHENNE- ERBS PARALYSIS

Brachial plexus comprises chiefly the nerves supplying to the hand. It consists of the spinal nerves coming from C5-T1. Whenever there occurs an injury to the brachial plexus due to birth injury resulting diseases are mainly Deuchenne erb's palsy and Klumpke's paralysis. Of these DEP is resulting from the injury to the spinal roots C5-C7.

#### Causes

- The most common cause of DEP is Dystocia
- Excessive pulling on the shoulders in vertex presentation

- Pressure on the raised arms during breech delivery
- Clavicular fracture

### Clinical features

- Affected arm is adducted and internally rotated with elbow extended.(Waiter's tip position)
- Fore arm is prone and wrist is flexed
- The limb falls to the side of body when passively adducted.
- Moro's, Biceps, Radial reflexes are absent
- In complicated cases there may be contractures.
- Loss of sensation in the arms.
- Atrophy of the deltoid, biceps and brachialis muscles.

### Nerves

The most commonly involved nerves are suprascapular nerves, Musculocutaneous Nerve and the axillary nerve.

### Ayurvedic perspectives

- The paralysis is with deformity with a reason of injury. The condition is comparable with kakshadrik marmaabhigaata.
- Symptom is similar to the snaayu gata vaayu like kubjatva or kunitva of hand.

## 5

# SAHAJAVYAADHI (Congenital Disorders)

These are the diseases of a developing foetus. It may be the defects of genetic structure, intra uterine environment, errors of morphogenesis, or a chromosomal anomaly. The outcome of the problem is depending on the base line defect in prenatal time and the environment of the post natal life. Congenital disorders are of several types.

- 1 Congenital physical anomaly-abnormality of a structure of body part. The abnormality may or may not be perceived as a problem.
- 2 Congenital malformation- the physical anomaly which is perceived as a problem.
- 3 Birth defect-these are congenital malformations recognizable at birth.
- 4 Genetic disorders- all these are congenital diseases. They may be expressed at the time of birth or later in life.
- 5 Congenital metabolic disorders- these are metabolic errors of inborn origin.

### Ayurvedic perspectives

According to Ayurvedic view the congenital diseases are either saha janyaadhis or garbhaja vyaaadhis or a combination of these two. But basically the congenital malformations and defects are produced by following factors according to Charakasamhita .

बीजात्पकर्माशयकालदोषेमातुस्तथा॑हारविहारदोषैः।

कुर्वन्ति दोषा विविधानि दुष्टाः संस्थानवर्णन्द्रियवैकृतानि॥ C.S.Sa. 2/29

- Beeja dosha (Aartava/beeja dosha)
- Aatma karma dosha-Effects of hereditary transmission
- Aasaya dosha- due to the defective environment in womb.
- Kaala dosha- doshas in relation with time of conception to the total confinement.
- Maturaahaaram-diet of pregnant women
- Matu vihaaram – activities of pregnant women.

### HRIDAYAJANYAVIKAARA (Congenital Heart Diseases-CHD)

The diseases of the heart produced in a child by birth are termed as congenital heart diseases. The evaluation of these diseases in Ayurvedic perspectives are summarized below.

#### 1 Beejadushti

यस्य यस्य हृड्गावयवस्य बीजे बीजभागोपतप्तो  
भवति तस्य तस्याङ्गावयवस्य विकृतिरुपजायते,  
नोपजायते चानुपतापात्। / C.S.Sa.3/17

The beejabhaaga(either of sukla or aartava) or beejabhaagavayava or hridayakaraanam sareera bhaava: which determines the organogenesis of the heart, is insulted by different nidaanas resulting in congenital heart disease.

#### 2 Aartavadushti constitutes the prime factor of congenital heart disease because formation of hridaya in a foetus is governed by maatruja bhaavas.

मातृजश्चायं गर्भः। तद्यथा त्वक् च लोहितं च  
मांसं च मेदश्च नाभिश्च हृदयं च.....॥ C.S.Sa. 3/6

#### 3 The main dhaatu involved in CHD is raktadhaatu and the predominant dosha is sleshma – which themselves are the factors governing the genesis of hridaya.

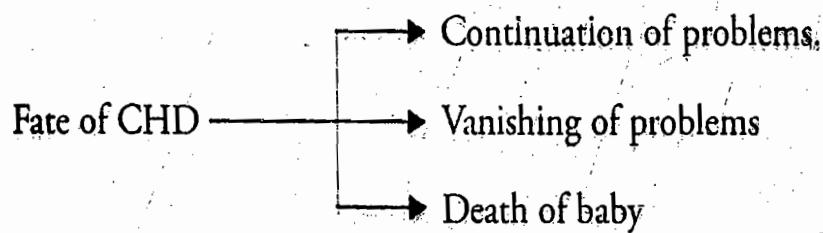
शोणितकफप्रसादजं हृदयम्॥ S.S.Sa. 4/30

#### 4 Other factors like garbhaasaya dushti, kaalam, aahaaravihaaras can also hamper the organogenesis of heart.

5. Hence an effective and judicious practise of malthunacharya and Garbhinee paricharya may prevent the occurrence of CHD.
6. Symptoms of CHD are comparable with kapha paittika hridrogas. Following are the symptoms given in the classics in kapha paittika hridrogas which may be seen in the cases of congenital heart diseases,

• Swasa rodha	Dyspnoea
• Klama/stimitam/tandra	Fatigue
• Hridayadrava/hridaya sunyata	Palpitation
• Aruchi	Decreased appetite
• Jwara	Fever
• Alpanidra	Sleep disturbances
• Moham/Bhrama/Murcha	Syncope

Respective kapha paittika hridroga chikitsa is applicable.



### Incidence

Defect	Percentage
Ventricular septal defect	25 – 30 %
Patent ductus arteriosus	10 %
Atrial septal defect	7 – 10 %
Coarctation of aorta	6 %
Tetralogy of Fallot	5 – 9 %

### General Etiology

#### 1 Genetic

- Single mutant gene
- Chromosomal anomalies eg. Down's syndrome
- Multifactorial inheritance.

#### 2 Environmental

- Viral infections during 1<sup>st</sup> trimester Eg. Rubella

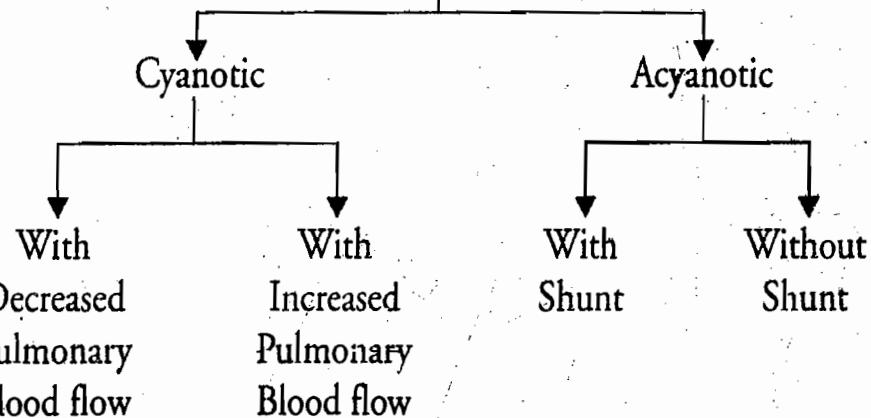
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- Other viral infections
- Drugs – Lithium
- Ionizing radiations, alcohol
- High altitude
- Metabolic disorders in mother

### 3 Hereditary

- Marfan syndrome

#### Classification of CHD



#### Symptomatology in general

- 1 Exercise intolerance
- 2 Dyspnoea
- 3 Fatigue
- 4 Palpitation
- 5 Decreased appetite
- 6 Feeding difficulties
- 7 Frequent infections
- 8 Sleep disturbances
- 9 Cyanosis
- 10 Edema
- 11 Syncope

#### Treatment in General

- Most of the CHDs will show the clinical features which give us the following Ayurvedic diagnosis.
  - i. Swaasa, ii. Kaasa, iii. Jwara, iv. Sopha, v. Hridroga, vi. Sosha.

According to the Ayurvedic diagnosis the treatment must be formulated.

## VENTRICULAR SEPTAL DEFECT (VSD)

VSD is a congenital heart disease where an abnormal communication is present between the two ventricles.

### Types

- Perimembranous type
- Inlet VSD
- Outlet VSD (infundibular)
- Muscular type of VSD. This type is again of three types
  - Central muscular
  - Marginal muscular
  - Apical muscular

### Clinical manifestations

- 1 Small VSD: Patient is asymptomatic and growth is normal. The child will be acyanotic.
- 2 Moderate to large VSD: Repeated pulmonary infections, decreased exercise tolerance, failure to thrive (poor weight gain), pulmonary hypertension. On examination there will be tachypnea and death will be due to CCF (Congestive Cardiac Failure)

## TETRALOGY OF FALLOT (TOF)

TOF is a combination of four types of congenital anomalies of the heart. They are enlisted below.

- Right Ventricular Outflow Tract Obstruction (RVOT)
- Ventricular Septal Defect (VSD)
- Dextroposition/Over riding of aorta
- Right ventricular hypertrophy

### Clinical Features

- Most cases of TOF cases will show slight cyanosis at birth, Exertional dyspnoea, squatting and hypoxic spells will be developed later.
- Congestive heart failure will be the result of acyanotic TOF with large ventricular septal defect.
- The pulmonary atresia with VSD will be presented as severe cyanosis at birth.

## JALASEERSHAKAM

The term jalaseershakam is the Sanskrit word coined for the disease hydrocephalus. This disease in Ayurveda is mentioned as Seershaambu in Bhaishajya ratnaavali text. In jalaseershakam abnormal accumulation of sneha (ambu) in siras is happening with its secondary clinical manifestations. Basically hydrocephalus originates from the imbalance of Cerebro Spinal Fluid production (atipravriti), absorption or by an obstruction in its path of flow (sangam).

### Nidaana

दुष्टाम्बुपानादतिशैत्यतो वा आन्त्रकृमेरुद्भवतोऽभिधातात्।  
असात्म्यभोजनाशनतः सुराया अत्यर्थपानात्पवनप्रदोषात्॥

.....  
दन्तोद्गमेऽनेकविधाहितानां निषेवणासदिभषजां मतेन। B.R.98/3

- Intake of cold/contaminated water
- Parasitic infestation
- Trauma
- Excessive alcohol use
- Intake of unwholesome diet causing vaata vitiation.
- In association with teething.

### Susceptible age group

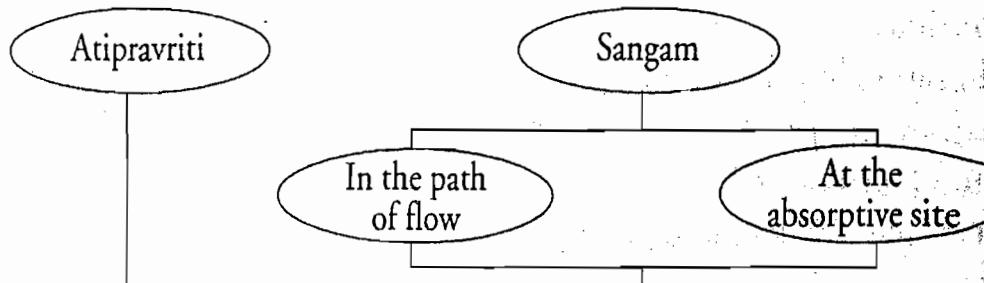
प्रायः शिशूनामुपजायतेऽसौ बाल्ये वयस्येव गदो विशेषात्॥ B.R.98/1-3

Mechanism of hydrocephalus can happen at any age but is mostly encountered in childhood. Hydrocephalus resulting in large head can occur only before closure of fontanel.

### Sampraapti

सचीयते यत्क्रमतः शिरःस्थस्नेहस्य भूमौ बहलं जलं हि॥ B.R.98/2

The collection of fluid occurs in a gradual course (क्रमतः)



Accumulation of CSF in ventricles

## Prognosis

The results of Ayurvedic treatment is poor

शीर्षाम्बुरोग एव त्वितदुश्चिकित्स्यः ॥ B.R. 98/2

## Poorvaroopam

जिह्वा मलाद्याऽपि च गाढविट्कता दौर्बल्यनिद्राधिकते तथा च ।

निश्चासमध्येऽपि च पूति गन्धः शीर्षाम्बुरोगे त्विति पूर्वरूपम् ॥ B.R. 98/4

- Coated tongue
- Constipation
- Weakness
- Excessive sleep
- Halitosis

## Roopam

तीक्ष्णा व्यथा शिरसि कृष्ण पुरीषताऽथो  
मूत्राल्पता श्रुतिगताऽक्षिण च तीक्ष्णता स्यात् ।

वेगं समाश्रितवती धमनी त्वचायां  
रौक्ष्योष्णते च वमनं विषमाक्षितारा ॥  
लौहित्यमक्षियुगले च विवर्णताऽस्ये  
निद्राक्षणे दशनघर्षणमप्यवश्यम् ।  
कण्ठूरदच्छदगताऽपि च नासिकाया-  
माक्षेपकः प्रलपनं खलु पक्षनाशः ॥  
शीर्षाम्बुरोग इति लक्ष्मभिषग्वरोक्तं । B.R. 98/5-6

- Severe headache
- Blackish faeces
- Scanty urine
- Burning sensation in eyes and ears
- Rapid pulse
- Rough skin
- Vomiting
- Change in level of cornea
- Redness of eyes
- Discolouration of face
- Grinding of teeth during sleep (Bruxism)
- Itching over lips

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- Deviation of nose
- Hemiplegia

### Chikitsa

यदौषधं रेचकं स्यात् यच्च मूत्रप्रवर्त्तकम्।  
अस्त्रदोषहरं चापि तत् शीर्षाम्बुगदे हितम्॥ B.R. 98/7

98/4

The drugs used should be rechaka and mutrala

- Hair should be removed and head covered with warm cloth.
- Administration of coconut oil internally.
- Small dose of rasa sindoora to be taken twice or thrice daily.

### HYDROCEPHALUS

Hydrocephalus is resulting from an increased accumulation of CSF in the ventricles of the brain. The accumulation is due to either increased production, obstruction in the flow of CSF, or due to a hinderance at the site of absorption.

#### Etiology

	Congenital		Acquired
1	CSF flow obstruction <ul style="list-style-type: none"> <li>• Acqueductal stenosis</li> <li>• Arnold Chiari malformation</li> <li>• Dandy-Walker malformation</li> </ul>	1	Post meningitis <ul style="list-style-type: none"> <li>• Tubercular meningitis</li> <li>• Chronic, acute meningitis</li> </ul>
2	Intra uterine infections	2	Posterior fossa tumours
3	Intra cranial bleeds	3	Cortical atrophy (Hydrocephalus ex vacuo)
4	Congenital tumors		

- Obstructive hydrocephalus- otherwise known as non communicating type of hydrocephalus. Here there will be one obstruction in the path of CSF flow.
- Non obstructive hydrocephalus- otherwise known as communicating type of hydrocephalus. Here obliteration of the subarachnoid cisterns or decreased absorption or excessive production of CSF is happening.

- Aqueductal stenosis- This is mostly an X linked inherited disorder or by the intrauterine infections.
- Arnold Chiari malformation- Here elongation and downward displacement of cerebellum or brain stem is happening so as to hamper the CSF flow.
- Dandy Walker malformation- This is a cystic malformation of the cerebellum and 4<sup>th</sup> ventricle, which occurs due to atresia of the foramen of Luschka and Magendie.

### Clinical features

- Increased head size with prominent fore head.
- Sutures and fontanel remain unduly prominent with delayed closure
- Macewen's sign (Cracked pot sound) is positive on head
- Prominent scalp veins
- *Sunset sign*-Impaired up ward gaze so as there will be visible sclera above the iris.
- Cranial nerve palsies.
- Increased muscle tone of the limbs with brisk deep tendon reflexes.
- Features of increased intra cranial tension like bradycardia, papilledema, ophthalmoplegia, irregular respiration, constipation etc may seen.
- Vomiting, head banging and head ache.

### OSHTABHEDA

This is a congenital condition illustrating the non fusion of lips at birth.

तत्र खण्डौष्ठ इत्युक्तो वातेनौष्ठौ द्विधा कृतः। A.H. U. 21/3

Ayurveda attributes vaatakopa as the main causative factor.

### Chikitsa

Ashtanga hridaya explains its management as lekhana and then seevana.

खण्डौष्ठस्य विलिख्यान्तौ स्यूत्वा ब्रणवदाचरेत्। A. H. U. 22/1

- Lekhana
- Seevana
- Management similar to vrana

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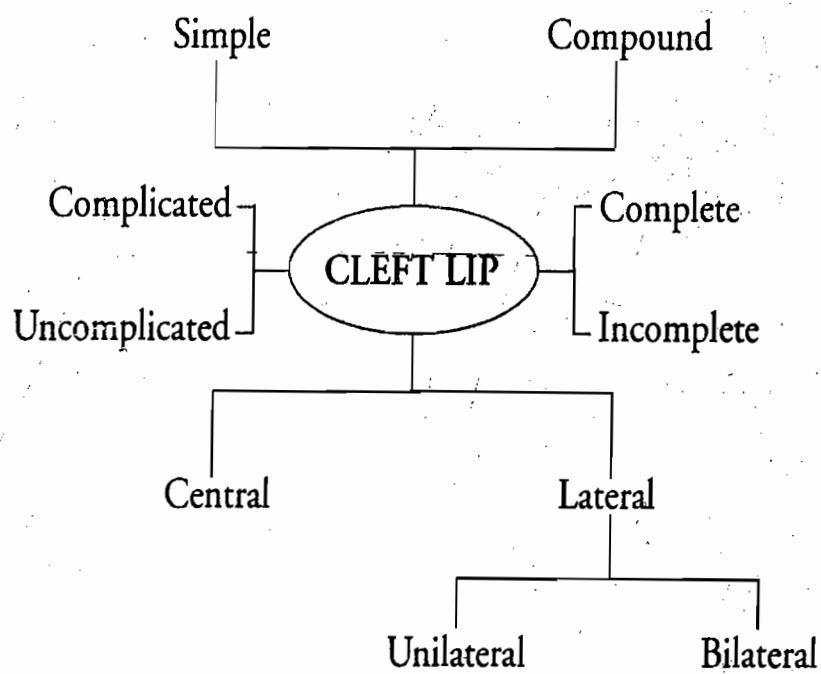
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- Abhyanjana with taila prepared from madhuka, jyotishmati, lodhra, sraavani, saariba, utpala, patola and kāakamaachi.
  - Nasyam with taila medicated with vaatahara and madhura gana drugs.
- Sushruta, the father of surgery has described the surgery of lips being similar to nasoplasty.

### CLEFT LIP

The developmental error in the formation of upper lip will lead to the formation of cleft lip. The cleft lip (CL) is classified in several ways.



The operative treatment is the only choice for this condition. When the baby attains 5-6 Kgm of the body weight or at the age of 3 months or before the commencement of primary dentition operation can be performed. Cosmetic problems, difficulty in sucking, defective dentition, defective speech and deformed nostrils are the chief problems encountered with the cleft lip.

### CLEFT PALATE (Khandataalu)

Cleft palate is the condition due to the failure of the fusion of the three basic components which together form the palate. These are: (i) the

premaxilla, developing from the medial nasal process, (ii) the two palatine processes one from each maxillary process.

**Types:** it is of two types – complete and incomplete.

- 1 Complete: the two halves of the palate fail to fuse in the entire length so that the nose and mouth become interconnected.
- 2 Incomplete: The fusions of the two halves of palate proceed from before backwards. Here, the anterior part of palate shows no abnormality.

**Complications of cleft palate:**

- 1 Difficulty in sucking
- 2 Difficulty in eating
- 3 Difficulty in speech
- 4 Difficulty in hearing
- 5 Dental problems
- 6 Defect in smelling
- 7 Repeated respiratory tract infection
- 8 Chance of aspiration bronchopneumonia.

### **Treatment**

Surgery must be carried out at the age of one to one and half years of age.

**Operations for repair of cleft palate:**

- 1 Langenbeck's operation
- 2 Wardill's operation (four-flap operation)

### **IMPERFORATE ANUS (Sanniruddhaguda)**

This is a common congenital anomaly wherein the post-allantoic gut (hindgut) and the proctodeum (lower part of anal canal) are imperfectly fused. Depending on the level of termination of the bowel, it may broadly be divided into two:

- 1) Low anomaly: In this bowel terminates below the pelvic floor. This type includes only minor development errors and the anal sphincter mechanism is not affected.
- 2) High anomaly: Here, the bowel terminates above the pelvic floor.

LOW ANOMALY	HIGH ANOMALY
i Membraneous stenosis	i Rectal atresia
ii Covered anus	ii Anorectal agenesis
iii Stenosed anus	iii Cloaca
iv Ectopic anus	
v Anal agenesis	

Membraneous stenosis: Narrowed anal canal, covered with a thin membrane.

Covered anus: Anal opening is abnormally placed due to a covering skin layer.

Stenosed anus: Narrowed anal canal with microscopic anus having minute openings.

Ectopic anus: Normally developed anal canal with a thick skin covering the anal opening.

Rectal atresia: Normal anal canal but ends proximally below the pelvic floor

Anorectal agenesis: Anal canal not developed

Cloaca: Condition presented only in females. Here hind gut, urinary bladder and genital tract open into a common cavity.

#### Clinical features:

Non- passage of meconium is the major clinical feature present.

#### Treatment

Surgical management is indicated in all these conditions.

### SANNIRUDDHA GUDA (Anal Stricture)

This is a deformity of the anal canal characterized by narrowing of anus resulting in difficulty in defecation. The predominant dosha is vaata. Sushruta explains the features of this disease in kshudraroga adhyaaya.

वेगसन्धारणाद्वायुर्वहतो गुदमाश्रितः।  
 निरुणद्वि महत्स्रोतः सूक्ष्मद्वारं करोति च॥।  
 मार्गस्य सौक्ष्म्यात् कृच्छ्रेण पुरीषं तस्य गच्छति।  
 सन्त्रुद्धगुदं व्याधिमेनं विद्यात् सुदुस्तरम्॥ S.S.Ni. 13/55-56

Here the apaanavaayu getting vitiated at gudamarma resulted to the stricture of anal canal, clinically expressed as difficulty for the defecation.

### **Chikitsa**

It is an asaadhyा roga. After pratyakhyāya, management of niruddhaprakasa has to be adopted.

The features of sanniruddhaguda are similar to those of stricture of rectum; and dilatation by surgical means is the treatment of choice.

## **SPINA BIFIDA**

It is the congenital defect of the spinal cord involving the laminas. The common anomaly involved here is the midline defect of the vertebral bodies. Depending on the severity of defect and the protrusion of the contents of the canal it is of following types:

- 1 Spina bifida occulta
- 2 Meningocele
- 3 Meningomyelocele
- 4 Syringomyelocele
- 5 Myelocele

### **Spina bifida occulta**

It involves non fusion of the neural arches, yet there is no protrusion of the spinal cord or the meninges. The condition is mostly asymptomatic. In some cases patches of hair, lipoma, discoloration of skin, and dermal sinus in middle low back may indicate the pathology. In some others, neurological defects like foot drop, nocturnal enuresis or backache may be presented.

### **Meningocele**

In this there occurs protrusion of the meninges through the defect in neural arch fusion. The protrusion contains only the cerebrospinal fluid. It is most common in the lumbo-sacral region, may occur in skull also. Most of these are well covered by skin and are asymptomatic. Though, constipation and bladder dysfunction may be presented as late symptoms with increasing size of the lesion.

### **Meningomyelocele**

Here the spinal cord protrusion is accompanied by the meninges also. Neurological manifestations are almost always present. This may range from

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sensory disturbances in initial stages, which may later advance to extensive paralysis of the legs. Bilateral talipes and urinary incontinence are common here.

## TRACHEO-OESOPHAGEAL FISTULA AND OESOPHAGEAL ATRESIA

Tracheo-oesophageal fistula is a congenital anomaly of the oesophagus generally seen in association with oesophageal atresia. As in any other fistula, here also an abnormal communication is the basic pathology. In this condition, the communication is between the trachea and the oesophagus.

### Types

It is of four types:

1. Type I: This is the most common type. Here, while the upper segment of oesophagus ends blindly, the lower segment communicates with trachea through the tracheo-oesophageal fistula at or above the level of tracheal bifurcation.
2. Type II: Upper and lower oesophageal segments end blindly with a small portion missing in between.
3. Type III: The distal oesophageal segment ends blindly while the proximal one communicates with the tracheo-oesophageal fistula.
4. Type IV: Both the distal and proximal oesophageal segments communicate with trachea through tracheo-oesophageal fistula.

### Clinical features

- 1 Regurgitation of saliva or the feeds.
- 2 Spitting up or vomiting of the feeds.
- 3 Aspiration, choking, cyanosis and respiratory diseases are common.
- 4 Aspiration pneumonia, associated anomalies (VATER – vertebral, anorectal, trachea, esophagus, renal), gastro-oesophageal reflux, reactive airway disease, etc.

### Diagnosis

1. Obstruction met by the nasogastric catheter about 10 cm from the lips.
2. Radiographic investigations

### Treatment

Surgical correction is the treatment.

## CONGENITAL HYPERTROPHIC PYLORIC STENOSIS

A congenital anomaly of the pylorus, seen more commonly in male babies (male:female = 4:1).

### Aetiology

Factors attributed to this condition involve-

- 1 Abnormal muscle innervation
- 2 Maternal stress in 3<sup>rd</sup> trimester
- 3 Infant hypergastrinemia
- 4 Elevated serum prostaglandins
- 5 Associated with trisomy 18, Turner syndrome etc.
- 6 Ganglion cell dysfunction etc.

### Pathology

According to the most accepted pathology, the pylorus fails to relax (achalasia) and gets hypertrophied. The hypertrophy begins in the muscle of pyloric antrum and gradually increases. It becomes maximum at the pylorus terminating abruptly at the end of pylorus and leaving the duodenum intact.

### Clinical features

- 1 Non-bilious projectile vomiting of the feeds
- 2 Dehydration, metabolic alkalosis, depletion of potassium and chloride ions (though serum potassium level remains normal)
- 3 Lethargy, emaciation, loss of weight
- 4 Constipation – stool small and dry like that of rabbit

### Physical examination

Pyloric mass - firm, mobile, smooth mass in epigastrium, above and to right of the umbilicus.

Post feed visible peristalsis in upper abdomen, from left to right.

### Treatment

The treatment of choice is surgery itself (Ramstedt's operation).

## CONGENITAL TALIPES EQUINOVARUS (Paadavikriti)

**Talipes – club foot**

**Equinus**-full dorsiflexion of foot is prevented due to fixation in plantar flexion

**Varus**- foot is inverted and adducted at midtarsal joint

### **Causes**

**Congenital causes**

**Acquired causes**

Congenital causes are of more significance in paediatrics and include:

- 1 Environmental factor like intra-uterine compression
- 2 Genetic factor
- 3 Dysplasia
- 4 Drugs like Thalidomide.

### **Pathology:**

Involves four major deformities:

1. Equinus – flexion of the ankle joint
2. Varus – inversion of foot at subtalar joint
3. Adduction of forefoot
4. Medial rotation of tibia

Degrees of deformity: three degrees of deformity are involved

First degree – only adduction of forefoot

Second degree – adduction and equinus of foot

Third degree – adduction, equinus and inversion of foot

**Changes in soft tissues:** These are the primary changes involved which are later followed by bone changes. It generally involves :

- Shortening and decreased growth of the muscles and tendons –involves flexors of ankle, inverters of foot; tendo - achillis
- Shortening and contracture of ligaments and capsules – involves plantar calcaeonavicular ligament, deltoid ligament of ankle.

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- Shortening of vessels and nerves on inferior and medial aspect of foot
- Skin – Callosities appear and later shortening of skin is present

Changes in bone:

These are involved secondarily only. In general, displacement and rotation of the bones – talus, calcaneum, navicular and cuboid- takes place from their site.

### Clinical features

- 1 More common in boys (male:female = 2:1)
- 2 Generally, it is a unilateral condition
- 3 Deformity itself is diagnostic.

### Treatment

Planning of treatment is based on patient's age. Accordingly, patients can be grouped into three- a) below 5 years, b) 5 – 10 years, and c) above 10 years.

**Below 5 years:** Correction of the deformity by manipulation. This is easy in age group below 2 months and can be done without anaesthesia. Above 2 months, correction is resisted and early soft tissue operations eg. Perkin's operation, Brockman's operation etc are suggested.

**5 - 10 years:** Bone deformity becomes prominent by this time and bone operations are required, the most common being Evan's operation.

**Above 10 years:** Cuneiform tarsectomy is the conventional management.

### PHIRANGA

फिरंगसंज्ञके देशो बाहुल्येनैव यत्भवेत्  
 तस्मात् फिरंग इत्युक्तो व्याधिव्याधिविशारदैः  
 गन्धरोगः फिरगोऽयं जायते देहिनां ध्रुवं  
 फिरंगिणो अंग संसर्गात् फिरंगिण्या: प्रसंगतः B.P.59/1-2

The etymology of the disease has came from the name of geographic region phiranga desa(may be Portugal). The phiranga was mostly prevalent in that area. The term gandharoga has been used synonymously for this disease. The disease phiranga is said to be produced either contagiously or as a sexually transmitted one.

**Chikitsa**

Use of special drug like-

Rasakarpoora

Saptasaali vatika

Paaradaadi dhuma prayoga

Unique application of a topical mercury - One tanka of mercury is rubbed by the hands together with the juice of peeta pushpa balaa patra till the mercury become invisible; the hands are made warm and with such hand the body is to be fomented for 7 days.

चोपचीनीभवं चूर्णं शाणमानं समाधिकम्।  
फिरंगव्याधिनाशाय भक्षयेत् लवणं त्यजेत्॥  
लवणं यदि वा त्यक्तुं न शक्नोति यदा जनः।  
सैन्धवं स हि भुज्जीत मधुरं परमं हितं॥ B.P.59/24-25

Powder of chopachini (one saaria) mixed with honey should be consumed for the cure of phiranga, the person avoiding salt; those who cannot avoid salt at all, can use little of saindhava, since sweet taste is greatly beneficial.

### CONGENITAL SYPHILIS

In Kaumarabhritya the disease 'congenital syphilis' is the matter of importance. The congenital syphilis is neither a contagious disease nor a disease under STD. The infection is transmitted through placenta of an infected mother.

Organism- a spirochete namely *Treponema pallidum*

#### Clinical features

- Birth of a syphilitic baby is often preceded by recurrent abortions
- Eyelesions- choroiditis, retinitis.
- Permanent damages from in vitro infections
  - Hot cross buns skull and parrot's nodes- localized thickening of the frontal and parietal bones
  - Saddle nose- due to the destruction of nasal bones.
  - High arched palate and bull dog facies.
  - Hutchison's teeth- peg like incisors of permanent teeth.

- Hutchison's triad - Huthcison's teeth, Interstitial keratitis and nerve deafness.
- The early manifestations are almost similar to secondary acquired syphilis
- Syphilitic pemphigus- Dusky red papules with bullae containing serum or pus, most prominent in the palms and soles.
- Generalized skin papular lesions are also common.
- In the mucocutaneous junction there may develop condylomata. Mucous patches may be seen in nose, mouth, larynx and throat. Radiating fissures from the angle of mouth may be present known as syphilitic rhagades.
- Syphilitic snuffle - Blood stained, thick purulent nasal discharge may block the nostrils and may produce a bubbling sound during breathing.
- Old man facies - The infant may have wasted and dehydrated appearance. Baby will also fail to thrive.
- Hairs- there may be alopecia in congenital syphilis. Occasionally there may be growth of black hair called 'syphilitic wig'.
- Bony lesion may produce after 6 months as osteochondritis and syphilitic periostitis.
- Clutton's joints - Painless knee joint effusion usually at the age of 10-20 years.
- Syphilitic pseudoparalysis - The movement restriction to the baby.

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# ANUVAMSIKAVYAADHI (Hereditary Diseases)

Beejam, beejabhaagam, beejabhaagavayava  
(Introduction to hereditary disorders)

The hereditary diseases, familial diseases and genetic diseases are mentioned in Ayurveda by following terms.

- Kulaja roga - The disease running in members of a given family. Eg- Prameha
- Sahaja rogas - Diseases originating from the sukladushti or artava dushti. Eg- Kushta, Prameha
- Aadibala pravritta rogas - Synonymous with the term sahaja roga in Sushruta samhita
- Beejadoshaja rogas - All clinical conditions in a child originating after the dushti of sukla/artava, or beejabhaaga or beejabhaagavayava of the parent.

The term anuvamsika rogas are used to indicate any one of the above mentioned rogas. There is no separate mentioning of this term in the classical text books of Ayurveda. So following are the conceptual elaboration of those terms.

The concept of beeja, beejabhaaga and beejabhaagavaya is the ancient

version of hereditary and genetic principles. The following observations may have led the Acharyas to introduce this concept.

- A particular disease or disease condition is prevalent among people of several generations in a family.
- Such a disease is sometimes absent in a particular person in one generation.
- Even without any dosha to aatmakarma, kaala, aasaya and aahaara, the child is born with congenital disorders.

The basic underlying pathology is :

यस्य यस्य हृद्गवयवस्य बीजे बीजभागोपतप्तो  
भवति तस्य तस्याद्गवयवस्य विकृतिरुपजायते,  
नोपजायते चानुपतापात् । C.S.Sa.3/17

Whenever there is a defect occurring in the beejabhaaga indicating a particular organ, the organ formed will be diseased.

The word beeja implies male or female gametes; beejabhaaga indicates that part of the beeja which decides the formation of anga and pratyanga of the baby.

As a whole, acharya views the beeja as a blue print which represents the whole organism.

मनुष्यबीजं प्रत्यद्गवीजसमुदायात्मकम् ॥ Chakrapani

बीज इति शुक्रशोणिते । Chakrapani

बीजस्याद्गप्रत्यद्ग निर्वर्तको भागो बीजभागः ॥ Chakrapani

- Chakrapani makes physiological explanations of heredity by giving example of similarity of children with their parents.
- If the sampraapti of sahaja rogas like kushta have affected the twakbeejabhaaga then the progeny formed will definitely have kushta. Suppose the sampraapti is not that deep to affect the twakbeejabhaaga, then it is not mandatory that the child should have kushta
- Another condition where the parents and ancestors are not diseased. Hence there is no chance of dushti in twakbeejabhaaga of sukla and

arthava. Aatma, aasaya, aahara, etc. are perfectly healthy. The child have not adopted any of the so called nidaanas of kushta still if the baby is affected with kushta, it can only be explained by काकतालीन्यायम् (Accidental).

These phenomena have been clinically explained in Mahati garbhaavakraanti sareera by Charaka.

Pathology i.e. vitiation of doshas

Site of vitiation	Results
Garbhaasayabeejabhaaga of female gamete (शोणितम्)	Vandhya
Garbhaasayabeejabhaaga avayava of female gamete	Pootipraja
Garbhaasayabeejabhaaga avayava of female gamete + स्त्रीकरणां शरीरबीजानामेकदेशः (morphology determining beejabhaga)	Vartta
Beejabhaaga of male gamete	Purusha vandhya
Beejabhaagavayava of male gamete	Purusha Pootipraja
Beejabhaaga avayava of male gamete + पुरुषकरणां शरीरबीजभागानाम् एकदेशः	Trinaputrikam

### HEREDITARY DISEASES IN CHILDREN

These are diseases caused by a problem in either a gene or in a chromosome. Mostly they are hereditary in nature and will run in families. In one sense they are otherwise known as genetic diseases. But all the genetic diseases are not necessarily inherited from one generation to another. The genetic diseases are classified as follows:

- 1 Chromosomal disorders - There are several chances of chromosomal aberrations like deletion, change in number, translocation etc producing several diseases. Eg-Down syndrome, Edward syndrome etc.

2. Single gene disorder - These are of again several types
  - a Autosomal dominant disorders. Eg Marfan syndrome.
  - b Autosomal recessive disorders. Eg- tay sachs disease, Spinal Muscular Atrophy.
  - c X-linked dominant disorders. Eg- Rett syndrome.
  - d X-linked recessive disorders eg-haemophilia, Deuchenns Muscular Dystrophy.
  - e Y-linked disorders- male infertility.
- 3 Multifacorial (polygenic) inheritance-Autism, cleft palate.
- 4 Mitochondrial disorders-Eg- leber's hereditary optic neuropathy.
- 5 Somatic cell disorders(cancer producing)-cancers.

### DOWN'S SYNDROME

This is one of the common autosomal trisomy. The 21<sup>st</sup>/chromosome is triple in number. This is the most common cause of mental retardation.

Basic defects in the chromosome resulting in the trisomy is as follows

- Non dysjunction
- Translocation
- Mosaicism

Of these non dysjunction is seen in 95% of the patients.

#### Identifying features

##### 1 Dysmorphic features

- a Dysmorphic facial features
  - i Flat face
  - ii Uplanting palpebral fissures
  - iii Brushfield spots in iris
  - iv Flat nasal bridge with epicanthal folds
  - v Small oral opening with protruding chin
  - vi Small retroplaced chin and short ears
  - vii High arched palate with small teeth

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- viii The tongue will be furrowed known as scrotal tongue
- b other dysmorphic features
- i Microcephaly with flat occiput
  - ii Short stature
  - iii Short sternum, small genitalia
  - iv Short and broad hands and fingers. Incurved 5<sup>th</sup> finger, hypoplastic middle phalynx.
  - v Wide gap between 1<sup>st</sup> and 2<sup>nd</sup> toes
  - vi Single palmar crease known as *simian crease*

## 2. Functional and structural abnormalities

- a Hypotonia of the skeletal muscles
- b Developmental disorders with mental retardation
- c Cardiac defects like endocardial cushion defects
- d Abdominal problems like duodenal atresia, Hirschsprung disease.
- e Hypothyroidism

## 3 Common complications

- a Death due to congenital heart diseases
- b Chronic rhinitis
- c Conjunctivitis
- d Periodontal diseases

## TURNER SYNDROME

These are female babies with a karyotype of 45 X0 gonadal dysgenesis. These babies are born 1 in 2500 births. The clinical features of Turners syndrome are given below.

- There will be normal bone and dental age but growth rate will be 4 cm/yr.
- At the time of puberty there will be delayed skeletal age due to the lack of sexual hormones

- Short stature, sexual infantilism
- Facial features
  - a Micrognathia
  - b Epicanthal folds
  - c Low set ears
  - d Fish like mouth
  - e High arched palate
  - f Strabismus
- Square shield shaped chest, widely placed nipples.
- They will have wide carrying angle and short fourth metacarpal
- Mentally they will be normal
- Associated complaints
  - a Coarctation of aorta
  - b Bicuspid aortic valve
  - c Aortic root dilatation
  - d Renal anomalies
  - e Autoimmune thyroiditis
  - f Inflammatory bowel disease

### **CONGENITAL MYOPATHIES IN CHILDREN**

There are many muscular diseases in children which are inherited through generations. All those are here known as congenital myopathies. Of these following names are noteworthy and clinically more prevalent.

- 1 Duchenne/Becker muscular dystrophy
- 2 Myotonic muscular dystrophy
- 3 Facio-scapulo humeral muscular dystrophy
- 4 Limb girdle muscular dystrophy
- 5 Congenital muscular dystrophy
- 6 Mitochondrial myopathy (MELAS - Mitochondrial Encephalo myopathy, Lactic Acidosis and Stroke episodes).

### Duchenne Muscular Dystrophy

It is the most common primary myopathy of children. It is an X linked recessive disorder produced by the abnormality of the gene Xp21.

#### Clinical features

- Usually asymptomatic at birth
- Early motor milestones appear at usual time or mildly delayed
- Poor head control may be the first sign of weakness
- Hip girdle muscle weakness may be expressed in subtle form as early as 2 years
- Gowers sign will be positive by the age of 3 years and it will be fully expressed by 5-6 years
- Pseudohypertrophy of calf muscle is characteristic
- Muscular weakness then continues with preservation of distal muscles
- Trendelenburg gait(waddling gait)
- Walking will be continued up to 12 years of life
- Gradually the patient will be in wheel chair and then get bedridden
- Death occurs by the age of 18 years

#### Complications

- Contractures of the Achillis tendon
- Cardiomyopathy
- Respiratory muscle weakness
- Scoliosis and thoracic deformities
- Learning disabilities
- Congestive cardiac failure

#### Diagnosis

- CPK usually rises to 15,000
- Muscle biopsy is specific
- Specific molecular genetic diagnosis is possible
- DNA analysis from peripheral blood

#### Ayurvedic perspectives

- The disease is a type of maamsasosha determined by beeja dushti

- Agnimaandya is usually at maamsadhaatu level(Maamsadhaatwagni)
- The presence of aama visha makes the treatment dilemma
- Aamapaachana and vishahara treatments are effective
- Death is usually by the sthaayee rasadhaatu soshana
- Severe degree of swedana as well as abhyanga gives negative results
- Controlled rukshana and swedana are beneficial
- Brimhana is the treatment of choice
- Hridayasamrakshana by sadyasnehas in a vichaarana form will prevent the early death

### THALASSEMIA

Thalassemias are the group of anaemic disorders in which the RBC is with shorter life span and their walls will be thin. The basic defect is inability to produce beta chains of the hemoglobin.

Thalassemia is of two types:

- Thalassemia major- this is severe form of thalassemia associated with homozygous state.
- Thalassemia minor- this is minor form and is mild associated with heterozygous state.

#### Clinical features

- Clinical features are starting at the age of around 3 months
- Progressive pallor, growth failure and jaundice
- Enlargement of liver and spleen
- Recurrent respiratory tract infections
- Lymphadenopathy will be present
- Hypogonadism
- Physical growth retardation
- Characteristic facial appearance(thalassemic/hemolytic facies)
  - Frontal bossing
  - Prominent maxilla
  - Depressed nasal bridge
  - Malocclusion of teeth

- Increased pigmentation of the skin
- Cardiomyopathy due to chronic anaemia

#### **Diagnosis**

- Microcytic hypochromic anaemia
- Large number of normoblasts and increased number of reticulocytes
- Anisocytosis, poikilocytosis, moderate basophilic stippling, nucleated and fragmented RBC.
- Bone marrow shows erythroid hyperplasia.

#### **Ayurvedic perspective**

- The disease correctly suits to the entities of paandu and kaamala
- Paandu can be produced by the lodgment of pitta as well as kapha in rakta dhaatu
- Kapha in rakta dhaatu symptoms are more comparable to iron deficiency nutritional anemia
- This pitta kopa is well attributed to the thalassemia cases.

### **PRAMEHA (Diabetes Melitus)**

गौरवं बद्धता जाड्यमकस्मांमूत्रनिर्गमः।

प्रमेहे मक्षिकाक्रान्तं मूत्रं श्वेतं घनं तथा॥

K.S.Su. 25/22

- Heaviness, stillness, dullness of the baby.
- Sudden excretion of urine
- Liked by flies.
- White and concentrated urine.

Diabetes mellitus is classified in to two.

- Type-1: Caused by deficiency of insulin due to pancreatic -  $\alpha$  cell damage
- Type-2: Due to insulin resistance at the level of skeletal muscle, liver and adipose tissues.

Of these, type 1 is most common among childhood and adolescent.

### Facts on type -1 diabetes mellitus

- Formerly called as insulin dependant diabetes mellitus(IDDM)
- The onset usually in median age of 7-15 years
- Basic cause is autoimmune destruction of pancreatic  $\alpha$  cell in the pancreas.
- Genetic susceptibility and environmental factors also contribute to the pathogenesis.
- Viral infections & vaccinations, seasonal factors, dietary factors, some chemicals like alloxan are also responsible for the disease.
- May associate with other auto immune diseases like celiac disease, multiple sclerosis etc.

### Clinical features

Polyurea.

Polydipsia.

Polyphagia.

Weight loss and weakness.

Ketoacidosis is heralded by vomiting, dehydration, abdominal pain, deep and rapid respiration, fruity order of acetone in the breath.

Laboratory findings include glycosuria, hyperglycaemia, ketonemia, ketonuria.

Leukocytosis may present without infection.

Hypertriglyceridaemia is typical finding.

### Late symptoms

- Vomiting
- Abdominal pain
- Hyperventilation
- Shock
- Coma
- Diagnosis may be missed because of associated febrile illness.

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## PRASAVOTTARAVYAADHIS (Neonatal Disorders)

The diseases produced immediately after birth upto the neonatal period is termed as neonatal disorders. All the diseases mentioned under neonatology are coming under this group. But still following are the diseases deserving special mention.

### NAVAJAATA KAAMALA (NEONATAL JAUNDICE)

Jaundice is the yellowish discolouration of the skin and mucous membrane, due to the excessive accumulation of bilirubin in the blood. Kamala is a pittavyaadhi mentioned in both Saamaanyaaja as well as Naanaatmaja Vikaaras.

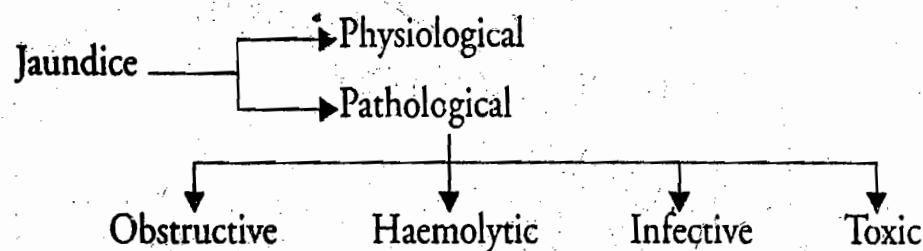
According to Ayurvedic view kaamala in children may appear in variant forms.

- Sahaja – Caused by beeja dushti(genetic) (eg. familial non haemolytic jaundice)
- Garbhaja - Due to the problems during pregnancy (eg. congenital rubella)
- Peedaja - Due to trauma during pregnancy or at the time of birth (eg. cephalohaematoma)
- Swabhaavaja – As a part of natural causes(Physiological jaundice)

- Jaataja - Kaamala may occur either secondary to paandu or in the complete absence of paandu. Paandu preceded kaamala (यः पाण्डुरोगी सेवेत.....) is indicative of a chronic pathology. The latter manifests if the pittadushti is sufficiently severe.

### Sampraapti

In children especially neonates, Kaamala is predominantly caused by excessive paaka of rakta dhaatu (तस्य पित्तम् असृक्.... दग्धा रोगाय कल्पते) producing excessive pittam again as dhaatu malam (कफपित्त मलखेषु....) and forms a vicious cycle which may result in further dhaatu involvement. According to the site of sthaanasamsraya of doshas, kaamala may be of two types viz- saakhaasrita kaamala and koshtaasrita kaamala.



### Neonatal Jaundice

Jaundice is a common manifestation among newborns with a relatively higher incidence in preterm neonates.

#### Physiological jaundice

	Full term	Pre term
Incidence	50%	70 – 75%
Time of onset	Between 30–72 hours of age	Early onset but never before 24 hours
Maximum intensity reached on	4th-5th day of life	7th day
Bilirubin level	Does not exceed 15mg/dl	May reach up to 15mg/dl
Disappears by	6th day of life	14th day

#### Pathological jaundice

Pathological jaundice can be differentiated from physiological by the following features.

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- Clinical jaundice prior to 36 hours of age.
- Clinical jaundice persisting for more than 8 days in full term or 14 days in preterm
- Total serum bilirubin more than 15 mg/dl.

#### Causes of neonatal jaundice based on age of onset

##### First day

- Rh and ABO incompatibilities.
- Intrauterine infections.
- G-6 - PD deficiency
- Drug administration to mother.
- Homozygous alpha - Thalassemia

##### Second and third day

- Physiological
- Hyperbilirubinemia of new born
- Birth asphyxia
- Cephalohematoma
- Hypoglycaemia
- Drugs
- Familial non hemolytic icterus.

##### Fourth to seventh day

- Septicaemia
- Syphilis
- Breast milk jaundice
- Extra hepatic atresia of bile duct.

##### After first week

- Septicaemia
- Neonatal hepatitis
- Drug induced hemolytic anemia

##### Persistent Jaundice during first month

- Cretinism
- Congenital hypertrophic pyloric stenosis
- Inspissated bile syndrome.

### Treatment

कामलायाज्च शस्तास्ते चूर्ण पल्लवमेव वा  
आम्रस्य पिष्ट्वा प्रत्यूषे पाययेत् केरजांभसा ARKD

It is desirable to take the churnas told earlier(vidanga, nimba pushpa, paatha, murva), or the kalkas made of tender leaves of mango tree with coconut water.

In older children the treatments proposed by ARKD is:

यथादोषं प्रकुर्वात् भूयो भूयो विरेचनं  
द्राक्षा वृश्चीव पथ्याभिसक्षौद्राभिर्यथाबलम्

According to the gravity of doshavitiation, the kaamala children may be subjected to virechana frequently with drugs like draaksha, punarnava, haritaki mixed with honey.

The rasaayana prayogas are well mentioned in kumbhakaamala by ARKD.

गोमूत्रेण पिबेत् कुंभकामलायां शिलोत्थवं  
पटोलवल्लीमूलं वा नीलिमूलमथापि वा

According to rasaayana vidhi, the silajatu can be administered along with gomutra in kumbhakaamala. The drugs can be changed to patolamoola or neeli moola for the treatment of kumbhakaamala.

### NAVAJAATA NETRAABHISHYANDA (Ophthalmia neonatorum-ON)

ON is defined as conjunctivitis developing within the first 4 weeks of life after the birth. Formerly this was one of the most prevalent causes of childhood visual disabilities. Now the situation is changed well. A large number of organisms are responsible for the ON.

1. Chlamydia trachomatis- this is the most common cause of ON.
  - a. Incubation period 5-14 days
  - b. Unilateral or bilateral
  - c. Mild erythematous to severe pseudomembranous conjunctivitis
  - d. Discharge is copious and purulent if the infection is severe
  - e. Corneal scarring is specific
2. Neisseria gonorrhoea
  - a. Infection is getting from the maternal vaginal passage

- b. Incubation period is usually 2-5 days
  - c. Conjunctivitis may present up to 3 weeks after delivery
  - d. Marked inflammatory reaction with lid and conjunctival edema
  - e. Copious, purulent greenish discharge and sometimes blood stained discharge
  - f. Infection can penetrate to cornea leading to blindness
3. Herpes simplex virus (HSV)
- a. This is a part of generalized infection
  - b. In addition to conjunctivitis corneal clouding and dendritic ulceration occur
  - c. In contrary to the general feature of HSV in adults, in children it progresses to both eyes
  - d. There may be vesicular formation on the eyelid.
4. Other organisms
- a. Streptococcus species
  - b. Staphylococcus species
  - c. Haemophilus species
  - d. E.coli
  - e. Pseudomonas aeruginosa

The treatment of ON and Ayurvedic references are well mentioned in the topic of kukunaka.

### MASTISHKAAGHAATA (Cerebral Palsy)

Cerebral palsy is a static encephalopathy resulting from various events in the prenatal life/perinatal period with or without mental subnormality, sensory deficits (like deafness, blindness etc) with/without epilepsy and other involuntary movements. The disease is otherwise known as Little's disease.

#### Aetiology

- Prenatal
  - Anoxia due to interference with placental circulation
  - Pre-eclampsia/eclampsia

- Intra uterine infections
- Congenital malformations of the brain
- Natal
  - Anoxia during birth process
  - ○ Asphyxia due to blockage of respiratory passages
  - Sedatives given to the mother
  - Cephalo pelvic disproportion
  - Breech presentation
  - Precipitate delivery
- Post natal
  - Kernicterus
  - Trauma- skull fracture, intracranial haemorrhage etc
  - Infections- meningitis, encephalitis
  - Vascular- hemorrhage, thromboembolism
  - Metabolic disturbances- hypoglycaemia

### **Pathology**

- Periventricular leukomalacia
- Diffuse cortical & scattered focal atrophy
- Cystic softening of the brain
- Hypoplasia of the midbrain or cerebellum
- Normal gross appearance with loss of cortical neuronal cells on microscopy.

### **Clinical features**

1. Spastic cerebral palsy (65%) - Quadriplegia, hemiplegia, monoplegia, diplegia
2. Extrapyramidal cerebral palsy - Choroathetosis, deafness, dystonia
3. Atonic cerebral palsy - Atonic diplegia, congenital cerebellar ataxia.
4. Mixed - Mixed presentation of spasticity, atonicity and athetosis.

### **Management**

The management of CP needs a multidisciplinary intervention by a team which includes

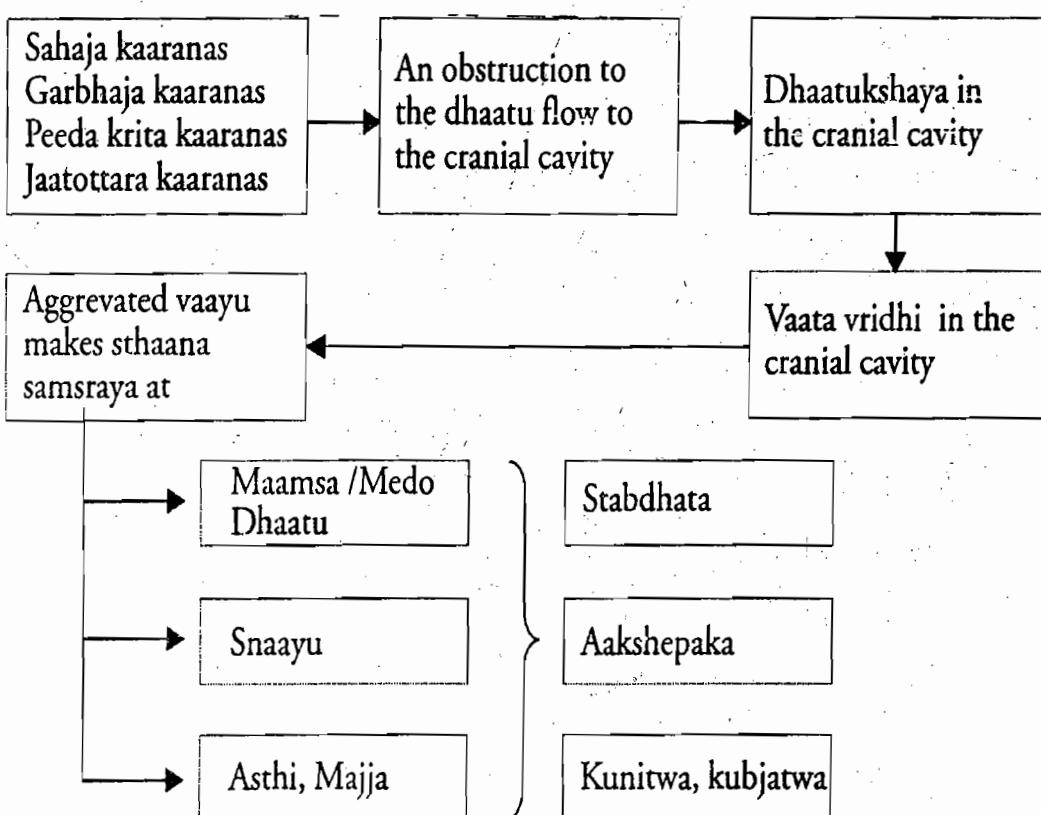
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- Ayurveda specialist
- Neurologist
- Paediatrician
- Physiotherapist
- Occupational therapist
- Educational support
- Orthopedic support
- Surgeon
- Social worker
- Developmental psychologist
- Speech therapist
- Voluntary organizations

### Ayurvedic perspectives



If the kunitwa, kubjatwa and aakshepa is happening after sthaanasamsraya of vaayu in

1. Whole of the body - sarvaanga vaata (QUADRIPLEGIA)

2. Half of the body - Pakshaaghaata (HEMIPLEGIA)
3. Two extremities - (DIPLEGIA)
4. One extremity - (MONOPLEGIA)
5. If one organ of the body (eg-Nystagmus)

### Key points

- Maamsa, medas and majja are the sites of sthaanasamsraya which are predominant in kapha doshas.
- The clinical features produced in CP will be kapha vaatika in nature
- So judicious administration of RUKSHANA and SNEHANA alternatively is needed in the management.

## MASTULUNGA KSHAYAM

मस्तुलुङ्गक्षयाद्यस्य वायुस्ताल्वस्थि नामयेत्।  
 तस्य तृडदैन्ययुक्तस्य सर्पिर्मधुरकैः श्रृतम्॥  
 पानाभ्यज्जनयोर्योज्यं शीताम्बूद्धेजनं तथा। S.S.Sa./10/42

### Clinical features

The vitiated vaata causes.

- Depression of taalwasthi (moordha?)[depression of anterior fontanelae]
- Trit
- Dainyata (general weakness)

### Chikitsa

- Use of ghrita medicated with madhura rasa drugs for paana and abhyjanana
- Use of cold water for sechana

The disease mastulunga kshaya is a least understood one in Ayurveda. Here the term mastulunga is meant for the structure brain according to acharya Dalhana.(मस्तुलुङ्गो अविलीन घृताकार मस्तकमज्जा). Here the clinical features are leading to the condition of dehydration. But clinical features are not suggesting any brain pathology as the name of disease suggests. From the name of the disease, the possible modern conditions of mastulungakshaya may be equated to the generalized cerebral atrophy or microcephaly.

## MICROCEPHALY

This is a term used for small size of the head(3 SD below average) as a result of developmental abnormalities and /or destructive process of the brain, usually during the intrauterine life or early infancy.

Following are the causes of such clinical conditions.

Defects in the brain development- hereditary microcephaly, trisomy like down's syndrome, phenylketonurea, cornella de Lange's syndrome, Rubinstein- Tabi's syndrome, Smith-Lemli-Optiz syndrome, fetal alcohol syndrome, Seckel's dwarfism, fetal ionizing radiation exposure.

Intra uterine infections - rubella, cytomegalo virus infections, toxoplasmosis, syphilis

Natal and post natal disorders - Anoxia, gross malnutrition, neonatal herpes virus infection.

Craniosynostosis - Small head secondary to premature closure of the skull sutures.

## ULBAKAM

Ulbakam is a disease which is explained only in Ashtanga Samgraha. It is also known by the names – sahajavyaadhi and – ambupurnam.

गर्भभसाऽवमनात् श्लेष्मणः कण्ठगस्य वा।

सम्पर्कद्वये दुष्टो मार्गानावृणुते रसः॥

बद्धमुष्टिस्ततो मुह्यन् रोगैबालोऽभिभूयते।

ह्रदोगाक्षेपकघासकासच्छर्दिज्वरादिभिः॥

उल्बकं सहजं व्याधिमन्बुपूर्णश्च तं वदेत्। A.S.U. 2/42

### Nidaana

1. Aspirated 'garbhaambha' being left in the respiratory tract / Ingested garbhaambha being left in the GI tract (without vomiting)
2. Mucus aspiration from Kanta.

### Sampraapti

Following the aspiration of 'garbhaambha', insufficient oxygenation of venous blood occurs which in turn leads to inefficient oxygenated blood supply from heart (सम्पर्कद्वये दुष्टो). The ultimate result of this sampraapti is

respiratory distress (kaasam and swaasam), hypoxic ischaemic encephalopathy (मुष्टिबन्धनं, मूर्छा, आक्षेपकम्, च्छाद्वि) . This aspiration also causes superadded infections of the lungs leading to kaasam, swaasam and jwaram.

Pulmonary vessels may vigorously constrict in presence of hypoxia or acidity and may keep the ductus patent.

### Treatment principle

Immediate measures for neonatal resuscitation should be initiated.

#### 1 Srotosodhanam

2 Samanam are the basic principles of treating ulbakam. Daily administration of छागमूत्रम् (goat's urine) is ideal for srotosodhanam.

**Varjya :** Abhyangam and Snaanam should be avoided.

तकर्वधोगुडिकां तपां निर्वाप्य कटुतैलके।  
तत्तैलं पानतो हन्ति बालानामुल्चमुल्बणम्। B.R.71/10

The metallic bottom of the hand weaving machine (tarku) is heated and immersed into mustard oil. This oil in small dose (1-2 gm) given to the child relieves congested throat due to ulbam.

In Ashtangasangraha a vilwaadi gritam is mentioned to treat the cases of ulbakam.

विल्वादिमूलबृहती पञ्चकोलं पलांशकम्  
धन्वमांसपलान्यष्टौ शशमूर्धः पलाष्टकम्॥  
साधयेत् षोडशगुणे सलिलेऽष्टांशशेषितम्।  
तेन क्वाथेन कर्षाशैर्घृतप्रस्थं विपाचयेत्॥  
छागलीमूत्रमदिरादधिक्षीरसमांशकम्।  
विडङ्गसैन्धवाजाजीचविकादेवदारुभिः॥  
सहिंस्त्राहिङ्गुलशुनैःसव्योषैःश्लक्षणकल्कितैः।  
तत्पानाद्धन्ति सहजगुल्महिध्मानिलामयान्॥  
पाण्डुरोगं च वातोत्थं स्वस्थवृते च पुष्टिदम्॥ (A.S.U.2/52)

One pala each of the vilwaadi panchamula, brihati and panchakola, eight pala each of meat of animals of dhanwa desa and head of rabbit-all these are boiled in 16 times their quantity of water and decoction reduced to 1/8<sup>th</sup> part. To this are added one prastha of ghee, equal parts of goat's urine, madira, dadhi and ksheera and paste of one karsha each of vidanga,

saindhava, ajaaji, chavika, devadaaru, himsra, hingu, lasuna and vyosha are added and medicated ghee prepared. By consuming daily this ghee cures ulbaka rogam(sahajam), gulma, hikka, vaatavyaadhi, paandu and it bestows nourishment to healthy children also.

Ulbakam may be equated to a condition called Foetal Aspiration Syndrome explained in modern paediatrics.

During prolonged and obstructed labour, vigorous respiratory movements are initiated in infants, in the utero since the oxygen supply through placenta is defective. In such situations, there is a chance for the infant to aspirate amniotic fluid (containing vernix caseosa, epithelial cells or meconium etc.). The blockage of the smallest airways resulting from this aspiration hinders the alveolar exchange of O<sub>2</sub> and CO<sub>2</sub>.

Other conditions in which pulmonary aspiration occur are:

- Tracheo oesophageal fistula
- Oesophageal and duodenal obstruction
- Gastro Oesophageal reflux
- Improper feeding practice
- Administration of depressant medicines.

The most common aspiration in the neonate is by meconium. The resultant clinical condition in the child is known as Meconium Aspiration Syndrome (MAS).

### MECONIUM ASPIRATION SYNDROME (MAS)

MAS is said to occur if,

- There is presence of meconium below the vocal cords
- Presence of respiratory distress in the new born
- Radiological findings suggestive of pneumonia
- No other clinical condition that can explain the respiratory distress.

#### Pathogenesis

Any of the following conditions may set up with this MAS. Mostly the common cause of MAS is fetal distress leading to meconium excretion in to the amniotic fluid. Later this meconium stained fluid will be aspirated in to the respiratory tract of the fetus.

1. If the meconium is thick enough, it will obstruct to the airflow in the respiratory tract at terminal bronchioles or at major bronchi. This will finally result in either pneumothorax or pneumomediastinum or gas exchange is affected leading to hypoxia.
2. If the meconium is thin, it will reach to terminal bronchi and alveoli, and gas exchange mechanism will be hampered and hypoxia set in finally.

### Clinical features

- History
  - i. IUGR/post term delivery
  - ii. Meconium stained amniotic fluid
  - iii. Asphyxia in newborn and resuscitation
  - iv. Time of occurrence of symptoms since delivery - 6-12 hours.
- Examination
  - i. Mild case- Tachypnoea (>60/min), rales, cyanosis
  - ii. Moderately severe case - Grunting, retractions and nasal flaring.
  - iii. Severe case-asphyxiated infant with severely depressed respiration. Profound cyanosis, pallor, irregular gasping respiration, emphysematous chest, pneumothorax/pneumo mediastinum etc.
- Complication
  - i. Virulent bacterial infections
  - ii. Persistent fetal circulation

### NEONATAL SEPTICAEMIA

Septicaemia is a serious condition of the neonate involving systemic signs and symptoms of infection along with bacteraemia in the first month of life.

#### Etiopathogenesis

1. Febrile maternal illness
2. Prolonged rupture of membranes
3. Frank amnionitis
4. Instrumentation and equipments
  - a. Resuscitator

- b. Incubator
- c. Face masks
- d. Feeding bottles
- e. Solutions for cold sterilizations
- 5. Mouth to mouth breathing
- 6. Umbilical sepsis
- 7. Medical personnel

#### Clinical features

- Temperature instability
- Lethargy, poor feeding, poor sucking
- Irritability
- Seizures
- Respiratory distress, cyanosis
- GI disturbances- diarrhoea, vomiting etc
- Jaundice hepato splenomegaly
- Petechiae
- Hypotension

## 8

## DUSHTASTANYAPAANA JANYA VYAADHI

(Disorders Due to Vitiated Milk)

### COW'S MILK ALLERGY

This is the hypersensitivity reaction produced after the ingestion of cow's milk in a baby. These babies are also allergic to several other food articles like ice cream, milk chocolate etc. which contains milk as an ingredient. The reactions are mediated by IgE. This disease is different from the lactose intolerance.

Allergy to beta lacto globulins is the chief factor of cow's milk allergy. Casein, lactalbumin, bovine serum globulin, bovine serum albumin may also be responsible for the allergic mechanisms.

#### Clinical features

- Vomiting
- Diarrhoea
- Colic
- Rash (infantile eczema or urticaria)
- Rhinitis
- Otitis media

- Chronic cough
- Poor weight gain
- GI hemorrhage

### Ayurvedic perspectives

- Here the human body is making allergy to a usual food article i.e.milk
- So the problem is of the body not of milk
- The main features produced by the cow's milk allergy are exactly same to that of ajeerna.
- Whenever the disease is at koshta or rasa dhaatu level most symptoms are GIT and respiratory in nature
- When the sampraahti gets progressed in to rakta dhaatu, it produces rashes and haemorrhages.
- Deepana, paachana and vishahara is the basis of the management. Recall the treatment of ksheeraalasaka in this context if the disease is in rasa dhaatu level.

### CHARMADALA

Charmadala is a skin disease of children characterized by exfoliative dermatitis with an inevitable connection with breastmilk of mother. The disease is well described in Kasyapasamhita while references are seen in Ashtanga Hridaya. This charmadala entity is entirely different from the charmadala mentioning in other classical texts.

### Nidaana

क्षीरपाणां कुमाराणां स्तन्यदोषेण, क्षीरान्नादानां  
 स्तन्यदोषेणाहारदोषेण च सुकुमाराणामस्थिरधातूनां  
 बालानां गर्भशास्योचितमृदुशरीराणां वस्त्राङ्काधार-  
 णोष्णानिलातपस्वेदोपनाहस्वमलमूत्रपुरीषसंस्पर्शा-  
 शौचपाणिपीडनाऽतीवोद्वर्तनकुलप्रवृत्यादिभिरुपायै । K.S. Khi 15/4

- Dushta stanyam
- Aahaaradosham
- Acclimatization difficulties of neonate (गर्भशास्योचितमृदुशरीराणां)
- Unhygienic conditions

- Iatrogenic causes (अतीबोद्धर्त्तन)
- Hereditary causes (कुलप्रवृत्ति)

### Susceptible age group

The disease is restricted to an age group of 2 years (सुकुमाराणामस्थिरधातूनां बालानाम्). Also the available descriptions limit the condition to ksheerannaada group of children.

### Site of lesion

Charmadala affects the third layer of skin named sweta. Kasyapasamhita describes the sites of lesion as :

मुखगलहस्तपादवृषणान्तर्कट्यङ्गसन्धिषु  
चोत्यद्यते ॥ K.S. Khi. 15/4

- Face (especially mouth)
- Neck
- Hand
- Feet
- Groin
- Sacral region
- Joints

In scalded skin syndrome, a unique type of distribution is seen as perioral, periorbital, flexural areas of neck, axilla, popliteal and anticubital areas and groin.

### Types

Charmadala is of 4 types: Vaatika, Paittika, Kaphaja, Sannipaatika.

### Complications

छर्दितृष्णाज्वराध्मानश्वयथुहिककाश्वास-  
स्वरभेदोपद्रवान्वितश्च प्रत्याख्येयः ॥ K.S. Khi. 15/11

If the disease is associated with the following complications it will be incurable.

- Vomiting
- Excess thirst
- Fever

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- Aadhmaana
- Swelling
- Hiccough
- Dyspnoea
- Dysphonia

### Chikitsa

#### Dhaatrichikitsa

- Sneha sweda
- Ghritapaana in vaata
- Virechana in pitta
- Vamana and sirovirechana in Kapha.
- Kashaayapaana
- Stanaalepam

#### Baalachikitsa

- Stanaalepa
- Pradeha
- Parisheka
- Abhyanga

Symptoms of erysipelas neonatorum caused by streptococcal infection have some similarities with descriptions of charmadala.

General samprapti and treatment of visarpa is practically applicable in case of charmadala.

### KSHEERAALASAKAM

It is a unique gastro intestinal tract disorder, occurring in children upto 2 years of age, characterized by vomiting, diarrhoea and fever, as a result of intake of tridosha dushtastanyam. Tridoshadushti of stanya can be either the sole reason or simply a pre disposing factor. Clinical features of vaatika, paattika and kaphaja atisaara manifests in the child as tridoshadushta stanya readily vitiates all the doshas in children.

स्तन्ये त्रिदोषमलिने दुर्गन्ध्यामं जलोपमम् ।  
विबद्धमच्छं विच्छिन्नं फेनिलं चोपवेशयते ॥

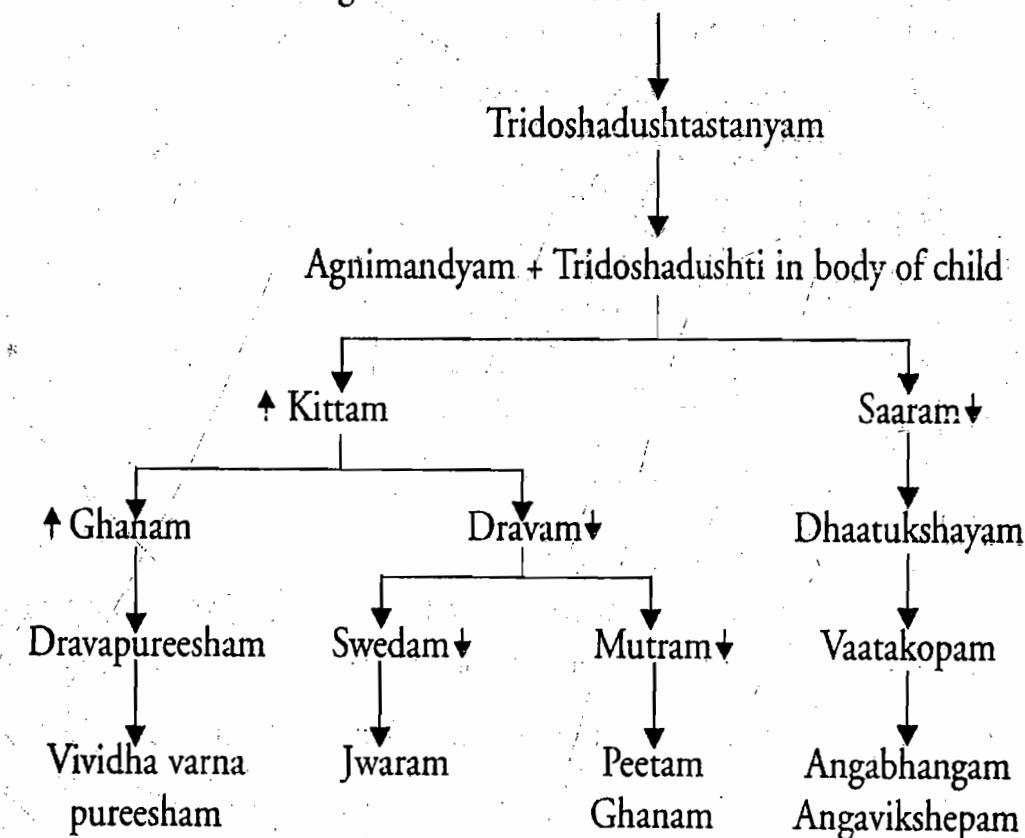
शक्त्रानाव्यथावर्ण मूत्रं पीतं सितं घनम् ।  
ज्वरारोचकतृट्छर्दिशुष्कोदगारविजृम्भिकाः ॥  
अड्गभड्गोऽड्गविक्षेपः कूजनं वेपथुर्भ्रमः ।  
घ्राणाक्षिमुखपाकाद्याः जायन्तेऽन्येऽपि तं गदम् ॥  
क्षीरालसकमित्याहरत्ययं चातिदारुणम् । A.H.U. 2/20-22

### Etiology

- Intake of tridoshadushta stanyam

#### Sampraahti of ksheeraalasakam

Aahaaravihaaras causing tridoshadushti → Dhaatri/mother



### Clinical features

#### Nature of stool

- Pichilam
- Different colours (Peeta, Asita, Haridra)
- Foul smelling
- Saamam
- Acham

- Vibandham
- Watery
- Frothy

### In the child

Group-1	Group-2	Group-3
Loss of appetite	Highly concentrated &	Ghraanapaakam
Fever	Yellowish, turbid urine	Akshipaaka
Belching	Excoriations	Angabhangha
Vomiting		Angavikshepa
Excessive thirst		Vepathu
Yawning		Bhrama
Excess cry		

Among the clinical features in child, the 1<sup>st</sup> group illustrates the symptoms which will be manifested in the first stage of the disease; second group shows features of dehydration and water and electrolyte imbalance. The third group includes secondary manifestations produced in the body as a result of deficiency of nutrients (after attaining chronicity).

The severity of the clinical presentations is influenced by

1. Quantum of stanyadushti
2. General health of baby
3. Other diseases

The above factors may vary in intensity and can end up in a stage of fatality. In acute conditions, death may result from extreme dehydration and electrolyte imbalance whereas in chronic cases from secondary infections and other diseases.

### Chikitsa

Whenever aama is produced in koshta and further sampraapti is confined to aabhyantara rogamaarga alone, ajeerna rogas are produced. In ksheeraalasaka, sampraapti up to the generation of ajeerna is same as that of alasaka mentioned in matraasiteeyam(A.H.Su). But in ksheeraalasaka,

children produce features like vomiting and diarrhoea in addition.

### Chikitsa sootram

तंत्राल्पे लंघनं पथ्यं मध्ये लंघनपाचनम्।

प्रभूते शोधनं..... A.H.Su.

### Alpamaatradosha

- Stop breast feeding
- Stanyadosha treatment to mother
- Paathaadiyoga

पाठाशुण्ठ्यमृतातिक्तिकादेवाह्वाकणशारिबाः।

समुस्तमूर्वन्द्रयवाः सन्यदोषहराः परम्॥ A.H.U. 2/25

### Madhyama dosha

- Stop breast feeding
- Give sufficient deepanapaachana drugs

### Prabhootadosha

- Vamana-to the child and to the mother
- Samsarjana
- Samana with nisaadi gana, vachaadi gana

तत्राशु धार्तीं बालं च वमनेनोपपादयेत्।

विहितायां च संसार्या वचादिं योजयेदगणम्॥

निशादिं वाऽथवा माद्रीपाठातिक्ताघनामयान्। A.H.U. 2/23-24

Clinical features of ksheeraalasaka are similar to that of persistent diarrhoea in children and the following are the reasons that can be correlated

- Infective gastro enteritis
- Lactose intolerance
- Cow milk allergy
- Carbohydrate malabsorption

### KUKUNAKA

Kukunaka is a particular type of inflammatory disease of eye seen in ksheerapas. Mostly this disease is caused during the infancy period (Kasyapa and Sushruta) or at the time of around 8 months of age (Vaghbata). Acharya Kasyapa, the pioneer in Kaumarabhritya opines this disease as ksheeradoshaja

one. According to him the whole nidaana of the disease is attributed to the nursing mother.

### Nidaana

- Intake of excessive abhishyandi food every time by nursing mother (matsyam, maamsa, dadhi etc.)
- Oversleeping by nursing mother especially after taking food at day time.
- As a secondary complication to the dantotpatti according to Vaghbata

कुकूणकश्शारेवदन्तोत्पत्तिनिमित्तजः।

यदा माता कुमारस्य मधुराणि निषेवते।

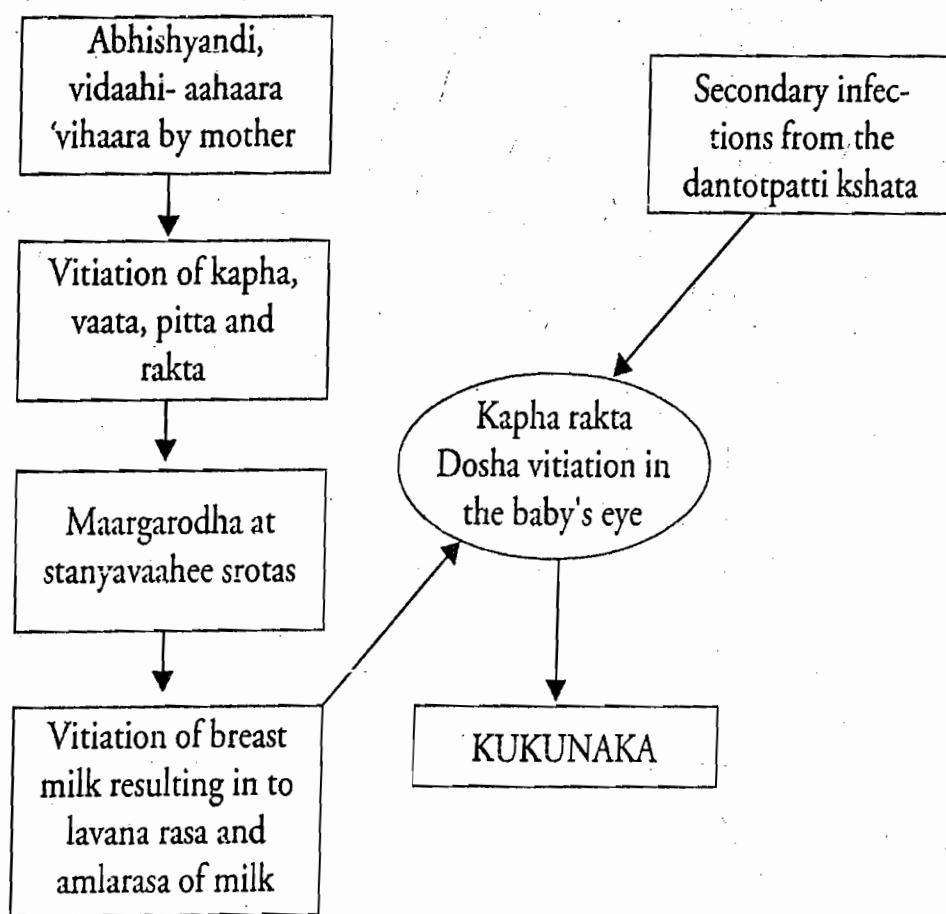
मत्स्यं मांसं प्यः शाकं नवनीतं तथा दधि॥

सुरासवं पिष्टमयं तिलपिष्टाम्लकाज्जिकम्।

अभिष्यन्दीनि सर्वाणि काले काले निषेवते॥

भुक्त्वा भुक्त्वा दिवा शेते विसंजा च विबुद्धते। K.S.Khi.13/3-4

### Sampraapti of Kukunaka



### Clinical features

स्यात्तेन शिशुरुच्छूनताम्राक्षो वीक्षणाऽक्षमः ॥  
सवर्त्मशूलपैच्छिल्यकर्णनासाक्षिमर्दनः । A.H.U.8/19-20

अभीक्षणमसं स्रवते न च क्षीवति दुर्मनाः ।  
नासिकां परिमृदगाति कर्ण वाञ्छति दुःखितः ॥  
ललाटमक्षिकूटं च नासां च परिमर्दति ।  
नेत्रे कण्डूयते अभीक्षणं पाणिनां चाप्यतीव तु ॥  
सप्रकाशं न सहते अश्रु चास्य प्रवर्तते ।  
वर्त्मनि श्वयथुश्चास्य जानीयात् कुकूणकम् ॥ K.S.Khi.13/9-11

- Congested and inflamed eyes
- Difficulty in vision
- Pricking pain in lids
- Pus
- Beats(always touches) on ears, fore head and nose.
- Bloody and watery discharges from the affected eye
- Itching at the neck and eyes
- Photophobia

### Treatment\*

As the disease is caused by the vitiation of breast milk, primary treatment should be directed to mother. After that the affected child should be subjected to the treatment to alleviate his doshadushti.

### Treatment for mother

कुकूणे खदिरश्रेष्ठानिम्बपत्र शृतं घृतं ।  
पीत्वा धात्री वमेत्कृष्णा यष्टीसर्षपसैन्धवै । A.H.U. 9/24

1. Snehapaanam- it should be done with khadiraadi ghritam mentioned above.

\* अभंयापिण्यलीद्राक्षाक्वायेनां विरेचयेत् ॥  
मुस्ताद्विरजनीकृष्णाकल्केनालेपयेत्स्तनौ ।  
धूपयेत् सर्षपैस्साङ्ग्ये शुद्धां क्वायं च पाययेत् ॥  
पटोलमुस्तमृद्धीकागुड्चीत्रिफलोद्भवम् । A.H.U. 9/25-26

शिशोस्तु लिहितं वर्त्म सुतासुग्वांबुजन्मभिः ।  
धात्र्यशमन्तकजम्बूथपत्रक्वायेन सेचयेत् ॥ A.H.U 9/27

2. **Vamanam** - Vamana preceded by proper swedakarma should be done. For that the compound formed by pippali, yashtimadhu, sarshapa along with saindhava can be used
3. **Virechanam** - A kwaatha made by abhaya, pippali, draaksha can be used for this purpose. This should be done after a snehana and swedana.

अभयापिप्पलीद्राक्षाक्वाथेनेनां विरेचयेत् ॥ A.H.U. 9/25

4. **Stana nirdohanam** - After the completion of vamana and virechana the remnant milk vitiated by the doshas has to be expressed out till the new and pure milk has set in. This treatment is prescribed by achaarya Kasyapa.
5. **Dhoopanam and lepana on stana** - Local doshas at stana can be managed by applying proper lepana and dhupana (sarshapa with ghrita)karma. For lepana purpose kalka of drugs like musta, rajanee dwayam and pippali can be used.

मुस्ता द्विरजनीकृष्ण कल्केनालेपयेत्स्तनौ

धूपयेत् सर्षपैः साज्यैः A.H.U. 9/26

6. **Kashaayapaanam** - For further prevention of dosha vitiation continuous administration of kashaayas are advised. This can be made with patola, musta, mridweeka, guduchi and triphala.

.....शुद्धां क्वाथम् च पाययेत्

पटोलमुस्ता मृद्वीकागुडूचीत्रिफलोत्भवम् । A.H.U. 9/26

### Treatment for infant

The aim of the treatment of the kid is

- Break the sampraapti of the diseases from the koshtha
- Alleviate the doshas which made sthaana samsraya at the eyes

### General body treatment

- **Vamanam**- With Vara churna and honey or Madana + madhukachurna with honey. After the procedure of vamana the child should be subjected for samsarjana krama with ksheera or ksheerapaakita anna.
- **Virechanam** - This treatment has to be the last choice if the vamana karma seems to be inefficient to cure the problem.

- Ubhayatosodhanam - The ghrita made by saptala rasa can be used for this karma (सप्तलारससिद्धान्यम्).

बमनं सर्वरोगेषु विशेषेण कुकूणके A.H.U.9/30

Almost all diseases of infants are kapha predominant, so varmana is the apt treatment especially so in kukunaka.

### Local treatment at eyes

- Lekhanam
- Jalaukaavacharanam
- Parishekam –drugs which possess the properties of vrana sophahara, vrana sodhana and vrana ropana properties can be used here.
- Samanoushadhas –
  - Varti - Varti made of taamraraja, haridra(2 types) lodhra, yashti, katurohini and nimbapallava is administered.
  - Parisheka - Kwaatha made by the leaves of dhaatri, asmantaka, jambu
  - Lepa - The kalka made by tekaraaja, neeli, surasa, gaurasarshapa, haridra can be used.
  - Anjana - Churnaanjana made of loharaja and ksheera, kshoudra and ghrita may be applied.
  - Aaschytana - Kapitha, vilwa, khadira processed with goat milk can be used
- Other symptomatic management
  - If pain and stabdhata - Pippalyaadi varti (K.S.Khi.)
  - If associated abhishyanda, pilla and upalepa - Haridraadi yoga (K.S.Khi.)

### Inflammatory and infectious eye disorders of neonates

The references of the kukunaka in the texts are self explanatory. All clinical features mentioned in the samhitas are indicative of some inflammatory or infectious diseases of the eyelid or conjunctiva of the child. So a few anatomical peculiarities of the new born should be kept in mind:

- Absence of tears for 3 weeks to one month after birth
- Conjunctival and corneal epithelium is very thin. Cornea contain only three layers.

- No adenoid layer in the conjunctiva.

Infectious and inflammatory conditions are enlisted below. All these show similar clinical picture of kukunaka.

1. Ophthalmia neonatorum-it is a bilateral purulent conjunctivitis occurring in the new born within first three weeks of life. Gonococcus, pneumococcus, staphylococcus bacteria are the chief organisms. A genital virus present in the mother's birth passage is also responsible. Clinical features are
  - Redness, swelling of conjunctiva, edema of the lids and discharge which may be purulent.
2. Congenital Nasolacrimal Duct Obstruction [CNLDO] (Dacryostenosis)- It is the most common disorder of the lacrimal system. The condition is manifested as continuous spilling of tear over the cheeks. There may be mucoid or mucopurulent discharge, crusting of the eyelids, erythema and maceration or excoriation of the cheek. The condition may be complicated with secondary conjunctivitis and lacrimal duct infection.
3. Neonatal conjunctivitis - The inflammation of the conjunctiva is a most common eye problem in infants. The common conjunctivitis which mimic the symptoms of kukunaka are mentioned below.
  - Acute purulent conjunctivitis
  - Viral conjunctivitis
  - Allergic conjunctivitis

### AHIPOOTANAA\*

शकृन्मूत्रसमायुक्तेऽधौतेऽपाने शिशोर्भवेत्।  
 स्विन्नस्यास्नाय्यमानस्य कण्डू रक्तकण्ठोद्भवा ॥  
 कण्डूयनात्ततः क्षिप्रं स्फोटाः स्रावश्च जायते।  
 एकीभूतं ब्रणैर्घोरं तं विद्यादहिपूतनम् ॥      S.S.Ni. 13/57-58

### Nidaana

#### Unhygienic conditions

- Absence of proper cleaning after defecation and urination

\* तृष्णामोहञ्चरक्तेद दाहुष्ट्यवदारणैः।

ब्रणं पित्तकृतं विद्यात् गच्छोः स्रावेश्च पूतिकैः॥

C.S.Chi. 25/13

बहुपिच्छो गुरुः स्निधाः स्तिमितो मन्दवेदनः।

पाण्डुवर्णोऽल्पसंक्लेदश्चिरकारी कफव्रणः॥

C.S.Chi. 25/15

- Negligence of bath after oversweating

### Clinical features

Dooshya: kapha and rakta

Itching occurs initially leading to many oozing blisters. Later they join to form a big vrana.

### Chikitsa

Management of stanyadushti of mother is advised by use of ghrita medicated with patolapatra, triphala and rasaanjanam.

**धात्र्याः स्तन्यं शोधयित्वा बाले साध्याऽहिपूतना। S.S.Chi. 20/57**

The features are similar to those of 'diaper rash'.

Diaper rash or nappy rash (also known as Generic rash or irritant diaper dermatitis -IDD ) is a generic term applied to skin rashes in the diaper area that are caused by various skin disorders and/or irritants.

### Clinical features

Generic rash or irritant diaper dermatitis (IDD) is characterized by joined patches of erythema and scaling mainly seen on the convex surfaces, with the skin folds spared (may get involved in secondary infections).

### Causes

Diaper rash develops when the skin is exposed to :

- Prolonged wetness,
- decreased skin pH caused by urine and feces,

This results in breakdown of the stratum corneum ( outermost layer of the skin) which is much more thinner and easily disrupted in infants than in adults.

### Secondary Infections

These are mainly bacterial or fungal Staphylococcus aureus and Candida albicans being the most common ones.

### Prevention

- Proper airing out of the skin
- Thorough drying of skin before diapering
- Use of moisture absorbing powders and oil based barrier creams.

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## 9

# KUPOSHANA JANYA VYAADHI (Nutritional Disorders)

### PHAKKA

Phakka is a unique disease of children mentioned only in Kasyapasamhita.

बालः संवत्सरा (पन्नः) पादाभ्यां यो न गच्छति।

स फक्क इति विज्ञेयः      K.S.Chi. 17/3

Phakka has been defined as inability of a child to walk even by the age of one year. Thus, the term phakka represents a broad concept. It can be defined better only by a thorough consideration of the associated clinical features.

#### Classification

Phakka has been classified into three

1. Ksheerajam.
2. Garbhajam.
3. Vyaadhijam.

#### Ksheeraja phakka

धात्री श्लैष्मिकदुग्धा तु फक्कदुर्धीतिसंजिता।

तत्क्षीरपो बहुव्याधिः कार्श्यात् फक्कत्वमाप्नुयात्॥      K.S.Chi. 17/4

Breast milk vitiated by kapha dosha is known as phakkadugdha. The

kaphadushta stanya has its implications in the child consuming this milk. He suffers from numerous diseases resulting in emaciation and finally attains the state of phakka.

### Garbhaja phakka

गर्भणीमातृकः क्षिप्रं स्तन्यस्य विनिवर्तनात् ।

क्षीयते मियते वाऽपि स फक्को गर्भणीडितः ॥ K.S.Chi. 17/11

When a nursing mother conceives, early cessation of breast milk results. Thereby the breast fed child gets emaciated and even dies. This condition is called garbhaja phakka.

The root cause of the disease is nutritional deprivation-resulting from lack of knowledge of spacing between children. Lack of effective contraceptive methods along with poor socio economic status of the country contributes to the higher incidence of malnutrition. Immediate conception of a lactating mother either causes lactational failure or deficiency in lactation.

### Pre disposing factors

1. Ignorance of alternatives for breast milk
2. Negligence of child
3. Poverty
4. क्षिप्रं स्तन्यस्य विनिवर्तनात् - means that
  - Early weaning
  - Insufficient weaning foods
  - Immaturity of GIT and further metabolism

These etiological factors contribute in the manifestation of two diseases,viz,

1. Parigarbhikam
2. Phakka

Both are different stages of malnutrition. In the initial stage of parigarbhika, the physical activity is not hampered. Phakka can be considered as a later stage in which the physical activities are hampered; finally leading to death.

### Vyaadhija phakka

If proper care and treatment is not provided to an immuno compromised child, suffering from different diseases, the resulting condition is termed

vyaadhija phakka. It includes a severe grade of protein energy malnutritional symptoms such as lack of sufficient growth and development particularly walking ability even at the age of 1 year. The key observation made by acharyas in this context was the facts of relation between recurrent infection and retardation in growth and development. The clinical manifestations of vyaadhija phakka include features of protein energy malnutrition as well as that of co-existing diseases.

निजैरागन्तुभिश्चैव..... ज्वरादिभिः।  
 अनाथः क्लिश्यते बालः क्षीणमांसबलद्युतिः ॥  
 संशुष्कस्फिक्बाहूरूर्महोदरशिरोमुखः।  
 पीताक्षो हृषिताङ्गश्च दृश्यमानास्थिपञ्जरः ॥  
 प्रम्लानाधरकायश्च नित्यमूत्रपरीषकृत्।  
 निश्चेष्टाधरकायो वा पाणिजानुगमोऽपि वा ॥  
 दौर्बल्यान्मन्दचेष्टश्च मन्दत्वात् परिभूतकः।  
 मक्षिकाकृमिकीटानां गम्यश्चासनमृत्युरुक् ॥  
 विशीर्णहृष्टरोमा च स्तब्धरोमा महानखः।  
 दुर्गन्धी मलिनः क्रोधी फक्कः क्षसिति ताम्यति ॥  
 अतिविष्मूत्रदूषिकाशिङ्घाणकमलोद्भवः।  
 इत्येतैः कारणैर्विद्याद्व्याधिजां फक्कतां शिशोः ॥ K.S.Chi. 17/12-17

Upon examining the lakshanas of phakka, it can be inferred that reason for delayed growth and development is nothing other than nutritional deprivation and other diseases. The condition if uncontrolled finally leads to a severe degree of PEM.

The two similar conditions have been explained by the Acharyas and they are caused by nutritional deficiency secondary to-

1. Successive pregnancy (Parigarbhikam).
2. Kapha dushti of stanya (Kumaara sosham)

The child suffering from different endogenous and exogenous diseases if not given proper treatment, may present with the following features:

#### Features\*

- The social factors- अनाथः - Illiteracy, illegitimate child
- The muscles and general built- संशुष्कस्फिक्बाहूरूर्महोदरशिरोमुखः ।, क्षीणमांस =gross

\* The modern interpretations for the lakshanas mentioned above are meant for comparison with the symptoms of PEM described in modern paediatrics as can be seen in the following pages.

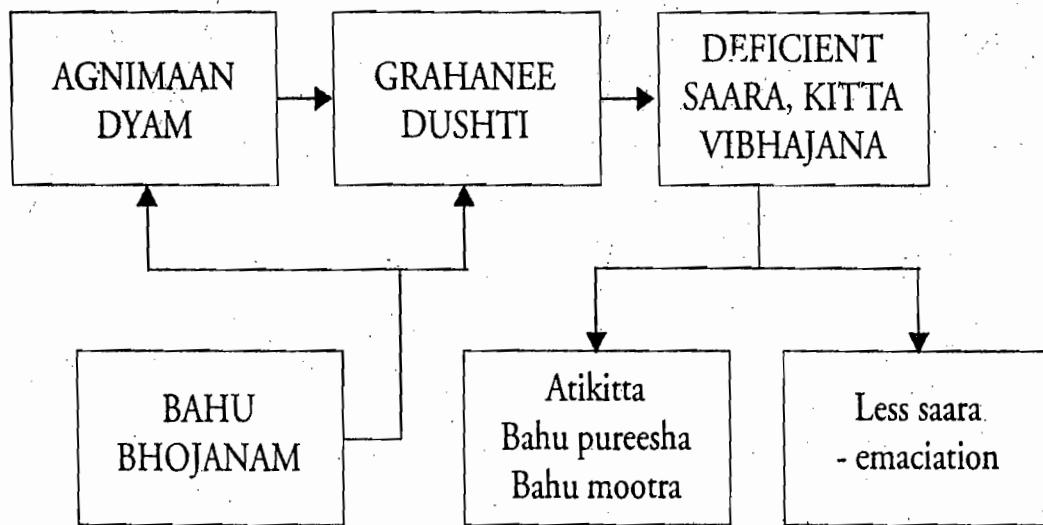
wasting of the muscles, complete loss of subcutaneous fat, shrunken buttocks and limbs, face prematurely aged look, hollow cheeks and temples.

- क्षीणमांस, निश्चेष्टाधरकायो वा पाणिजानुगमोऽपि वा, दौर्बल्यान्मन्दचेष्टश्च = poor muscle tone, motor retardation, delay in sitting and standing, walking etc.
- महोदर = abdomen either distended or more frequently scaphoid with visible peristalsis.
- Skin, hair & nail changes-हृषिताङ्ग, विशीर्णहृष्टरोमा, स्तब्धरोमा, महानखः skin is dry loose wrinkled, loss of elasticity, patchy hypopigmentation. Hair may be sparse, dry and lighter than normal. Hypothermia will be present.
- क्रोधी = in the earliest stage the child may be lively and playful but later becomes irritable, fretful and cries loudly.
- GIT changes.= अतिविष्मूत्रदूषिकाशिङ्घाणकमलोद्भवः,, नित्यमूत्रपरीषकृत्।

प्रदुष्ट ग्रहणीकाशच प्रायशो बहुभोजिनः

फक्क भवन्ती तस्माच्च भुक्तं तेषां अपार्थकं

मन्दान्तिवाद्रवो (सो) त्सर्गो बहुमूत्रपुरीषिणः K.S.CHI..17/19-20



- Features of complications - श्वसिति ताप्यति,, मधिकाकृमिकीटानां गम्यश्चासन्नमृत्युरुक्, अतिविष्मूत्रदूषिकाशिङ्घाणकमलोद्भवः।

Moniliasis, cancrum oris, bronchopneumonia, other secondary infections and infestations, hypoglycemia, electrolyte imbalances, diarrhoea.

### Treatment of Phakka

References for the treatment of phakka are available in the 'Phakkachikitsitam' adhyaaya of Kasyapasamhitam.

वस्तयः स्नेहपानानि स्वेदाश्चोद्रुत्तनानि च।  
वातरोगेषु बालानां संसृष्टेषु विशेषतः॥ K.S.Chi. 17/41

..... कारयेत् क्रियां।।  
कल्याणकं पिबेत् फक्कः षट्पलं वा यथाऽमृतं।  
सप्तरात्रात् परं चैनं त्रिवृत्कीरणं शोधयेत्।।  
शुद्रकोष्ठस्ततः फक्कः K. S. Chi.17/22

The whole treatment can be broadly classified into sodhana and samana

### SODHANAM

1. Snehanam with Kalyaanakaghrtam, Shatpalaghrtam, Amrutaghrtam for 7 days
2. Swedanam
3. Virechanam with trivrutksheeram
4. Vasti

### SAMANAM

#### Aabhyantaram

1. Deepanam – with ghritam medicated with raasna, madhuka etc.
2. Paachanam
3. Srotosodhanam - Udwartanam  
Milk mixed with gomutram for paanam
4. Brmhanam- Maamsarasa and ksheera medicated with raasna, madhuka etc.

#### Baahyam

- Abhyangam with Raajatailam
- Other treatment : Physiotherapy for disabilities.
- Using phakkaratham, the child is trained to walk properly.

त्रिचक्रं फक्करथकं प्राशः शिल्पिकनिर्मितं  
विद्यात्तेनशनकैर्गृहीतो गतिमभ्यरोत्॥ (K.S.Chi. 17/40)

## PROTEIN ENERGY MALNUTRITION (PEM)

PEM is the term applied to a class of clinical conditions consisting of classifiable and non classifiable manifestations of protein lack and energy inadequacy. 25% of paediatric beds in India are occupied by children with major problems of malnutrition.

### **Classification**

There are different types of classification for the PEM. Some of them are given below for better understandings.

- **Clinical classification**

1. Kwashiorkor - Results from gross deficiency of proteins with associated energy inadequacy.
2. Marasmus - Results from the gross deficiency of energy, though protein deficiency also accompanies.
3. Marasmic kwashiorkor - Overlap of clinical picture of kwashiorkor and marasmus.
4. Pre kwashiorkor
5. Nutritional dwarf.

- **IAP classification (Indian Academy of Paediatrics)**

Grade – I	70-80 % of expected weight
Grade-II	60-70 % of expected weight
Grade-III	50-60 % of expected weight
Grade-IV	<50% of expected weight.

- **Classification based on subcutaneous fat (Udani's classification)**

Grade -1	loss of fat from axilla
Grade-2	loss of fat from abdominal wall and gluteal region
Grade-3	loss of fat from chest and neck
Grade-4	loss of buccal pad of fat.

## CLINICAL FEATURES

### Marasmus

- Age- usually in children less than 3 years, peak incidence in first year of life
- General features
  1. Gross wasting of muscle, hypotonia
  2. Prominent bones uncovered by fat and muscles
  3. Large head, staring eyes, shrunken buttocks and limbs
  4. Premature baby look, hollow cheeks and temples- monkey facies
  5. Distended abdomen with visible peristalsis.
  6. Hypothermia
  7. Classically edema will be absent.
- Skin and hair changes- dry, loose and wrinkled skin with loss of elasticity, patchy hypopigmentation. Scaling and purpura may be seen in final stage. Hair will be sparse, dry and lighter than normal.
- Psychological changes- at first child may be lively and playful but later become irritable, fretful. Child will be always crying due to hunger and later child will become apathetic as infections come in to picture. Child will later become inactive and refuses everything.
- Growth failure
  1. Motor retardation in sitting and standing
  2. Marked difference in weight and to a lesser extent in height also.
- Gastro intestinal system
  1. In early stage there will be constipation. Later recurrent diarrhoea.
  2. Due to the condition of skin features of dehydration is difficult to elicit.
  3. Hepatomegaly is uncommon.
  4. Vitamin and mineral deficiency features.
- Features of complication - Moniliasis, cancrum oris, broncho pneumonia, hypothermia, hypoglycaemia, electrolyte imbalance.

### Kwashiorkor

- Age- common in older infants and preschool children.
- General features
  - Edema - Unique feature in kwashiorkor, pitting in nature, seen initially in dependant areas.
  - Muscle wasting - Wasting present with some retention of subcutaneous fat. Hypotonia will be present with diminished or absent deep tendon reflexes.
  - Facies - Moon face or baggy face of trawel- due to over hydration of buccal tissues.
- Skin changes - Seen in up to 60% of florid cases. Cracked dry and scaly skin assuming mosaic pattern. Hypopigmentation either diffuse or patchy with areas of hyper pigmentation.
  - Dermatoses - Areas of hyperpigmentation, mainly over pressure points and flexors of extremities, exfoliate and desquamate to reveal pale underlying areas. These lesions are similar to peeling of paint, hence called 'flaky point dermatosis' 'reticular dermatosis', 'enamel paint dermatosis', 'crazy pavement dermatosis'. Raw moist ulcerating areas of the skin at flexors, groin and buttocks may be seen. Wrinkled moist and pale skin of one or more fingers due to prolonged sucking, angular stomatitis.
  - Petechiae and ecchymosis
  - Pyoderma and scabies
  - Rarely gangrenous dermatitis.
- Hair changes
  - Light coloured, with change in texture
  - Painless easy pluckability and hence sparseness.
  - Alternate bands of light and dark colour known as flag sign.
- Psycho motor changes
  - Listless apathy, misery and easy irritability is a constant feature.
  - Anorexia to an extent requires nasogastric feeding.

- May lead to permanent physical and mental retardation.
- Growth failure
  - Underweight in spite of edema.
  - May be due to damage of anterior pituitary there will be permanent growth failure.
  - Normochromic normocytic anemia is seen.
- G.I.features
  - Moderate hepatomegaly
  - Diarrhoea (watery, offensive) because of super added infections, lactose intolerance or enteropathy resulting from iron deficiency.
- Cardiovascular-cyanosis, hypotension, feeble pulse, tachycardia, CCF due to severe anemia, myopathy, electrolyte imbalance
- Features of complication.- vitamin and mineral deficiencies. Superadded infections and infestations. Congestive cardiac failure(CCF)

### KUMAARASOSHAM

Reduced growth and development in children as a result of general dhaatukshaya can be attributed to different reasons. This dhaatukshaya manifests in all the three rogaamaargas, praanavahasrotas being the seat of most of the symptoms. The clinical condition that arises is termed Raajayaksma. In Kaumarabhritya, it is known by the term kumaarasosha.

#### Nidaana

अत्यहःस्वप्नशीतांबुरलैषिकस्तन्यसोविनः । A.H.U. 2/44

- Excessive day sleep
- Drinking cold water
- Intake of kaphadushta stanyam.

Kumaarasosha may express in two clinical forms.

1. In breast fed babies (Ksheeraada and ksheeraannaada).
2. After stoppage of breast feeding (Annaada).

In the former, the kumaara sosha nidaanas explained in Ashtangahridaya can be considered and in the latter, Charaka's descriptions of sosha is applicable.

### **Sampraapti**

शिशोः कफेन रुद्धेषु स्रोतसु रसवाहिषु ॥ A.H.U. 2/45

The rasavaha srotas is being blocked by kapha. This prevents further dhaatuposhanam. In the second group of children, (Taking food other than breast milk), tridoshas gets vitiated by vishamaasana, avoiding rules regarding feeding, saahasam and oja sneha kshayam. These doshas obstruct the channels especially the rasavaahisrotas resulting in dhaatuukshayam which will be clinically expressed as sosh.

### **Lakshanas**

अरोचकः प्रतिश्यायो ज्वरः कासश्च जायते ।  
कुमारः शुष्प्रति ततः स्निग्धशुक्लमुखेक्षणः ॥ A.H.U. 2/45

- Anorexia
- Rhinitis
- Fever
- Cough
- Failure to thrive

### **Chikitsa**

The treatment modality of kumaarasosha is mainly based on :

1. Deepana paachana
  2. Srotosodhanam
  3. Brimhanam
  4. Symptomatic management
1. Deepana paachana

Use of ushna and teekshna drugs are advised for deepana and paachana.

अशोकरोहिणीयुक्तं पञ्चकोलं च चूर्णितम् ॥ A.H.U. 2/47

### **2. Symptomatic treatment**

सैन्धवाव्योषशाङ्गोष्टापाठगिरिकदंबकान् ।  
शुष्प्रतो मधुसर्पिभ्यामरुच्यादिषु योजयेत् ॥ A.H.U. 2/46

The choorna of saindhava, triphala, shaarngeshta, paata, giri kadamba is to

be taken mixed with honey and ghee to cure symptoms like aruchi etc.

- Athivishadi lehanam

मधुनाऽतिविषाशृङ्गी पिप्पली लेहयेच्छिशुम्।  
एकां वातिविषां कासज्वरच्छिद्रुपद्रुतम्॥ A.H.U.

If associated features like cough, fever and vomiting are presented with kumaarasosha, the baby can be administered as lehana with ativisha, shunti and pippali powdered and mixed with honey. Ativisha alone can also be used as lehana with honey.

### 3. Brimhanam and sroto sodhanam

Two ways	Baahya
	Aabhyantara

#### Baahya

1. Use of laakshaadi tailam for abhyanga

लाक्षारससमं तैलप्रस्थं मस्तुचतुर्गुणम्।  
अश्वगन्धानिशादारुकौतीकृष्टाब्दचन्दनैः॥  
  
समूर्वारोहिणीरास्नाशताह्वामधुकैः समैः।  
सिद्धं लाक्षादिकं नाम तैलमध्यज्ञनादिदम्॥  
  
बल्यं ज्वरक्षयोन्मादश्वासापस्मारवातनुत्।  
यक्षराक्षसभूतघं गर्भिणीनां च शस्यते॥ A.H.U. 2/54-56

Medicated oil prepared with one prastha of taila, equal quantity of solution of laaksa, four times that quantity of mastu, equal quantity of decoction of equal parts of asvagandha, nisa, daaru, kaanti, kushta, abda, chandana, murva, rohini, raasna, sataahva and madhuka is known as laakshaadi taila. When used for massage and bath, it bestows strength, cures fever, consumption, insanity dyspnoea, epilepsy and mitigates vaata and wards off yaksha, raakshasa and bhutas. It is good even for pregnant women.

#### Aabhyantara

Formulations like Sringyaadi ghritam and Yashtyaahwa ghritam have been indicated which have brimhana property. Other formulations explained in Ashtangahridayam like Sthiraadi ghritam and Brahmyaadi ghritam serves the purpose of both brimhana and srotosodhana.

**Yashtyaadi ghrитam**

यष्ट्याह्वपिप्पलीलोध्रपद्मकोत्पलचन्दनैः।  
तालीससारिवाभ्यां च साधितं शोषजित्घृतम्॥ A.H.U. 2/50

Medicated ghee prepared with yastyaahva, pippali, lodhra, padmaka, utpala, chandana, taalisa and saariva cures emaciation.

**Sthiraadi ghrитam**

स्थिरावचाद्विबृहतीकाकोली पिप्पलीनतैः।  
निचुलोत्पलवर्षाभूभाङ्गमुस्तैश्च कार्षिकैः॥  
सिद्धं प्रस्थार्धमाज्यस्य स्रोतसां शोधनं परम्। A.H.U.2/48-49

Medicated ghee prepared with one karsha each of sthira, vacha, the two brihati, kaakoli, pippali, nata, nichula, utpala, varshaabhu, bharngi and musta (made into decoction) with half prastha of ghee is best to clear the channels.

In this clinical condition the baby is not getting sufficient body mass or weight due to the lack of nutrition and allied disorders. This coincides with the term FAILURE TO THRIVE in modern paediatrics.

**FAILURE TO THRIVE (FTT)**

FTT is a condition resulting from caloric insufficiency without any obvious aetiology resulting in failure to grow and gain weight.

**Causes of FTT****1 Functional/non organic/environmental/ psychosocial causes**

- Unwanted child, illegitimacy, female child, mentally subnormal child, too many children, emotional deprivation
- Poor mother child interaction, psychologically disturbed mother, working mother, child abuse
- Poor feeding techniques, false belief on nutrition
- Absent father, illiteracy, poverty, economic and social deprivation, psychic anorexia.

## 2 Organic causes

### 2.1 Inadequate food intake

- Secondary to chronic illness
- Inability to suck, swallow or masticate eg-cleft lip/palate
- Vitamin deficiencies
- Diabetes insipidus
- Cardio respiratory difficulties

### 2.2 Failure to assimilate

- Vomiting
- Regurgitation
- Milk allergy
- Intestinal parasites
- Maldigestion, malabsorption
- Portal hypertension

### 2.3 Failure to utilize

- Renal insufficiency
- Renal tubular acidosis
- Hypercalcaemia
- Hepatic insufficiency
- Diabetes mellitus
- Storage disorders

### 2.4 Reduced growth potential

- Chromosomal disorders
- Pituitary dysfunction
- Gonadal dysgenesis
- Skeletal dysplasia

### 2.5 Elevated metabolic rate

- Chronic infections like tuberculosis
- Malignancies
- Chronic inflammatory diseases

- Hyperthyroidism
- Immunodeficiency
- Cerebral palsy.

### PAARIGARBHIKAM

मातुः कुमारो गर्भिण्याः स्तन्यं प्रायोऽपि बन्धि।  
 कासाग्निसादवमथुतन्द्राकाशयां रुचिर्भैः॥  
 युज्यते कोष्ठवृद्ध्या च तमाहुर्पारिगर्भिकम्। A.Sa. U. 2/63-64

A baby feeding on a pregnant mother's milk will catch the disease paarigarbhikam.

Symptoms :	Kaasam	Cough
	Agnisaadam	Loss of appetite
	Vamathu	Vomiting
	Tandra	Lassitude
	Kaarsyam	Emaciation
	Aruchi	Anorexia
	Bhramam	Vertigo
	Koshtavridhi	Abdominal Distension

### Treatment

रोगं परिभवाख्यं च युज्यात्त्राग्निर्दीपनम्। A.Sa. U. 2/64

Agnideepana chikitsa is ideal.

A ghrita prepared of pippali, pippalimula, katurohini, devadaaru, kshaaradwya, vida, ajaaji, vacha, agni, deepyaka in dadhi, sauviraka and suraamanda cures paarigarbhikam.

In this disease the baby is showing features of malnutrition. Normally the milk from a pregnant woman doesn't cause any pathological affliction to the baby. But pregnancy will either stop or reduce the breast milk. If the baby is exclusively dependent on breast for his food, he will certainly develop the manifestations of malnutrition. So this disease should be understood in the scenario of people who are ignorant about the contraceptive measures, spacing and nutritional need of children.

According to ashtanga samgraha those cases should be treated with following principle:

- Deepana paachana
- Highly brimhana diet (high calorie and protein)

अत्युद्रिक्तं क्षुधं बालं परिभूतं तु लेहयेत्  
 विदारीयवगोधूमकणाचूर्णं घृताप्लुतं  
 पाययेदनु च क्षीरं शृतं समधुशर्करम्। A.S.U.2/43

The food made out of vidaree, yava, godhuma, pippali with sufficient ghee can be given in such cases. The anupaana should be milk which is boiled and cooled mixed with honey or sugar.

### VITAMIN DEFICIENCY DISORDERS

No	Name of the vitamin	Deficiency
1	Vitamin A	<ul style="list-style-type: none"> <li>• Atrophy &amp; keratinisation of epithelium</li> <li>• Dry skin and hair</li> <li>• Recurrent infections</li> <li>• Drying of cornea (Xerophthalmia)</li> <li>• Night blindness</li> </ul>
2	Vitamin D	<ul style="list-style-type: none"> <li>• Rickets in children</li> <li>• Possible loss of muscle tone</li> </ul>
3	Vitamin E(tocoferol)	<ul style="list-style-type: none"> <li>• May cause oxidation of monosaturated fats, resulting in abnormal structure and function of mitochondria, lysosomes and plasma membranes, a possible consequence being hemolytic anemia.</li> </ul>
4	Vitamin K	<ul style="list-style-type: none"> <li>• Delayed clotting time results in excessive bleeding.</li> </ul>
5	Vitamin B1(thiamine)	<ul style="list-style-type: none"> <li>• Beriberi</li> <li>• Poly neuritis</li> </ul>
6	Vitamin B2(Riboflavin)	<ul style="list-style-type: none"> <li>• Blurred vision, cataract, corneal ulceration</li> <li>• Dermatitis, intestinal mucosal lesion</li> </ul>

contd.

No	Name of the vitamin	Deficiency
7	Niacin(Nicotinamide)	<ul style="list-style-type: none"> <li>Pellagra characterized by diarrhoea, dermatitis and psychological disturbances.</li> </ul>
8	Vitamin B6(Pyridoxine)	<ul style="list-style-type: none"> <li>Dermatitis of eyes, nose and mouth</li> <li>Nausea</li> <li>Growth retardation</li> </ul>
9	Vitamin B12(cyano cobalamin)	<ul style="list-style-type: none"> <li>Cyano cobalamin</li> <li>Neuropsychiatric abnormalities</li> <li>Impaired osteoblast activity.</li> </ul>
10	Pantothenic acid	<ul style="list-style-type: none"> <li>Fatigue, muscle spasm, Neuromuscular degeneration etc(experimentally)</li> </ul>
11	Folic acid	<ul style="list-style-type: none"> <li>Macrocytic anaemia</li> </ul>
12	Biotin	<ul style="list-style-type: none"> <li>Depression, muscular pain, dermatitis, fatigue, nausea</li> </ul>
13	Vitamin C (Ascorbic acid)	<ul style="list-style-type: none"> <li>Scurvy</li> <li>Growth retardation</li> </ul>

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## AUPASARGIKA VYAADHI (Infectious Diseases)

The children are with immature immune system. So they are very susceptible to recurrent infections. Mostly children are getting viral infections. Unusual infections or increasing number of infections are warning signs to the doctors. It directly affects the pace of growth and development of children too.

### MUMPS (KARNAMOOLA SOPHA)

This is an infectious disease caused by virus. This usually affects the salivary glands and frequently CNS. One episode of infection usually provides life long immunity.

The incidence of mumps is more in cities than rural areas. About 30-40% of the cases are subclinical in nature.

- Incubation period- 17 days (12-24 days)
- Clinical features
  - Prodromal phase (1-2days)- fever, malaise, sore throat, ear ache and pain behind the ear on swallowing and chewing
  - Next some days (1-3 days)- swelling of the parotid glands. Submaxillary and sublingual swellings are not usual
  - Tenderness and pain subsides in 1-3 days
  - Swelling persists for 7-10 days

- By this time fever, anorexia and malaise disappear.
- The opening of the parotid duct will be puffy and red
- Diagnosis
  - Diagnosis has to be made from clinical features
  - Differential diagnosis has to be made with other parotid swellings.
  - Leucopenia with lymphocytosis
- Complications
  - Orchitis
  - Pancreatitis
  - Meningoencephalitis
  - Nephritis, hepatitis, myocarditis, thyroiditis, facial palsy etc
- Ayurvedic perspectives
  - Compare the features with karnamoolika jwara, though clinical fate of the karnamoolika jwara is not comparable with that of mumps. Karnamoolika jwara is comparatively asaadhyta roga whereas mumps is usually self limiting.
  - This jwara is specific with involvement of vaata and kapha at the sites of maamsa-medo-dhaatu involvement.
  - Along with jwarachikitsa, add the chikitsas of aama granthi also.

### MEASLES (Romaantika)

It is one of the most common viral infectious diseases in children. In health challenged children the infection by measles virus is risky. This disease is unusual in children below the age of 3-4 months due to the antibody support from the mother. The peak incidence of the disease is 1-5 years. Both epidemic and endemic existence is known to this disease. The incidence in childhood is more in poor community.

- The virus of the measles is specific measles virus, a RNA virus (paramyxogroup)
- Transmission
  - Indirect or direct contact
  - Droplet infection

- Infectivity period
  - 4 days prior to and 5 days after the appearance of the rash
- Clinical features
  - The average incubation period is 11 days
  - There are three stages for the disease manifestations
    - Prodromal stage
      - Phase of 3-5 days
      - Upper respiratory catarrh
      - Fever, malaise, conjunctivitis, photophobia
      - Posterior cervical lymphadenopathy
      - Appearance of koplik's spot-fine tiny grain like papules on faint erythematous base. They appear on buccal mucosa, opposite the first lower molar and then other sites of buccal mucosa.
    - Eruptive phase
      - Rashes begin to appear 3-5 days after the onset of the disease.
      - Fever reduces by the appearance of rashes
      - After 3 days of its appearance the rashes begins to regress
      - Mild itching may accompany
      - Rashes first appear at retroauricular area then spread to neck, trunk and limbs.
      - Frequently associated with cervical lymphadenopathy.
      - Then fine shedding starts leaving behind a light brown pigmentation
    - Convalescent period
      - Disappearance of fever
      - No other constitutional symptoms
      - No rashes.
  - Complications
    - Immediate complications
      - Otitis media

- Tracheobronchitis
- Stomatitis, enteritis, cancrum oris
- Keratitis and corneal ulceration
- Bleeding diathesis
- Appendicitis
- Malnutrition
- Encephalitis
- Myocarditis
- Late complications

SSPE (Subacute Sclerosing Pan Encephalitis) - Severe myoclonic jerks, paralysis and coma. This is a long term sequale after an average of 6 years.

### ROMAANTIKA

पिटका प्रकीर्णः स्यूलाणुमध्याऽपि पित्तजास्तः ।  
क्षुद्रप्रमाणाः पिटकाः शरीरे सर्वाङ्गगाः सञ्चरदाहतृष्णाः  
कण्डूयुताः अरुचि अंप्रसेका पित्तकफात् प्रदिष्टाः ॥

Pidakas of variable size and shape appearing all over the body associated with fever, burning sensation, thirst, itching, anorexia, watering of mouth etc. is termed as romantiika. The doshas involved are pitta and kapha.

### Chikitsa

Similar to that of visarpa.

### CHICKEN POX (Masurika)

This is a highly communicable disease. The disease is usually mild in children, but may end in death in immuno compromised children. The disease usually gives lifelong immunity. The peak age of infection in children is 5-10 years, the peak incidence being winter and summer. The primary problems of the disease are pertaining to skin and respiratory tract.

### Etiopathogenesis

- Causative agent- DNA virus, varicella zoster virus (VZV)
- Mode of spread- direct or indirect contact, air borne infection is rare.

The patient can spread the disease a day before and 5 days after the onset of

syntax.

- Clinical features

- Prodromal phase- slight malaise, low grade fever, head ache, back ache and shivering.
- A single rash appears as the first sign usually
- Stages of the eruption will be macule, papule, vesicle, pustule and crust with centripetal distribution.
- Rapid progression and spread of the rashes
- Stages of the lesion completes in 4-7 days
- Scabs falls off in 2 weeks of time.
- Varieties like, varicella bullosa, hemorrhagic, neonatal and congenital chicken pox may also be noted.

### MASOORIKA

दाहज्वररुजावन्तस्ताम्राः स्फोटाः सपीतकाः ।

गात्रेषु वदने चान्तर्विज्ञेयास्ता मसूरिकाः ॥ S.S.Ni. 13/38

The disease is characterised by yellowish red pidakas either all over the body or on the mucous membrane of mouth and throat associated with burning sensation, fever and pain.

### Chikitsa

Use of kushtahara lepas and management of pittakaphaja visarpa have to be adopted.

### DIPHTHERIA

Diphtheria is an acute bacterial toxic infection. This is the first infectious disease controlled on the basis of principles of microbiology, immunology and public health.

- Name of organism  
- *Corynebacterium diphtheriae*
- Mode of infection- air borne respiratory droplets, direct contact with respiratory and skin secretions.
- Incubation period- 2-4 days

- Pathogenesis- bacteria reach the skin or mucous membrane → remains in the superficial layer → inducing local inflammation → producing poly peptide exotoxin → inhibit protein synthesis → local tissue necrosis → pseudomembrane formation → toxin absorption → kidney tubular necrosis, cardiomyopathy, thrombocytopenia and demyelination of nerves.

### Basic Clinical features

- Serosanguineous, purulent, erosive rhinitis with membrane formation.
- Ulceration of nares and upper lip
- Sore throat
- Fewer have fever, dysphagia, malaise, hoarseness of voice or head ache
- Underlying soft tissue edema and enlarged lymph node gives bull-neck appearance.

### ROHINI

This is a clinical condition characterized by abnormal growth in throat resulting in some acute clinical manifestations like dysphagia.

जिह्वाप्रबन्धजाः कण्ठे दारुणा मार्गरोधिनः।

मांसान्कुराः शीघ्रचया रोहिणी शीघ्रकारिणी॥ A.H.U. 21/41

Vaata	Pitta	Kapha	Raktaja
Dryness of mouth and throat	Fever	Sliminess	Covered with pidaka
Earache	Burning sensation	Itching.	Ear ache
	Excessive thirst		Reddish in colour
	Fainting		Similar to paittika rohini
	Intolerable to touch		

This condition is very much similar to Diphtheria.

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## KHURKURA KAASA [Pertussis (whooping cough)]

Pertussis is an acute respiratory tract infection by a gram negative coccobacilli bacteriae. The word meaning of pertussis is 'intense cough'. Whooping cough is an another name of the same disease.

### Etiology

- Name of organism- *Bordetella pertussis*

### Pathology

- The organism produces the pertussis toxin(PT) along with a number of biologically active substances like filamentous haemagglutinin.
- All these substances ultimately cause damage to the ciliated epithelium of respiratory tract.
- This damage again facilitate the absorption of PT
- PT again causes several systemic effects.

### Clinical features

Pertussis is classically a 6 week disease. The clinical staging is as follows.

- Catarrhal stage-(3-12 days) begins after incubation period.
  - Congestion, rhinorrhea, low grade fever, sneezing, lacrimation and conjunctival suffusion.
- Paroxysmal stage-after waning the initial symptoms, coughing marks the onset of this stage.
  - Cough is first as dry, intermittent, irritative hack and evolves in to the inexorable paroxysm.
  - Un interrupted cough, chin and chest held forward, tongue protruding maximally, eyes bulging and watery, face purple, until coughing ceases and a loud whoop follows as inspired air traverses still partially closed airway.
  - Post tussive emesis is common in pertussis.
  - The number of paroxysms progress over days to a week and may remain for a long time.

- Convalescent stage
  - The number, severity and duration of episodes diminish
  - In infants cough and whoop may become louder and more classic in convalescence.

### RUBELLA (GERMAN MEASLES)

It is an acute infection of the childhood (3-10 years) of mild severity with a short duration (approximately 3 days). It is characterised by low-grade fever, lymphadenopathy and a maculopapular skin rash. One attack results in life long immunity. But infection occurring in early pregnancy leads to serious congenital defects, including IUD.

- Causative agent: RNA virus
- Source of infection: The infection is majorly sub-clinical, though clinical cases also communicate the infection.
- Period of communicability: Roughly from a week before appearance of symptoms to a week after rashes appear.
- Transmission: Disease is transmitted by droplet infection.
- Incubation period: 2-3 weeks
- Clinical features:
  - a Prodomal stage: Include symptoms like sore throat, coryza and low grade fever, but is not so frequent in children.
  - b Lymphadenopathy: Post auricular and posterior cervical lymph nodes are involved.
  - c Rash: This is the first sign of infection in children. Non-confluent, minute, discrete, pinkish rash appear first on face, within 24 hours of prodomal stage. It spreads rapidly to trunks and extremities, disappearing from the face. It subsides completely by the third day.
- Complications:
  - 1 Thrombocytopenic purpura
  - 2 Encephalitis, only rarely.

- Diagnosis:
  - 1 Virus isolation in throat swabs
  - 2 Serology- haemagglutination inhibition test (HAI) and ELISA test.

### **DHANUR VAATA (Tetanus)**

Tetanus is a bacterial disease. The disease is characterized by painful spasms of muscles of the whole body. The spasm is produced by bacterial neurotoxins. This is one of the common causes of neonatal death in tropics and subtropics. Majority of the infected cases of tetany succumb to it.

- Organism            *Clostridium tetani*
- Transmission
  - Invasion of an injury
  - Contamination during the cutting of umbilical cord
  - Dust or animal dung
- Incubation period      3-14 days(shorter the incubation stronger the disease)
- Clinical features       Clinically three varieties are noted
  - 1 Localized tetanus
    - Pain
    - Constant rigidity and muscle spasm at the site of injury
    - Association of chronic otitis media may occur
    - Occasionally progress to general type
    - Take weeks to regress fully
  - 2 Generalized tetanus
    - Sudden onset with muscle spasm and cramps- at the location of inoculation.
    - In a neonate refusal of food may be the earliest sign
    - Restlessness, irritability, difficulty in swallowing
    - Soon convulsions follow.

- In the next 48 hours
  - Neck rigidity
  - Trismus and lock jaw
  - Risus Sardonicus-characteristically anxious expression, in which the eyebrows and corners of mouth are drawn up.
  - Stiffness of upper limbs(flexed) and legs(hyperextended)
  - Opisthotonus (5-10seconds) with agonizing pain
  - Clenching of jaw and hands
  - Low grade fever is usually present.
  - Death due to anoxia, respiratory or cardiac failure.

### 3 Cephalic tetanus

- Paresis or paralysis of one or more cranial nerves(Usually 7<sup>th</sup>)
- Spastic manifestations are also present
- Usually follows an injury to head and neck
- Relatively good prognosis
- Prophylaxis- is more important by doing active or passive immunization.

### KRIMI

Krimi is a clinical condition, affecting people of all age groups, which have been given equal importance as kushta (one of the mahaaroga). The main agents of this condition are small creatures (worms) with different morphological features making the human body a habitat.

The striking similarity between kushta and krimi is that both have manifestations in skin. The additional gastro intestinal tract manifestations makes krimi different from kushta.

All the acharyas has come to a concensus about the number of krimi ie. 20 in number.

#### 1. Kaphaja krimi

##### Nidaana

मधुरान्नगुडक्षीर दधिसकूनवोदनैः ॥ A.H. Ni. 14/45

The nidaana of krimiroga is food, which is predominant in madhura rasa,

brings about utklesana ie. sleshmala aahara. This is indicative of faeco - oral route of transmission.

### **Krimisthaana (Habitat)**

तेषामामाशयो स्थानः C.S.Vi. 7/12

The site of krimi is Aamaasaya.

### **Nature of spread**

ते प्रवर्द्धमानः तु ऊर्ध्वमधो विसर्पन्ति उभयतो वा। C.S. Vi. 7/12

Krimi moves upwards to sleshma sthaanas like uras, siras, kanta, etc. and downwards upto pakwaasaya.

### **Morphological features and nomenclature**

The krimi will be white or coppery, thick, sharp and in the shape of earthworm, some may be small, elongated.

They are named as :

1. Antraada
2. U daraaveshta
3. Hridayaada
4. Mahaakuha
5. Kuru
6. Darbhakusuma
7. Sugandha

### **Possible clinical features**

हल्लासमास्यस्ववणमविपाकमरोचकम्।

मुच्छाच्छर्दिज्वरानाहकाशर्यश्वयथुपीनसान्॥ A.H. Ni. 14/50

The features include :

- Hrillaasa
- Watering from mouth
- Indigestion
- Anorexia
- Fainting

- Vomiting
- Fever
- Abdominal distension
- Emaciation
- Swelling
- Rhinitis.

Krimi are helminthic infestations of upper gastro intestinal tract. The clinical features mentioned are gastro intestinal and respiratory manifestations. Rest of the skin manifestations like pruritis, urticaria etc should be considered in the context of raktaja krimi.

Most of these worms are visible. Majority of the features expressed by them are resulting after mechanical hindrance; nutritional deficiency and other systemic actions in sleshma sthaana like kshavathu, peenasa (respiratory tract) etc. Kaphaja krimi express the symptoms of upper respiratory tract features which are produced by worms harbouring the upper gastro intestinal tract.

## 2. Pureeshaja krimi

### Nidaana

पुरीषजास्तुल्य समुत्थानाः श्लेष्मजैः। C.S. Vi. 7/13.

Nidaana is similar to that of kaphaja krimi i.e. indicates the faeco oral route.

### Krimisthaana (Habitat)

तेषां स्थानं पक्वाशयः॥ C.S. vi. 7/13

Pureeshajakrimi harbours the lower gastro intestinal tract.

### Nature of spread

Usually they comes down to rectum and anal canal. If they increase in excess, then move to aamaasaya (sleshmastaana)

### Nomenclature and morphological features.

They are whitish or blackish in colour. May be round or elongated. They are named as follows

1. Kakeruka
2. Makeruka
3. Leliha
4. Suloona
5. Sousuraada

Nomenclature have been made on the basis of size, shape, colour and lustre of adult worm, infant worm or segments of adult worm.

### Clinical features

Features with normal downward spread

विट्भेदशूलविष्टम्भकार्श्यपारुष्यपाण्डुता।

रोमहर्षग्निसदनगुदकण्डुविनिर्गमात्॥ A.H.Ni. 14/56

- Diarrhoea
- Pain
- Abdominal distention
- Emaciation
- Roughness
- Dryness
- Horripilation
- Itching in anal region
- Prolapse of rectum

The following symptoms are seen with upward movement.

तदाऽस्योदगारनिःश्वासा विट्गच्छानुविधायिनः।

A.H. Ni. 14/54

Eruption (udgaara) and breath will be having the smell of faeces.

### Raktaja krimi

Raktaja krimi are the only type of krimi whose origin is attributed to Kushtanidaana (कुच्छे: समानं समुत्थानं). Other attributes are:

1. The presence of clinical manifestations of raktjakrimi are:

- Disruption of integrity of skin (skin diseases and ulcers)
- Harsha, toda, kandu in the existing skin diseases and ulcers.

- Presence of round coppery germs.
- Absence of any enteric manifestation.

These, strictly sticks us to the idea that krimi are confined to skin.

2. From the morphological features of raktaja krimi like taamravarṇa and vruttaakriti, it is clear that most of them are visible. However, there is no classical reference to support the presence of such worms in the blood stream or outletted blood (in bleeding disorders like raktapitta, traumatic injuries, raktamoksha).
3. Those krimis which are invisible expresses their features by hair and nail pathological symptoms (केशश्मशूनखलोमपक्षमोपध्वंसः).

From the above postulations it can be concluded that Raktaja krimis are :

- Germs present in skin diseases or ulcers.
- Invisible Raktaja krimis are causing nail or hair problems.
- Both these point that these worms are really exogenous in origin.
- From the therapeutic aspect Raktaśodhaka drugs will show better results. This may be the reason that Raktajakrimis are said to be originated from Raktavaahee sira.

### Nidaana

शोणितजानां तु खलु कुष्ठैः समानं समुत्थानम्। C.S.Vi. 7/11

रक्तवाहिसिरोत्थाना। A.H. Ni. 14/51

Charaka relates the nidaana of Raktaja Krimi to be similar to kushta while Vagbhata describes its origin from sira.

The causes are chronic use of viruddhaahaara, heredity and psychosomatic (paapam) mostly endogenous in origin. No relation is seen with faeco-oral route.

### Nomenclature and Morphology

They are said to be the smallest krimis, without legs, coppery in colour, round in shape. Some of them are said to be invisible with naked eye.

#### 1. Kesaada

2. Lomavidhwamsa
3. Loma dweepa
4. Udumbara
5. Sourasam
6. Maatrukam

### Clinical features

- Produces skin diseases or ulcers.
- Aggravates existing skin diseases or ulcers.
- Produces harsha, toda, kandu etc. in the ulcer or skin diseases.
- Presence of round or coppery germs.
- Produces damage to hair, nail, eyebrow etc.

### Chikitsa

Management of krimi can be broadly divided into two

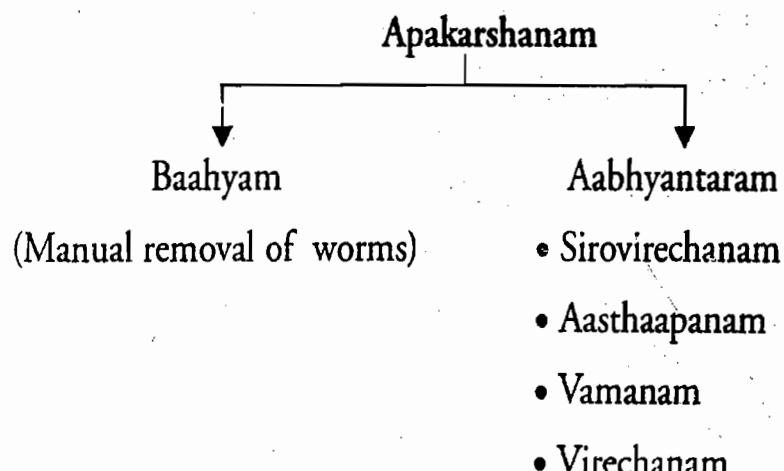
- Sleshma pureeshajakrimi chikitsa
- Raktaja krimi chikitsa.

Mainly 3 basic principles work in the treatment of krimi.

तत्र सर्वकृमीणामपकर्षणमेवादितः  
कार्यं, ततः प्रकृतिविधातः अनन्तरं निदानोक्तानां  
भावानामनुपसेवनमिति । C.S.Vi. 7/14.

### 1. Apakarshanam

Indicates removal of adult worms and eggs.



## 2. Prakritivighaatam

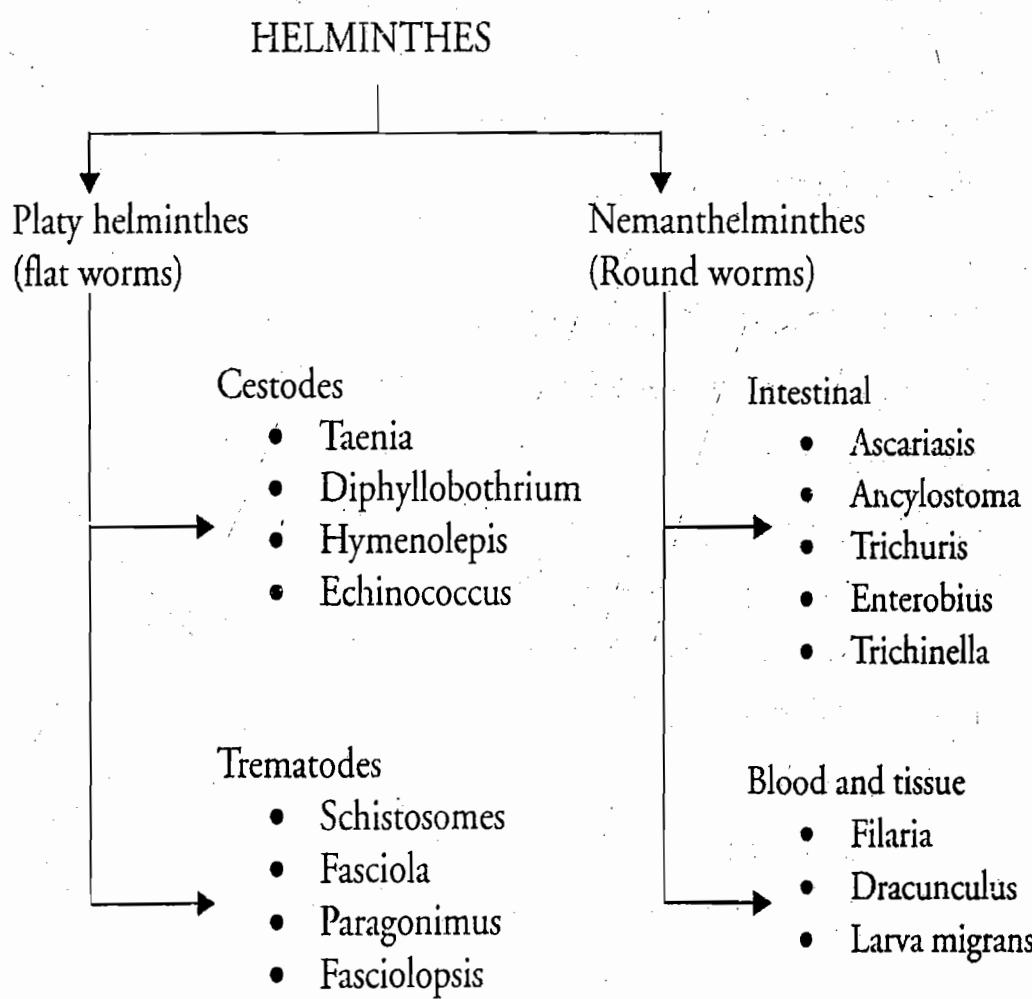
Aims at sampraaaptivighattana by using medicaments.

## 3. Nidaanatyaga

Prevention of the situations leading to krimi by caring for personal hygiene, avoiding viruddhaahaara etc.

## HELMINTHIC INFESTATIONS IN CHILDHOOD

Classification of helminthes is as follows



The mechanisms by which the helminthes can cause diseases are enlisting below.

- Round worms deprive the host of the nutrients.(rasa pradoshaja vikaaras will be produced and krisata will be the main symptom)
- Hook worms cause anaemia (each worm suck about 0.4ml.blood per day)[usually kaphaja paandu lakshanas are seen in such cases]

- Mechanical hinderance eg- Round worms causing jaundice by blocking ampulla of vater
- Reactions occurring to toxins elaborated by the helminthes(rakta pradoshaja vikaaras are observed in this case).
- Necrosis of the tissues that the helminthes infest (specific antarvidradhi or kushta vikaaras are produced).

### AANTRIKA JWARA (Typhoid)

This fever is otherwise known as enteric fever. This bacterial infection is characterized by constitutional symptoms like prolonged pyrexia, prostration and involvement of spleen and lymph nodes. Typhoid has world wide distribution. Maximum spread of the disease occurs through chronic carriers.

- Organism - *Salmonella typhi*
- Transmission
  - Contaminated food
  - Unboiled milk, vegetables or water
  - Housefly
- Pathology
  - Initial proliferation of the organism in the lymphoid tissues of the intestines
  - Inflammation of peyer's patches
  - Invasion of the organism in to the blood stream
  - At the end of 2<sup>nd</sup> week, ulceration of ileum
  - Enlargement of mesenteric lymph nodes
  - Focal necrosis of liver, splenomegaly, myocarditis, respiratory infection.
- Clinical manifestations
  - Incubation period 10 to 14 days
  - In children typhoid manifests suddenly
  - Rapid rise of temperature, malaise, anorexia

- Head ache, vomiting
- Abdominal pain and distension
- Low pulse rate, high pyrexia is not common in children
- Cloudy consciousness
- Diarrhoea, doughy abdomen
- Palpable spleen and liver
- A macular rash(red rose spot) appears on 5<sup>th</sup> day
- Diagnosis
  - From clinical features
  - Eosinopenia or complete absence of eosinophils
  - Culture for S.typhi
  - Usual leucopenia and lymphocytosis may be absent
  - Widal test.

### MASTISHKAAVARANA SOTHA (Pyogenic Meningitis)

It is the inflammation of the meninges caused by the bacterial infection. About 5% of the paediatric admissions fall into this group.

#### Causative organism:

- Neonatal age – group: E.coli, streptococcus beta haemolyticus, streptococcus faecalis, staphylococcus aureus, salmonella spp. and pseudomonas aeruginosa.
- 3 months to 2 years – H. influenzae, pneumococci and meningococci
- 3 years onwards – pneumococci

#### Susceptible host

In conditions of decreased immunity such as:

- Diseases like diabetes, malignancy, infections, HIV etc
- Infants and young children
- Immuno suppression – burns, sickle cell anaemia etc.

- Other predisposing factors like upper respiratory tract infection. Otitis media, head injury etc.

### Clinical features

- 1 In neonates and young infants –

Insidious onset

Symptoms include refusal of feed, fever and irritability

Bulging of anterior fontanelle may be present.

- 2 In older children

Acute onset

Symptoms include high fever, vomiting, restlessness, irritability, acute shrill cries, headache and often convulsions

Respiration becomes periodic/ Cheyne stoke's type

### Diagnosis

Physical examination reveals neck stiffness, positive Kernig and Brudzinski sign, cranial nerve palsies and even hemiplegia in initially neglected cases.

Diagnosis is confirmed by:

- 1 Lumbar puncture
- 2 CSF culture
- 3 NBT (nitroblue tetrazolium) test
- 4 CT and MRI in case of neurological deficit
- 5 Polymerase chain reaction (PCR) test of CSF to diagnose specificity of organism

### Complications and sequale

- 1 Encephalomyelitis
- 2 Ventriculitis
- 3 Internal hydrocephalus
- 4 Mental deterioration
- 5 Spinal cord compression

- 6 Subdural empyema/effusion
- 7 Mental retardation and cognitive impairment
- 8 Cerebral palsy
- 9 Epilepsy
- 10 Neurological deficits
- 11 Syndrome of inappropriate secretion of ADH (SIADH)

### **Tuberculous meningitis**

It is the most common and serious form of CNS tuberculosis with the highest incidence in the pre-schoolers. The maximum risk is within 6 months of primary infection and much less after one year.

#### **Types**

- 1 Acute inflammatory caseous meningitis – commonest type
- 2 Disseminated miliary tubercles
- 3 Focal caseous plaques
- 4 Proliferative meningitis

#### **Pathology**

This type of meningitis usually occur secondary to tubercular infection of the lung by *Mycobacterium tuberculosis*. The spread is mainly haematogenous reaching to the meninges.

#### **Clinical features**

The disease is generally of insidious onset. The course of disease involves three successive stages:

- 1 Prodromal stage: 1-3 weeks duration with vague symptoms only such as fever, anorexia, vomiting, headache and irritability etc.
- 2 Transitional stage: 2-3 weeks duration and symptoms of raised intracranial tension and meningeal irritation become predominant including increased headache, vomiting and irritability, convulsions, neck rigidity and positive Kernig's sign, and other neurological deficits may intervene.

- 3 Terminal phase or phase of coma: patient becomes unconscious with dilated pupils,. Respiration becomes irregular Cheyne- Stokes type. Hydrocephalus and paralysis may follow soon and death may occur within one week.

#### Diagnosis

- 1 Lumbar puncture test
- 2 Mantoux test
- 3 X-ray chest
- 4 CSF tests- ELISA, Bromide partition test, polymerase chain reaction test

#### Complications and sequale

- 1 Hydrocephalous
- 2 Epilepsy
- 3 Mental deterioration
- 4 Endocrinial abnormalities like SIADH, Diabetes mellitus, Cushing's syndrome etc.

#### AIDS

An estimated 2.1 million children were living with HIV/AIDS in 2007. Most of these children acquire HIV from their infected mother during pregnancy, birth or breast feeding. Effective intervention are now available to reduce the risk of infection from mother to children, however those measures are not within the reach of common people. In developed countries, children can be tested soon after birth (sometimes within 48 hours) using polymerase chain reaction (PCR) tests and other specialist techniques. Where this technology is available, the longest a mother will have to wait for an accurate result is usually around six weeks. In resource-poor countries, where PCR testing is generally unaffordable or unavailable, a mother may have to wait up to 18 months after giving birth before antibody tests (which are used in adults, and are more commonly available) can be used to accurately diagnose her child. During this time the antenatal clinic, where the mother was probably diagnosed, is likely to lose contact with her. The main clinical profile associated with AIDS in children in

India according to a study is given below.

- Failure to thrive
- Recurrent fever
- Diarrhoea
- Recurrent and persistent pneumonia
- Poor nourishment.
- Lymphadenopathy
- Hepatomegaly
- Oral candidiasis
- Splenomegaly
- CNS involvement
- Bronchiectasis

### MALARIA

This is the most important among the parasitic diseases of humans. With its persistent, destructive and widespread nature it is the most difficult to control. Warm and humid environment is most favourable for the disease prevalence.

#### Pathology

This is a protozoal infection caused by malarial parasite which is of four types, in order of frequency of occurrence as follows:

- 1 Plasmodium vivax
- 2 Plasmodium falciparum
- 3 Plasmodium malariae
- 4 Plasmodium ovale

The disease is vector-borne, transmitted by the female Anopheles mosquito. The parasite spend its sexual cycle in the mosquito while the asexual cycle takes place in the human body.

#### Clinical features

Commonest presentation in children is characterised by high fever, headache, sweating and restlessness. The classical hallmark of malaria, i.e. chills and rigors, are not common in children. Diarrhoea, vomiting, abdominal pain,

convulsions and even coma may be present sometimes. Later, hepatosplenomegaly and progressive anaemia are characteristic of the disease.

Neonatal malaria, though uncommon, may occur due to transplacental transmission of infection, infected blood transfusion, or natural infection itself.

### Diagnosis

Peripheral blood smear

Fluorescent antibody technique

### Complications

- 1 Cerebral malaria
- 2 Gastrointestinal malaria
- 3 Hyperpyrexia
- 4 Algid malaria
- 5 Hemoglobinuria and shock (blackwater fever)
- 6 Severe anaemia
- 7 Acute nephritis or nephrotic syndrome

## DENGUE FEVER

It is a viral disease of major public health concern.

### Pathology

The causative organism belongs to the Flavivirus genus and has 4 antigenic types -1, 2, 3 and 4. This is a vector borne disease transmitted by the mosquito Aedes aegypti and Aedes albopictus. The spread of the disease is through movement of patient rather than that of vector from one place to the other.

### Clinical features

Incubation period – 5 to 6 days (varies from 3 to 15 days)

Symptoms begin with sudden onset of moderate to high biphasic fever associated with headache, retro-orbital pain, pain in muscle, bone and joints, anorexia, distaste in mouth, and flushing of face.

Characteristic maculopapular rash may appear on trunk and upper limbs

3-4 days after onset of fever and may last from few hours to few days.

Some children often present with convulsions, tonsillitis, pharyngitis, rhinitis, or diarrhoea. Cervical lymphadenopathy, hepatosplenomegaly and bradycardia are positive findings.

Fever regresses in 2-7 days with profuse sweating and convalescence is marked by generalised weakness.

Dengue haemorrhagic fever/dengue shock syndrome characterised by haemorrhagic cutaneous manifestations, fever and shock is the severe and fatal form of this disease.

### Diagnosis

1. Clinical features
2. Hess test positive
3. Raised hematocrit
4. Leukopenia with relative lymphocytosis
5. Reduced platelet count
6. Increase in immature or unsegmented polymorphonuclear cells

### Complications

1. Fluid and electrolyte imbalance
2. Hyperpyrexia
3. Shock
4. Febrile seizures

### RAAJAYAKSHMA (Tuberculosis)

The condition in which the dhaatus exhibit a steady rate of deterioration, as a result of saahasam, vegarodham, annapaana vidhi tyagam, sukla-oja-sneha samkshayam is known as Raajayakshma. Children being the most tender, (heena balaavastha) a good majority of the affected children show Ekaadasa rupa.

पीनस श्वास कासांऽसमृद्धस्वररुजाऽरुचि।  
ऊर्ध्वं, विट्भ्रंश संशोषावध, छर्दिश्च कोष्ठगे॥  
तिर्यकस्थे पार्श्वरुक् दोषे, सन्धिगे भवति ज्वरः।  
रूपाण्येकादशैतानि जायन्ते राजयक्षिणः॥ A.H.Ni. 13-14

Of the above mentioned causes, annapaana vidhi tyagam, and oja-sneha

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samkshayam are more applicable in the case of children. Saahasa is also a valid reason up to some extent. [excessive play without sufficient food, excessive cry etc.].

However, annapaana vidhi tyaagam[leading to malnutrition] proves to be the foremost among the causes of raajayakshma.

## CHILDHOOD TUBERCULOSIS

The term childhood tuberculosis is used to describe clinical, pathological and radiological features suggestive of the infection with tubercle bacilli.

### Aetiology

Organism- Mycobacterium tuberculosis – a rod shaped acid fast bacillus

### Mode of infection

Human source who is sputum positive

Bovine source via bovine milk

### Mode of transmission

Nasopharyngeal secretions & sputum as droplet infection

Social factors- TB is called barometer of social welfare. Other social factors which are contributory to the TB enlisting below

- Poor quality of life
- Population explosion
- Undernutrition
- Lack of education
- Early marriages
- Lack of awareness of causes of illness.

Primary infection occurs in lungs in 95% of cases and the rest in lymph nodes, skin or GI tract. Initially, the TB bacilli inhaled reaches the bronchioles and alveoli; specific reaction takes place which results in tubercle formation.

Tubercle has central caseation, surrounded by epitheloid cells and giant cells surrounded by lymphocytes and fibroblasts. Multiple tubercles coalesce to form an area of pneumonitis and this focus is called primary focus (Ghon's

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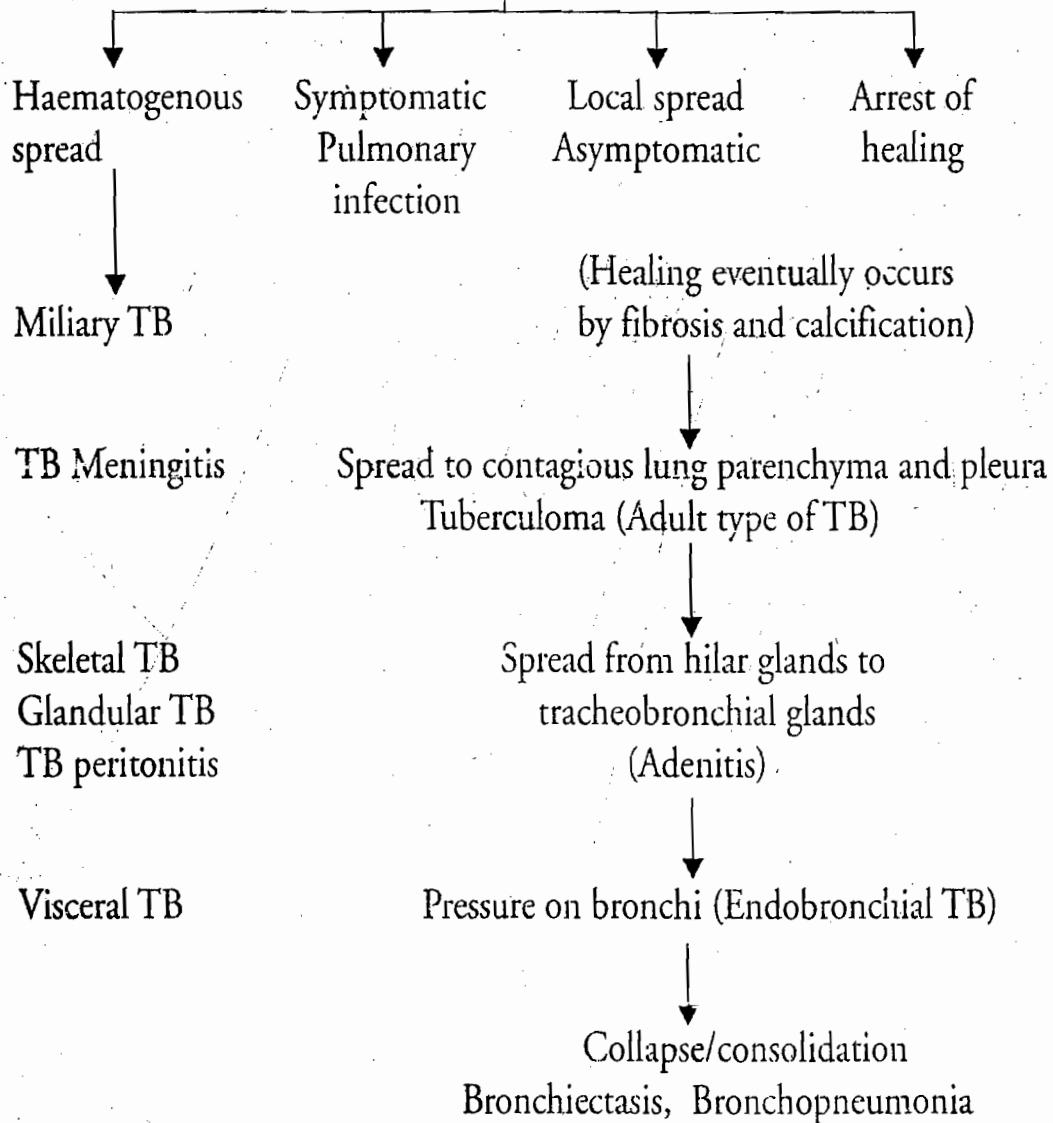
focus). The various factors which decide the progress of the reactions is the force of resistance, dose of bacilli, virulence, sensitivity and age of child.

Primary complex is a triad of Ghon's focus+lymphatics+regional lymph nodes.

### Inhalation of TB bacilli

(Incubation period – 3-8 weeks)

#### Primary complex (ghon's focus & lymph nodes enlargement)



### JEEVAANUJANYA YAKRIT SOTHA (Viral Hepatitis)

This is one of the major health concerns in both developed and developing countries. Following are the varieties of viruses which causes hepatitis.

- Hepatitis A

- Hepatitis B
- Hepatitis C, D, E, G

Almost all above viruses causes acute clinical illness except HGV(Hepatitis G Virus).

### Hepatitis A

- Prevalence mostly in developing countries
- HAV causes only acute hepatitis
- The children below 5 years doesn't have symptoms mostly
- Person to person contact is the mode of transmission
- Food borne and water borne outbreaks are common
- The mean incubation period is about 4 week.
  - Onset is usually abrupt
  - Systemic complaints are fever, malaise, nausea, emesis, anorexia and abdominal discomfort.
  - Diarrhoea often occurs in children
  - Subtle jaundice present may not be clinically evidenced
  - Right upper quadrant pain, dark colored urine
  - The duration of symptoms usually is 1 month
  - Fulminant hepatitis leading to death is common.

### Hepatitis B

- Majority of infections in children are asymptomatic
- Neonatal infection from the positive mother is an important risk
- Intrauterine infection is common
- Breast feeding, cracked nipple are risk factors of transmission
- IV drugs are also a route of transmission
- High concentration of HBV is present in blood, serum, and serous exudates and moderate concentrations in the saliva, vaginal fluid, and semen.

- Incubation period ranges from 45 to 160 days.
- The first clinical evidence of HBV in most of the cases will be elevated ALT levels.
- Lethargy, malaise and anorexia occur about 6-7 weeks after the exposure.
- In few cases children shows serum sickness like conditions
- Extrahepatic conditions of HBV are polyarteritis, glomerulonephritis and aplastic anemia.
- Diagnosis can be made by positive titre of HBsAg.

### POLIOMYELITIS

This is an acute viral infection of humans with wide range of symptoms.

#### Etiopathology

The causative factor is a RNA enterovirus called Poliovirus. The virus is transmitted by the oropharyngeal route and within the human body it multiplies in the gastro-intestinal tract. The proliferating virus invades the nerve structures, primarily affecting the anterior horn cells, bulbar nuclei and the cerebellar cortex.

#### Clinical features

Incubation period – 7 to 14 days

Clinical types- 4 as follows:

- 1 Asymptomatic or silent type
- 2 Abortive type: virus having invaded the blood stream causes viremia without nervous system involvement. The patients present with influenza like features with body pains, fever, sore throat, anorexia etc.
- 3 Non-paralytic polio: The virus invades the nervous system without destroying the cells. Here, the febrile illness associated signs of meningeal irritation are evident including neck stiffness, headache, pain in neck and back muscles, vomiting etc. Paralysis is however absent.
- 4 Paralytic polio: this type has four main forms
  - a Spinal form: this is the commonest form involving the extremities, abdomen, diaphragm and intercostals. Its major clinical features involve

- Fever and constitutional symptoms
  - Muscle pain and tenderness
  - Flaccid paralysis
  - Bladder and bowel involvement
- b Bulbar form: most severe form involving vital medullary centres. The symptoms include paralysis of soft palate and facial paralysis resulting in dysphagia, nasal speech and dyspnoea. The vital respiratory and circulatory centres are also paralysed and mild hypertension may be associated.
- c Bulbospinal form:a combination of bulbar and spinal forms
- d Encephalitic form: symptoms includes changes in sensorium.

### Complications

Gastro-intestinal: bleeding, perforation and dilatation

Cardiovascular: hypertension, tachycardia, congestive cardiac failure, myocarditis, cardiac arrest

Pulmonary: respiratory distress, pneumonia, collapse, pulmonary oedema

Urinary tract: transient paralysis of bladder, calculi and infection.

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## PRAANAVAHASROTUVIKAARAS

### (Diseases of Respiratory System)

Of the three nourishing srotasas of human being (Praana, anna, udaka) praana vaha srotas is most important one. It has invariable connections with other two nourishing srotasas. In children the praanavaha srotas easily gets affected with diseases as their agni is aniyata due to aahaara sankaratwa and due to their weakness of dhaatu excellence. Moreover the site of praanavaha srotas is at kaphasthaana and children are more in kapha predominant stage. So mostly kaphaja diseases are encountered with praanavaha srotas in children.

#### SWAASA

निष्टन्त्युरसाऽत्युष्णं श्वासस्तस्योपजायते। K.S.Su. 25/17

Sighs hot breath from chest

The breathing difficulty expressed as a praanavaha srotovikaara, may be originated from diseases primarily of praanavaha srotas itself or secondarily from other srotas. The chronic pathogenesis of swaasa can occur as a result of the dosha dushti in udakavaha and annavaha srotas which manifests in praanavahasrotas.

Considering the breast fed babies (sleshmalaaahaaram) and the paediatric age group(sleshmakaalam) in general, the respiratory diseases (kaphasthaana

is uras and aamaasaya) are prone to attain chronic form. (कफस्य आत्मकार्य - चिरकारित्वं).

In children, swaasa roga can occur by preceding conditions like untreatable kaasa, gastrointestinal tract infections (amaatisara) aspiration (vamathu - regurgitation is a usual cause of aspiration) toxic or anaphylactic (visha) haemolytic disorders in infants (paandu) or with a chronic anaemia (paandu) pulmonary diseases(jwara) or allergic features (रजोधूमानिलैः हिमाम्बुना)

कासवृद्ध्या भवेत् श्वासः पूर्ववा दोषकोपनैः।

आमातिसारवमथुविषपाण्डुञ्चरैरपि॥

रजोधूमानिलैर्मधातादतिहिमाम्बुना। A.H.Ni. 4/1

Bronchial asthma in childhood is defined as hyper responsiveness of trachea - bronchial smooth muscle to a variety of stimuli resulting in partially or completely reversible narrowing of the tracheobronchial tree often accompanied by increased secretions and mucosal oedema, presenting clinically as paroxysmal dyspnoea accompanied by wheezing.

### Sampraahti

कफोपरुद्धगमनः पवनो विष्वगास्थितः।

प्राणोदकात्रवाहीनि दुष्टः स्रोतांसि दूषयन्॥

उरस्थः कुरुते श्वासमामाशयसमुत्पवम्। A.H.Ni. 4/3

Swaasa originates in aamaasaya but manifestations are seen in uras. Vaayu, gets obstructed by kapha, remains static in tiryak direction; vitiates the praana, udaka and annavahasrotas resulting in swaasa.

### Pathophysiology of bronchial asthma

Airway obstruction in asthma is caused by:

- Spasm of smooth muscle of bronchi
- Oedema and inflammation of mucous membrane lining the airways
- Excessive secretion of mucous extrusion of inflammatory cells and cellular debris.
- Dilatation of submucosal venous plexus in the bronchi

All these factors cause a diffuse and non-uniform obstruction of the airways. The resistance of the airways is increased more during exhalation as they

close pre-maturely during expiration. This leads to hyper-inflation and decreased compliance manifesting as dyspnoea. Perfusion of inadequately ventilated lung causes lowering of  $pO_2$ . Initially there is a fall in  $pCO_2$  also because of hyperventilation caused by dyspnoea. With severe obstruction, alveolar hypoventilation occurs leading to  $CO_2$  retention and raised  $pCO_2$ .

The basic treatment plan of the swaasachikitsa should be as follows.

- 1 Snehanam- by using vichaarana sneha in the form of abhyanga(lavana taila) and samana snehanaa.
- 2 Swedanam- by using naalee, prastara, sankara sweda. In milder cases this sneha sweda itself relieve the disease.
- 3 Ulklesakara aahaaram- in excessive doshas the liquefied kapha has to be drawn out of the koshta
- 4 Vamanam
- 5 Dhoomapaanam
- 6 Samana oushadha seva

भाङ्गीरास्नाकर्कटकचूर्णं वा मधुसंयुतम्।  
लेहो वा बालकस्यापि श्वासकासनिवारणः

पथ्यावचानागरकं घनं कर्कटमेव च।

चूर्णं सगुडमेवं हि बालानां कासनाशनम्॥ H.S. 15-16

### KAASA (Cough)

Kaasa is a disease which originates at the site of kapha (aamaasaya) with the vitiation of vaata dosha. So kaasa in children are presenting mainly as three types.

- Vaatika kaasa- Always dry in nature. Cough of allergic bronchitis, worm infestations etc presents in this way. They are easily cured by logical application of sneha sweda.
- Kapha vaatika- Mostly seen in bronchial asthma, cystic fibrosis, etc. Most of them are productive cough.
- Vaata paitika – Mostly they are infectious and fever association is always present.

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### Ayurvedic differential diagnosis.

- Swatantra kaasa
- Jwara
- Tamakaswaasa
- Raajayakshma
- Kaphaja hridroga
- Madaatyaya
- Arsas
- Kaphaja grahani
- Kaphaja paandu
- Kaphaja gulma
- Dantotbheda
- Aamaasayagata vaata
- Kumaarasosha

The term cough refers to the violent and noisy expulsion of air from the lungs. Following are the common conditions in children where cough will be a predominant symptom.

- 1 Upper respiratory tract infections
- 2 Lower respiratory tract infections
- 3 Bronchial asthma
- 4 Pleuritis
- 5 Mouth breathing
- 6 Congestive cardiac failure
- 7 Neuropathic state
- 8 Bronchiectasis
- 9 Lung abscess
- 10 Foreign body
- 11 Pertussis
- 12 Remaining causes
  - a Cystic fibrosis
  - b Smoking
  - c Repeated aspiration etc.

Broad spectrum oushadha yogas for kṣāsa

Vyoshaadi kashaayam

व्योषतामलकी यष्टी भाङ्गी संप्राधितः  
पीतः कषायः पञ्चापि कासानाशु नियच्छति

ARKD

Aatarooshaka patropayoga

भर्ज्यित्वाटरूषस्य पत्राणि सहचूर्णयेत्  
लाजानां तुल्यभागेण सितया तत् रजो हितम्। ARKD

### HYALINE MEMBRANE DISEASE

(Idiopathic respiratory distress syndrome )

It is a disease in the newborn producing acute respiratory distress which may ultimately prove to be fatal.

#### Causes

- 1 Deficiency of surfactant in alveoli- this is the chief cause.
- 2 Small alveoli
- 3 Excessively compliant chest wall

#### Predisposing factors

- 1 Premature baby
- 2 Smaller than gestational age
- 3 Gestational diabetes
- 4 Caesarean section delivery
- 5 Second baby among twins
- 6 Neonatal asphyxia
- 7 Precipitate labour following ante-partum hemorrhage

#### Clinical features

- Manifest within 6 hours of birth
- Respiratory pattern is shallow and rapid (>60/min)
- Audible grunting in expiration
- Involvement of accessory muscles like alae nasi, intercostal and subcostal muscles and xiphoid.

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- Progressive cyanosis
- Breathe sounds may be normal or diminished associated with harsh, tubular, fine crepitations on deep inspiration.
- Signs of bad prognosis:
  - a Increased dyspnoea/apnoea
  - b Air hunger
  - c Increasing cyanosis
  - d Decrease or absence of grunting
  - e Absent breathe sounds
  - f Hypothermia
  - g Hypotension
  - h Irregular breathing
  - i Acidosis as a result of decreased pulmonary blood flow.

### Management

- Treatment of inadequate gas exchange
- Correction of metabolic acidosis
- Pharmacological closure of ductus
- Antibiotics
- Exchange transfusion
- General measures to manage hypothermia, hypoglycaemia etc
- Use of artificial surfactant
- Prevention – by preventing prematurity, poorly timed and planned LSCS, proper management of high risk pregnancy and labour.

## PHARYNGITIS

It is the infection of the orophaynx.

### ACUTE VIRAL PHARYNGITIS

Most common cause of pharyngitis in children is the viral infection. It is characterised by sore throat and fever and may be associated with rhinorrhea and mild cough.

### Differential diagnosis

- Infectious mononucleosis
- Herpangina
- Lymphonodular pharyngitis
- Hand, foot and mouth diseases
- Pharyngoconjunctival fever

### ACUTE BACTERIAL PHARYNGITIS

Bacterial infection leading to pharyngitis is much uncommon than the viral type. Sore throat and fever are the chief symptoms. Most commonly group A Streptococcus is the causative agent. Less common ones involve Mycoplasma pneumoniae, Chlamydia pneumoniae, and group C and G streptococci.

#### Complications:

- 1 Acute rheumatic fever
- 2 Glomerulonephritis
- 3 Suppurative complications like peritonsillar abscess, otitis media, septicaemia etc.

### RECURRENT PHARYNGITIS

It is a condition having prevalence among the school going children characterised by recurrent or persistent sore throat. Fever and other systematic symptoms are usually absent.

#### Causes

- 1 Mouth breathing: caused due to adenoid enlargement or nasal oedema, it leads to dryness and irritation of throat.
- 2 Post nasal drip: it is seen in chronic sinusitis and leads to constant irritation of throat. Mucopurulent secretions from nasopharynx are commonly present.
- 3 School phobia: sore throat is the common presentation, but on examination oropharynx and tonsils appear normal.

## TONSILLITIS

Tonsillitis is a disorder involving inflammation of the tonsils. It is extremely common in children. The characteristics of the disease are pain in the throat and trouble in swallowing.

### Causative organism:

Tonsillitis may be caused by-

- Virus: eg Epstein barr virus
- Bacteria: streptococcus A group is the most common

### Spread of infection

The infection is transmitted from person to person through-

- Airborne droplets
- Hand contact
- Kissing

Incubation period - 2 to 4 days.

### Clinical features

- Pain in the throat lasting for more than 48 hours, associated with difficulty in swallowing. The pain radiates to the ears.
- The throat is reddened, the tonsils are swollen and may be coated or have white spots on them.
- Possibly a high temperature.
- Swollen lymph glands under the jaw and in the neck.
- Headache.
- Loss of voice or changes in the voice.

### Diagnosis

- Clinical signs and symptoms
- Throat swab and blood test- to identify the cause.

### Complications

Tonsillitis is usually a self-limiting condition, i.e. it gets better without treatment, and generally there are no complications. But the following complications can arise.

- A secondary infection may occur in the middle ear or sinuses.
- If the sore throat is due to a streptococcus infection, there may be a rash (scarlet fever).
- An uncommon complication is a throat abscess that occurs usually only on one side. If sufficiently large this may need surgical drainage (Quinsy throat).
- In very rare cases, diseases like rheumatic fever or a particular kidney disease (glomerulonephritis) can occur. This is much less commonly observed now than it was several decades ago.

### LARYNGITIS

It is a group of diseases involving the inflammation of the mucous membrane of the larynx, partially or completely. These disorders have a different course in children under 4 years old than in children above 4 years old owing to variations of the structure of the larynx in these two groups of children.

#### Causes :

- Para influenza virus- the commonest cause
- Influenza virus,
- Rubella virus and
- Varicella-zoster virus

#### Diffuse laryngitis

- Inflammation involves vestibule of the larynx, subglottic region and eventually adjacent parts of the respiratory system.
- Chances of oedema are less.
- More common in patients above 4 years of age.
- Causative factor is virus.
- Symptoms include- hoarseness of voice even to aphonia, scraping or burning sensations in the pharynx.
- In the case when the infection involves other levels of the respiratory tract, additional symptoms, characteristic for these levels, occur: serous discharge from the nose, dry cough, fever, etc.

### Acute subglottic laryngitis

- Cushion-like, symmetrical oedema develops in the subglottic region.
- Erythema of the mucosa of this part and exudations sometimes may be seen.
- Patients under 4 years old.
- The symptoms of this type of laryngitis include: dyspnoea, inspiratory stridor, hoarseness and a characteristic barking cough.

### TAALUKANTAKA

It is a unique disease mentioned in Ayurveda with diverse presentations including local features like depression of anterior fontanelle and systemic disorders like diarrhoea and vomiting.

In Bhaishajyaratnaavali this disease is named as TAALUPAATA.

तालुमांसे कफः क्रुद्धः कुरुते तालुकण्टकम्।  
 तैन तालुप्रदेशस्य निम्नता मूर्धि जायर्ते ॥  
 तालुपातः स्तनद्वेषः कृच्छ्रात्पानं शकृद्रवम्।  
 तृडास्यकण्डवक्षिरुजा ग्रीवादुर्धरता वसिः ॥ A.H.U. 2/63-64

### Postulation No. 1

स्तनद्वेषः	Loss of appetite
कृच्छ्रात्पानं	Difficulty in feeding
शकृद्रवं	Diarrhoea
वसि	Vomiting

Chronological appearances of above symptoms are indicative of gastro enteritis leading to vomiting, diarrhoea and loss of appetite

निम्नतामूर्धि	Depressed anterior fontanelle
तृड़	Excessive thirst
ग्रीवादुर्धरता	Drooping of head

Excessive thirst and depression in the anterior fontanelle are the hallmarks of dehydration in children after vomiting and diarrhoea.

### Postulation No. 2

तालुप्रदेशस्य निम्नता

तालुपातः

कृच्छ्रात्पानं

आस्यकण्डु Oral Itching

अक्षिरुक् Pain in eyes

These symptoms are indicative of local oral diseases which cause difficulty in feeding due to its painful inflammatory nature.

These diseases may lead to secondary inflections of GIT causing vomiting and diarrhoea finally leading to a stage of dehydration.

In the above mentioned two postulations, it is difficult to make a reasonable judgment with the available references. If the main vyadhi is atisaara and charddi with its associating symptom of dehydration, the condition need not be kapha predominant but vata predominant. The area of sthaanasamsraya according to Vaghbhata is taalu.

Oral infections are not a prominent cause for gastro enteritis in children. So it is difficult to emphasize the site of this roga.

Treatment mentioned under taalukantaka is most agreeable to the latter postulation.

1. Pratisaaranam – eg. Yavakshaara with kshoudram
2. Lepanam – eg. Hareetaki, vacha, kusta + honey in milk
3. Internal administration of drug
4. Netraparishekam

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# ANNAVAHASROTOVIKAARAS (Diseases of Gastro Intestinal System)

Children are classified as ksheeraada, ksheeraannaada and annaada due to their nature of food intake. This indicates the immaturity of their annavahasrotas according to age. The power of agni also depend on the type of material which burns by it. As children are in stage of unstable jatharaagni, they are more susceptible to get the diseases of annavaha srotas and allied disorders. Gastrointestinal system function varies with age. A symptom like regurgitation in adult may be pathological whereas the same will be normal in an infant.

### AJEERNA (Indigestion)

Ksheerapa and ksheerannaada are highly prone to develop the indigestion or ajeerna as their agni status is aniyata. This is due to their nature of food i.e. aahaara sankaraat and by their immaturity. Mostly they are taking madhura and snigdha food.

#### Features of ajeerna food

विषादो गौरवं तन्द्री श्लेष्मसेकारति ध्रमाः ।

स्वस्थवृत्तोपरोधश्च तदजीर्णस्य लक्षणम् ॥ K.S.Su.24/19

- Loss of play and activities
- Drowsiness

- Excessive salivation
- Dullness
- Giddiness
- Loss of signs of health

### Classification

Acharya Kasyapa classified ajeerna in to four types as follows.

- 1 Aamaajeerna- characterized by the feeling of 'having just taken food' always.
- 2 Vidagdhaajeerna- characterized by smoky eructation.
- 3 Sasleshmaajeerna- characterized by feeling of heaviness
4. Rasasesha ajeerna –is characterized by hridaya drava.

### Management

The protocol of the management of different type of ajeerna is as follows.

- Aamaajeerna      Uddharanam(emesis)
- Vidagdhaajeerna Pravrita sayanam(sleeping under the cloth sheet)
- Sasleshmaajeerna Sweda
- Rasaseshaajeerna Parisoshya (langhana)

### Pathyaahaara

यदुकं पथ्यमशनं तदेव एतेषु शस्यते  
 दीर्घकालौषधानां तु मुदगमण्डःसदाडिमः।  
 सस्नेहलवणव्योषः पेयो मांसरसोऽपि वा  
 बालमूलक्यूषो वा हितः शाल्योदनस्तथा॥ K.S.SU.24/25-26

- General pathyaahaaras
- Prolonged use of medicine
- Mudga mandam with daadima
- Maamsarasa with sneha, trikatu and lavana
- Yoosha made by tender moolaka
- Food made of red rice.

**ATISAARAM (Diarrhoea)**

देहवैवर्ण्यमरतिमुखग्लानिरनिद्रता ।  
वातकर्मनिवृत्तिश्चेत्यतीसाराग्रवेदना ॥

K.S.Su. 25/14

- Discolouration of body
- Uneasiness in mouth
- Fatigue
- Insomnia
- Absence of functions of vaayu (flatus)

Atisaara is a very common disease met in the paediatric clinics. This disease has been explained with due importance in all the Ayurvedic classics.

अतिसरणात् अतिसारः । A.H.Ni 8/17

अत्यन्तसरणात् अतिसारः । S.S.Ni.

The excessive sarana of purishayukta 'ap'dhaatu through adhomaarga is termed as atisaara.

**Nidaana**

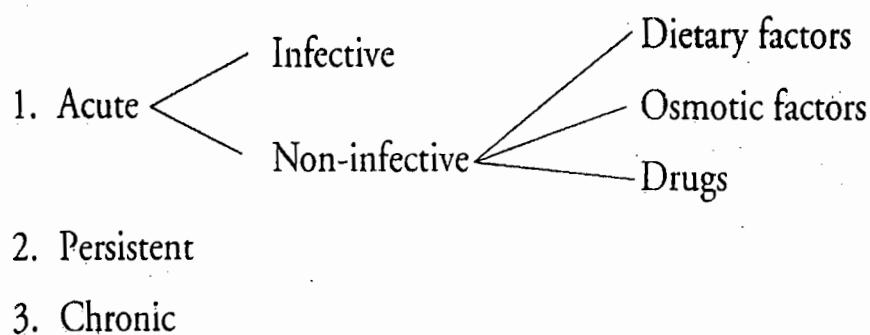
अतिसारः सं सुतरां जायतेऽत्यम्बुपानतः  
कृशशुष्कामिषासात्प्यतिलपिष्टविरुद्धकैः ।  
मद्यरुक्षातिमात्रान्नरशोभिः स्नेहविभ्रमात्  
कृमिभ्यो वेगरोधाच्च ॥ A.H.Ni. 8/1-2

The main cause of dravadhaatusarana is vaayuvridhi. The factors contributing to vaayuvridhi are summarized below.

- 1 Dietary factors.
- 2 Associated with other diseases like krimi.
- 3 Psychological (bhayam, sokam).
- 4 Alteration in the nature of breast milk (in ksheeraada & ksheerannaada).
- 5 Graha (infections).
- 6 Iatrogenic. (स्नेहविभ्रमात्)

Diarrhoea contributes 15-40 % of the deaths in age group < 5 years. In India at least 1.5 million children under age of 5 die due to acute diarrhoea every day.

Diarrhoea can be classified into three



Chronic diarrhoea can occur in the following conditions

- 1 PEM
- 2 Iron deficiency anaemia
- 3 Intestinal parasite infestation
- 4 Endemic tropical sprue
- 5 Coeliac disease
- 6 Cystic fibrosis of pancreas
- 7 Carbohydrate malabsorption
- 8 Cow's milk allergy
- 9 Irritable bowel syndrome
- 10 Crohn's disease
- 11 Ulterative colitis
- 12 Acrodermatitis enteropathica
- 13 AIDS

### Chikitsa

- The basic treatment of atisaara is same as that of adults. First assessment should be whether the condition is saama or niraama. But too much langhana therapy is not advocated even if aama is associated with the atisaara.
- In Ashtangasamgraha treatment of the pathological gastrocolic reflex (fecal out put immediately after food) is well mentioned.

पीतं पीतं च यः स्तन्यं सवात्मतिसार्थते  
तस्याप्येतत् परं पथ्यं दीपनं बलवर्णकृत्। A.S.U. 2/43

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अजमोज समंगातिविषानागर वत्सकैः।  
पाठा विल्वयुतैः क्वाथः कणाचूर्णन मिश्रितः॥  
आमशूलान्वितं हन्यातिसारं कफान्वितं।  
सरक्तं वा तथानन्त चव्य विल्वाम्बुदेः कृता॥ ARKD

## DEHYDRATION

In children the assessment of dehydration is very difficult. Treatment should be carried out assuming that all children with watery diarrhoea will have dehydration.

The clinical grading of dehydration is given below.

No	Characteristic	Mild(grade 1) Stage of symptoms	Moderate (Grade-2) Stage of signs	Severe(grade-3) Stage of complications
1	%of fluid loss	0-5%	5-10%	>10%
2	Loss in ml/kg	50 ml/Kg	50-100 ml/Kg	>100 ml/Kg
3	General appearance	Thirsty	Irritable/lethargic	Drowsy
4	Pulse	Normal	Rapid/Normal	Feeble/absent
5	BP	Normal	Decreased	Unrecordable
6	Respiration	Normal	Normal/rapid	Acidotic
7	Eyeballs	Normal	Soft	Deeply sunken
8	Anterior fontanelle	Normal	Slightly depressed	Markedly depressed
9	Skin turgor	Normal	Normal to decreased	Complete loss
10	Mucous membrane	Moist	Dry	Very dry
11	Tears	Present	Reduced	Absent
12	Urine output	Normal	Decreased	Severe oliguria to anuria

### Management of dehydration

- Correction of dehydration and restoration of fluid and electrolyte balance.
- Use of drugs

- Dietetic management
- Treatment of complications
- Symptomatic treatment
- Preventive measures.

Of the above three grades, 2<sup>nd</sup> and 3<sup>rd</sup> grade dehydration should be treated in hospital. For the grade 1 dehydration following are the measures to be taken.

1. give the child more fluid than usual to prevent dehydration
2. give the child plenty of food to prevent undernutrition
3. Take the child to the health worker if the child doesn't get better in 3 days.
4. ORS(Oral rehydration Solution)should be given in a scientific way.

#### ORS at home

- $\frac{1}{2}$  litre water + 4 teaspoon full sugar + 1/2 table spoon of salt
- $\frac{1}{2}$  litre water + 4 fingerscoops of sugar + 1-3 finger pinch of salt + twist of lemon
- $\frac{1}{2}$  litre of water + small closed fistful sugar+3 finger pinch salt

Age	Amount of ORS to give after each loose stools	Amount of ORS to provide for use at home
Less than 24 months	50-100 ml	500 ml/day
2-10 years	100-200ml	1000 ml/day
10 years or more	As much as wanted	2000 ml/day

#### Ayurvedic perspective

Severe pipasa lakshana mentioned in Kasyapasamhita can be considered as the symptomatology correlated to the signs of dehydration in Ayurveda.

ताल्पोष्ठ जिह्वागल गण्डशोषः  
श्रोत्राक्षिदौर्बल्य विषादमोहा:।  
सृत्यग्निमेधा सुख वाक्याहानि  
जिह्वाविवृद्धिश्च पिपासितस्य॥

K.S.Ka. 7/11

- Dryness of palate, lips, tongue, throat
- Unable to perceive by eyes and ears
- Lethargy(vishaada), altered sensorium and orientation(moha, smriti haani)
- No appetite
- General weakness(sukha haani)
- Protruding tongue

### CHARDDI (Vomiting)

अनिमित्तमभीक्षणं च यस्योदृगारः प्रवर्तते।

निद्राजृम्भापरीतस्य छर्दिस्तस्योपजायते॥ K.S.Su. 25/16

Vomiting in infancy, early childhood and late childhood should be considered separately because its nidaana and sampraapti are of different magnitude

#### Causes

- 1 **Nutritional:** Children have highly sensitive GIT and so food or feeding habits is one among the major causes of charddi.
- 2 **Other diseases:** The vomiting centre situated in the medulla is highly sensitive to chemical changes in any system of the body. This is a cause for charddi following other systemic disease eg:-kshayam, gulmam, krimi, kaasam etc
- 3 **Psychological:** Vomiting is a common condition seen in children having psychological deficit as attention seeking behaviors, aerophagy, etc.

#### Age wise classification of causes of vomiting

##### A. Neonate

- 1 Normal possetting (food coming up with wind)
- 2 Sucking and swallowing difficulties
- 3 Infections- meningitis, septicaemia
- 4 Intracranial- oedema, haemorrhage, kernicterus hypoxia
- 5 Obstruction- oesophagus, duodenum, small intestine, vascular ring, meconium plug or ileus, bezoars
- 6 Achalasia
- 7 Perforation of stomach/ pharynx

- 8 Renal insufficiency, urethral obstruction
- 9 Metabolic- phenyl ketonuria, galactosemia, carbohydrate intolerance, organic aciduria, adreno cortical hyperplasia

## 10 Drugs

### Infancy after newborn period

#### i Non-organic

- 1 Normal posetting
- 2 Incorrect feeds
- 3 Over feeding (pre-term babies only)
- 4 Careless handling after feeds
- 5 Rumination
- 6 Food forcing, early weaning
- 7 Delay in giving solids
- 8 Crying causing vomiting
- 9 Travel sickness
- 10 Migraine
- 11 Allergy
- 12 Achalasia
- 13 Bezoars

#### ii Organic

- 1 Infections- otitis media, gastro-enteritis, whooping cough etc
- 2 Intracranial causes
- 3 Obstruction
- 4 Peptic ulcers
- 5 Coeliac disease
- 6 Appendicitis
- 7 Metabolic disease-diabetes
- 8 Rare causes-uraemia, phenyl ketonuria galactosemia, carbohydrate intolerance, adrenocortical hyperplasia, Reyes syndrome, Riley's syndrome
- 9 Drugs and poisons

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### Vomiting after infancy

#### i Non-organic causes

- 1 Excitement
- 2 Fear/anxiety eg:-school phobia
- 3 Suggestion and irritation
- 4 Attention seeking device
- 5 Insertion of finger into throat
- 6 Migraine
- 7 Travel sickness

#### ii Organic causes

- 1 Infection eg: tonsillitis, otitis media, acute pharyngitis
- 2 Meningitis
- 3 Appendicitis, mesenteric lymphadenitis
- 4 Intestinal obstruction
- 5 Poisons and drugs eg: lead poisoning.

### Chikitsa

पीतं पीतं वमति यः स्तन्यं तं मधुसर्पिषा  
द्विवार्ताकीफलरसं पञ्चकोलं च लेहयेत् ॥ A.H.U. 2/58

If the baby is vomiting immediately after every feed, he should be given panchakolachurnam with vaartakiphalarasa and ghee and honey.

लाजविल्वबलामुदगकदलीकन्ददारुभिः  
जंबूत्वगेलासंयुक्तैः क्वाथो वमथुनाशनः A.R.K.D.

The decoction mentioned above named as laajavilwaadi kwaatha can be effectively used for charddi in older children.

### MALAAVARODHAM (Constipation)

Vibandha occurs whenever there is an obstruction to proper functioning of Apaanavaayu. It can also be produced secondarily by impairment of functions of samaana and vyaaana vaayu. Following are the disease conditions in which constipation is mentioned as one among the clinical profile.

- 1 Vaatika arsas
- 2 Gulma
- 3 Jwaram
- 4 Udaavartam

- 5 Vaataavrita vaayu
- 6 Tiktarasa dravyopayoga
- 7 Vaatika grahanī
- 8 Vaatika paandu
- 9 Raajayakshma

### **1 Vaatika arsas, udaavarta, vaataavrita vaayu**

The main predisposing factor in all the above mentioned conditions is nothing but nature of diet. In paediatric context, most of the benign causes of constipation like breast feeding, faulty artificial feeding and delayed weaning are attributed to this category and has to be treated according to principles of udaavartachikitsa.

### **2. Vaatika gulma,vaatika grahanī**

These are the functional disturbances of gastro intestinal tract leading to constipation and ajeerna. Meconium ileus and meconium plug can be accounted under this category.

### **3. Jwara**

In paediatric context constipation related to jwara is mostly encountered with deficient intake of food. The functional ileus of the new born secondary to septicaemia, pneumonia and certain metabolic abnormalities should also be kept in mind.

### **4. Paandu, Raajayakshma**

Here the metabolic disturbances caused by hypothyroidism (agni maandyam) intestinal parasitosis( krimi, paandu) cough and vomiting (raajayakshma) should be taken into consideration. The main cause of vibandha in this context is dhaatuukshaya and corresponding vaatavridhi.

Injudicious administration of different medicaments like kashaaya without considering its dose and frequency may lead to constipation.

### **Chikitsa**

A primary evaluation about the status of bowel is needed before giving a drug to the child who has not passed stool regularly. History about the food, intake of drugs, colour and consistency of the stool, any subjective complaints to the child are to be evaluated thoroughly. According to Kasyapa samhita following treatments and regimens can be adopted for a constipated

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1. Giving lukewarm water - To ensure the movements of bowel and adequate fluid intake.

शूलकफानिलतृष्णा हिक्कारोचक विबन्धं गुलमध्म्।  
ब्रणधातु मृदूकरणं दीपनमुष्णोदकमुशन्ति॥ K.S.SU.22/12

2. Giving mild swedana in abdomen (by either patasweda or hastasweda) itself will relieve the constipation. K.S.SU.23/6-7
3. Try to avoid kashaaya rasa drugs maximum, as it causes constipation again.(K.S.Khi.4/78)
4. Try to avoid dry food like fried items, as it creates constipation (K.S.Khi.5/31). However giving plain ghee itself will relieve the constipation up to some extent.
5. Following drugs can be judiciously applied in a case of constipation.
  - a Sukumaaram ghritam
  - b Hareetakee kalkam
  - c Abhayaarishtam.
6. Kwaatha intended for the relief of vibandha in Kasyapasamhitā

शठीपौष्ट्ररपिष्पल्यो ब्रह्मती कण्टकारिका  
शुष्ठी कर्कटकी भाङ्गी दुरालाभा यवानिक  
शूलानाह विबन्धघं शठयाद्यं कफवातनुत्॥ K.S.khi.19/44

7. Giving vasti chikitsa

शताह्वापिष्पली कुष्ठ वचानां देवदारुणः  
पूतीकस्य हरेणूनां बिल्वानां मदनस्य च  
शूलानाह विबन्धघमिमं वस्तिं प्रदापयेत्॥ K.S.Khi.18/46

### MUKHAPAAKA (Stomatitis)

लालास्त्रवणमत्यर्थं स्ततद्वेषारतिव्यथाः।  
पीतमुद्गिरति क्षीरं नासाधासी मुखामये॥ K.S.Su.25/8

Mukhapaaka is referred to as an oral disease which occurs in two ways. The former one occurs independently (swatantrarogam) and the latter occurs in association with (anubandha rogam) other systemic diseases like Grahani. Mukhapaaka which manifests independently is explained in Saalaakyatantra

in the Mukharogavijnana adhyaaya. Moreover it is a Sarvaasyagataroga.

Based on doshik predominance mukhapaaka is classified into five.

- 1 Vaatika mukhapaakam
- 2 Pittajamukhapaakam
- 3 Raktajamukhapaakam
- 4 Kaphajamukhapaakam
- 5 Saraktasannipaatajamukhapaakam

**Clinical features and characteristics of vrana (ulcers) in different types of mukhapaaka.**

करोति वदनस्यान्तर्वणान् सर्वसरोऽनिलः।

सञ्चारिणोऽरुणान् रूक्षानोष्ठौ ताम्रौ चलत्वचौ।

जिह्वा शीतासहा गुर्वा स्फुटिता कण्टकाचिता

विवृणोति च कृच्छ्रेण मुखं पाको मुखस्य सः॥ A.H.U. 21/58-59

Types of mukhapaka	Clinical features and characteristics of vrana
1. Vaatika	<ul style="list-style-type: none"> <li>• Lips - taamravarna chala twak</li> <li>• Tongue - Sitaasaham Guru Sphutitam Kantakaachitam</li> <li>• Vrana - Arunam Rooksham</li> <li>• Mukham Krchrena vivrunoti (difficulty to open mouth)</li> </ul>
2. Pittaja & Raktaja	<ul style="list-style-type: none"> <li>• Daaham</li> <li>• Osham</li> <li>• Tiktavaktrata</li> <li>• Vrana- Kshaarokshita kshata samam</li> </ul>
3. Kaphaja	<ul style="list-style-type: none"> <li>• Madhuraasyatwam</li> <li>• Vrana - Kandumat Pichilam</li> </ul>
4. Saraktasannipaataja	<ul style="list-style-type: none"> <li>• All features explained above are seen</li> </ul>

ataroga.

types of

vrana

## Differential diagnosis of gingivostomatitis

- Infections
  - Herpes gingivostomatitis
  - Coxsackie stomatitis
  - Vincent angina
  - Cancrum oris/gangrenous stomatitis
  - Oral thrush(Moniliasis)
  - Staphylococcal or streptococcal gingivitis
- Avitaminosis - Deficiency of riboflavin, niacin, pyridoxine and vitamin C.
- Aphthous ulcers
- Stevens - Johnsons syndrome- this disease is characterized by vesiculobulbous lesions in the mouth as well as conjunctiva.
- Fibromatosis gingivae- this is a familial condition and is characterized by gingival hyperplasia in association with mental deficiency and hypertrichosis.
- Drugs
- Dental defects
- Chronic mouth breathing

### Treatment

विरलामूलवल्कस्य स्वरसं मधुमिश्रितम्।  
 कैशिकी जाति पक्वाभ्यां सहितं धारयेन्मुखे॥  
 प्रातः प्रातस्त्रिभिरहन्याधिवसैरास्यसंभवम्।  
 ब्रणं प्रभूते वा तत्र पाययेच्छमनौषधम्॥ AKD/29/41-42

The juice taken from the root bark of viralaa mixed with honey and powder of kaishiki and jaati can be applied for at least 3 days in the morning on the mucous membrane of the mouth or by kavaladhaarana for the relief of mukhapaaka. The same drugs can be prepared as ghrita kalpana for the treatment of severe form of mukhavrana.

### GUDABHRAMSAM (Rectal prolapse)

प्रवाहणातिसाराभ्यां निर्गच्छति गुदं बहिः।  
रूक्षदुर्बलदेहस्य तं गुदभ्रंशमादिशेत्॥ S.S.Ni. 13/61

Tre

#### Nidaana

- Rooksha and durbala deham
- Straining of stool
- Persistent diarrhoea

The above nidaanas can result in prolapse of rectum.

#### Chikitsa

गुदभ्रंशे गुदं स्विन्नं स्नेहाभ्यक्तं प्रवेशयेत्।  
कारयेत् गोफणाबन्धं मध्यच्छिद्रेण चर्मणा॥ C.S.Chi. 20/61

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- Abhyanga
- Swedana
- Manual reduction of prolapsed rectum.
- Gophana bandham
- Frequent swedana
- Ksheera paaka of vaataharoushadha internally.

### RECTAL PROLAPSE

The mucosa or submucosa or the complete rectal portion, if coming out of the anal region, the condition is called as rectal prolapse. This condition is common in the extremes of life viz childhood and elderly people. Following factors predispose the child to develop rectal prolapse.

- In children sacral curve of the rectum has not well developed. So direct downward course of the rectum helps to develop this condition.
- Children's anal musculature tone will be diminished.
- Faulty bowel habit is so common in children.
- Straining such as attack of diarrhoea, whooping cough are causative factor for partial (only mucosa and submucosa) prolapse.
- In malnourished child loss of weight, lack of pararectal fat are causative.

### Treatment

- Conservative management
  - digital reposition
  - submucous injection with 5% phenol
- Operative management
  - Thierch's operation
  - Excision of prolapsed mucosa.

### UDARASOOLA (Infantile Colic)

It is a behavioural syndrome of children in the age group 2 weeks to 4 months. A healthy infant cries excessively in a paroxysmal nature, more common in evenings, without any identifiable reason. This is often associated with stiffening, drawing up of legs over abdomen and passage of flatus.

Wessel's rule of three - according to this infantile colic is characterised by crying lasting for more than 3 hours in a day, more than 3 days in a week, for three weeks.

### Epidemiology

5 – 15 % of normal infants are affected.

A typical attack of infantile colic sets in at the age of 2 weeks. The infant starts having intermittent attacks of prolonged crying, especially in the evenings. The pain is evident from the face, with drawing up of the legs against the abdomen. Though diarrhoea or vomiting is not commonly present, but passage of flatus is almost always associated. The child tends to gain weight at a rate above average as no feeding problems are involved. Rather, feeding and sucking on pacifiers provide temporary relief. Once the attack passes off, the child gets into sound sleep. Most of the attacks get totally subsided by the age of 16 weeks.

### Aetiology

#### a Gut theories:

- Dietary hypersensitivity
- Accumulation of gas or obstruction to its passage in intestine

- Hyperperistalsis and hypermotility of intestine
- Other theories include increased gut secretion, motilin secretion, hypertonicity, underfeeding, overfeeding, and fat or protein intolerance etc.

### b Behavioural theories

- Atypical parenting
- Extreme of normal variability of crying
- Parent-infant interaction problems

### GUDAPAAKA (Proctitis)

This is an inflammatory disease of the rectum. The incidence as an independent disease is not common rather it is seen to be associated as a symptom in a number of other clinical conditions.

Causes of proctitis: include the following conditions

- Ulcerative colitis
- Crohn's disease
- Sexually transmitted diseases
- Rectal infection
- Anal infection
- Rectal injury
- Bacterial infection
- Allergy
- Rectal nerve malfunction
- Certain medications
- Adverse reaction to enema
- Radiation exposure
- Herbal agent adverse reaction
- Chlamydia trachomatis
- Herpes virus 2
- Entamoeba histolytica
- Neisseria gonorrhoea

- Behcet's disease
- Trichomoniasis
- Herpes simplex
- Non-specific urethritis
- Bacillary dysentery

#### Clinical features

- Constipation
- Feeling of rectal fullness
- Left-sided abdominal pain
- Rectal bleeding
- Anorectal pain
- Rectal pain
- Proctalgia
- Blood in stool
- Mucus in stool
- Pus in stool
- Tenesmus
- Frequent urge to defecate
- Rectal inflammation
- Bloody diarrhoea
- Rectal discomfort

#### PARIKARTIKA (Anal Fissure )

It is a secondarily acquired laceration wound of the mucocutaneous junction of the anus. It is commonly presented in the infancy as a consequence of constipation resulting in forceful passage of hard stools.

#### Clinical features:

- History of constipation
- Painful defecation
- Bright red blood on the surface of stool

- Skin appendage or "tag" peripheral to laceration representing the epithelialised granulomatous tissue can be seen on inspection.

### GUDAKUTTAM

This is a pathological condition affecting the perianal skin characterized by kapha rakta pradhaana vrana resulting from unhygienic care of the child.

मलोपलेपात्स्वेदाद्वा गुदे रक्तकफोदभवः।  
ताप्त्रो ब्रणोऽन्तः कण्डूमान् जायते भूर्युपद्रवः॥  
केचित्तं मातृकादोषं वदन्त्यन्येऽहिपूतनम्।  
पृष्ठारुर्गुदकुट्टं च केचिच्च तमनामिकम्॥

A.H.U. 2/69-70

#### Etiology

- Remains of faeces on anus due to improper washing after defecation.
- Excessive sweat.
- Impure milk (तत्र धात्र्या पयः शोध्यं.....in the treatment).

#### Features

- Coppery red wounds in and around the anus.
- Severe Itching.

#### Synonyms

- Maatrikadosham.
- Pootana
- Prishtaarus
- Gudakuttam
- Anaamikam

#### Chikitsa

Both the mother and the baby should be treated

तत्र धात्र्या पयः शोध्यं पित्तश्लेष्महौषधैः। A.H.U. 2/71

Principle of treatment is pitta vranaahara chikitsa

1. Samanoushadha seva : eg - Chandana kashaayam
2. Lepanam : eg - Taarkshya with honey and chandanakwaatha

सक्षौद्रताक्षर्यशैलेन व्रणं तेन च लेपयेत्।

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3. Parishekam : Thripalaadiyogam

त्रिफलाबदरीप्लक्षत्वक्वाथपरिषेतितम्।

4. Avachoornanam : Yashtyaadi choornam

..... अवचूर्णयेत्

सुश्लक्षणैरथवायष्टीशंखसौवीरकाज्जनैः

5. Raktamoksha with jalooka

Conditions for raktamoksha

- The disease has progressed to raktadhaatu from twak and lasika
- Increased itching and redness
- No relief by use of samanoushadhas

रागकण्ठूत्कडे कुर्याद्रक्तस्नावं जलौकसा। A.H.U. 2/75

13

## RASAVAHASROTOVIKAARAS

Rasadhaatu residing in koshta is termed as annarasa and the same in general body circulation is known as rasadhaatu proper. Rasadhaatu has mainly two domains viz. psychological and somatic as its moolasthaana is hridaya. So problems and causes of rasadhaatugata diseases are presented either as a somatic disease or as a psychiatric/psychological issue or a mixture of both.

### JWARAM (Fever)

मुहर्नप्यतेऽङ्गानि जृम्भते कासते मुहुः।  
धात्रीमालीयतेऽकस्मात् स्तन्यं नात्यभिनन्दति॥  
प्रसावोष्णात्ववैवर्ण्यं ललाटस्यातिपत्ता।  
अरुचिः पादयोः शैत्यं ज्वरे स्युः पूर्ववेदना॥ K.S.Su. 25/12-13

Jwara is considered to be a swatantra roga in Ayurveda. Allopathic system of medicine views fever as one among the several clinical manifestations in many diseases. This difference of opinion indicates two methods of approach for a particular disease. The Ayurvedic methodology is to reach the pathology through clinical features, where as modern medicine gives due importance to pathogenesis rather than clinical features. Keeping in mind the relevance of both the systems,jwara in children can be divided as follows :

1. Jwara related to graham and allied disorders.
2. Anubandha jwara- related to other diseases like kaasa.
3. Swatantra jwara.
4. Aagantuka Jwara eg. Abhigaatajam.

## 5 Fever without a focus

### Jwara related to graham and allied disorders

Jwara caused by grahas are of acute onset with specific systemic manifestations. Mostly originating from infections. Allied disorders imply fever of iatrogenic (oushadha) toxic (visha) and psychosomatic (krodha, bhaya, kaama) origin included under abhishanga jwaras.

### Anubhanda jwara- related to other diseases like kaasa

Jwara can also occur secondary to other diseases like atisaara, kaasa, raajayakshma, etc. In these cases, sampraahti vighattana should be carried out in accordance with the primary disease.

### Swatantra jwara

In this context, the saamaanya sampraahti mentioned under jwara nidaana takes course. Saama and niraama differentiation of jwara becomes mandatory. Special care should be taken as progression to successive dhaatus can occur producing vomiting (rasadhaatu), skin eruptions (raktadhaatu) and febrile convulsions ( maamsadhaatu)

## FEVER WITHOUT A FOCUS

Here, the fever occurs in the absence of conspicuous nidaana, which cannot be attributed to any particular srotas. This often results in a dilemma in management. Concept of shaapa and abhichaara jwara can be identified as the underlying causes.

Fever without localizing signs or symptoms, usually of acute origin and lasting for less than one week is a tiresome hitch for the paediatricians, especially if the child is below 3 years. Fever of unknown origin presents a similar picture i.e unable to identify the cause even after 3 weeks of investigation in O.P.D. or 1 week of evaluation in a hospital.

Fever occurs when there is

- A rise in the hypothalamic set point eg- infection, malignancy, collagen vascular disease, drugs etc.
- When the body's heat production or environmental heat exceeds heat loss mechanisms-eg- malignant hypothermia

- When heat loss mechanism are defective- as in ectodermal dysplasia

### Facts on fever of children

- The vast majority of fevers are caused by viral infections and last no longer than 3 days
- There is little relationship between fever magnitude and serious bacterial infection until the temperature exceeds  $40^{\circ}\text{C}$
- Teething doesn't cause fever over  $38.4^{\circ}\text{C}$
- Fever cause no harm, such as brain damage, when it is less than  $41.7^{\circ}\text{C}$
- Only 4% children do develops febrile convulsions.

Sam

### MRITBHAKSHANAJANYA PAANDU

Here the term indicates the paanduroga originating after eating soil (or other such items like lime, chalk, etc). If we correlate paandu as anaemia, the concept is something controversial. Piça is defined as habit disorder characterized by perversion of appetite in which there is persistent and purposeful ingestion of apparently unsuitable substances seemingly without any nutritive value. An association of anaemia with pica is observed but it is not clinically proven. There is no evidence to prove that earth eating causes anaemia in human. In biomedical science pica is described as feature of habit disorder.

So here the paandu is an after effect of severe parasitic infestations leading to several systemic clinical manifestations.

### Nidaana

- Swallowing of soil

Dosha kopa occurs depending on the quality of soil

Taste of Soil	Dosha
Kashaaya	Vaata
Ushara	Pitta
Madhura	Kapham

Clinica

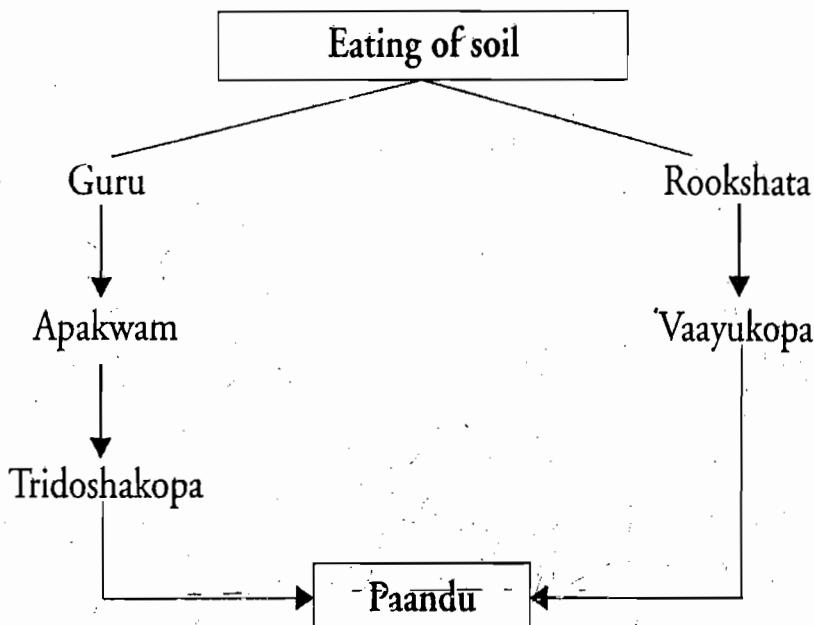
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## Sampraapti

Sampraapti proceeds in two ways



मृत्कषायाऽनिलं पित्तमूषरा मधुरा कफम्।  
 दूषयित्वा रसादीश्च रौक्ष्यात् भुक्तं विरुक्ष्य च॥  
 स्रोतांस्यपक्वैवापूर्य कुर्याद्वद्ध्वा च पूर्ववत्।  
 पाण्डुरोगं ततः शूननाभिपादास्यमेहनः॥  
 पुरीषं कृमिमन्मुच्चेदभिन्रं सासृक्कफं नरः।

A.H.Ni. 13/13-14

### Clinical features

- Paanduroga.
- Inflammatory swelling of umbilical region, feet, mouth and testis.
- Faeces contains krimi, blood or kapha (pica is always associated with parasitic infestations.)

This disease condition is mostly encountered in children, as they have more chances to swallow soil. This can also be seen in patients suffering from other diseases involving pica as one of the symptoms.

If the child is engaged in mud eating daily, chances of following diseases are noted in addition to paanduroga according to Ashtangasamgraha.

नित्यं मृत्भक्षणात् रक्षेत्या स्वर्णियतं गदाः।  
 पाण्डुत्वश्वयथुधासकासातीसारजन्तवः  
 छर्दिर्मूर्छाग्निसदन स्तन्यद्वेषाङ्गरुग्माः॥ A.S. U.1/56-57

Paandu (Anaemia)	Swayathu (edema)	Swaasa (dyspnoea)	sai ka:
Kaasa (cough)	Atisaara (diarrhoea)	Jantu (worm infestations)	Of of:
Charddi (vomiting)	Murcha (loss of sensorium)		Paa
Agnisadanam (Loss of appetite)	Bhrama (giddiness)		dia
Stanyadwesha (aversion to breast feeding)			•
Angaruk (body pain)			•
			•
			•
			•

## **PAANDU (Anaemia)**

Anaemia is defined as a quantitative or qualitative deficiency of red cells or haemoglobin concentration in circulation.

The anaemia can be classified in to following headings.

1. Nutritional anaemia - These are iron deficiency anaemia. Clinical features include progressive pallor, irritability, anorexia, tiredness, failure to thrive, pica, koilonychia.
  2. Anaemia from blood loss - Trauma, esophageal varices, hook worm infestations, ulcerative colitis, haemorrhagic diseases of new born, cow's milk allergy, haematuria, etc are the common causes.
  3. Haemolytic anaemia - These are characterized by sustained reticulocytosis above 2%.
  4. Anaemia from inadequate red cell production - This means bone marrow is unable to produce sufficient number of new red cells to replace those removed from circulation.

Paandu is a disease mentioned in Ayurveda in which discoloration of the skin especially pallor will be the chief clinical presentation. The pathogenesis of paandu includes any of the following two incidences.

- One in which sleshma situated in rakta dhaatu gives rise to paandu.
  - Pitta aggrevates and circulates all over the body making its sthaana

samsraya in different dhaatus including rakta producing paandu and kaamala.

Of these the former is more nutritional type and latter is haemolytic type of anaemia.

Paandutwa is the feature mentioned in Ayurveda in the following clinical diagnosis

- Raktapitta
- Poorvaroopa of raajayakshma
- Kaphaja mada
- Raktaarsa
- Paandu
- Pleehodaram
- Krimi
- Vranaayaama
- Prasupti(kshudra roga)
- Pitta dooshita stanya intake in child.

## RAKTAVAHA SROTOVIKAARAS

बाल्ये रक्तमया दोषाः कफपित्तादनन्तरम्।  
 षोडशे तु समे प्राप्ते त्रिदोषप्रभवा गदाः।  
 पञ्चविंशतिमे प्राप्ते ज्वरो वै सान्निपातिकः॥ H.S. 3/1

This thought from the Hareetasamhita reveals that, baalya is predominant in raktadosha in the development of diseases (pathologically). This may be due to the fact that the diseases in childhood are aasukaari, and are highly fatal. Both these attributes are given to the diseases of raktadhaatu due to its properties like ushna and teekshna.

### RAKTAPITTA

These are bleeding disorders of neonates, infants and children in which following attributes of raktapitta sampraaapti should be incorporated.

1. A history of intake of ushna teekshna dravyas either by child or by mother.
2. There should be clinical features of pitta vridhi like rakta haairidra harita varnata, swarakshaya, aamagandhaasyata, etc. This pittavridhi should be associated with raktadushti (pittaraktamurchanam-draveekaranam).

This is a disease in which dosha vitiation occurs all over the body rather than at a local site, involvement of yakrit and pliha is mandatory. All

diseases coming under raktapitta are chronic haemorrhagic disorders of congenital or acquired origin.

Sukradushti (haemophilia), garbhaja factors (drugs taken during antenatal period) can also result in raktapitta even without chronic usage of ushna teekshna dravyas.

### Management

The general line of management of the raktapitta is almost one and same in both children and adults except in some sodhanachikitsa perspective. However some clinically tested and result oriented oushadha yogas are noteworthy from the text book of Arogyarakshakalpadrumam.

विष्णुक्रान्त्या: पिबेत् कल्कं पयस्या कुंकुमस्य वा  
शाल्मली मुकुलानां वा ततस्तस्य प्रशान्तये ARKD – 4

For urdhwaga rakta pitta

- Kalkasevana of the following drugs or any one of them can be administered with milk
  - Vishnukraanthi
  - Kumkumam
  - Salmalee mukulam.
- Moordha lepa - By using navaneeta triturated with patola patra swarasa. This has been used for the bleeding from ear and nose in raktapitta.

पटोलपत्रसारेण नवनीतं विमर्द्य तत्  
विधाय नीरसं तेन मूर्धिनि लेपं प्रकल्पयेत् ARKD

- Sahasravedhee churna for hematemesis
 

सहस्रवध्याशचूर्णं तु नवनीतेन संयुतं  
लेहयेदातुरं वैद्यो रक्तच्छर्दि प्रशान्तये ARKD
- Saaribadi kashaayam as a broad spectrum formulation for raktapitta
 

शारिबा मधुकोशीरं तण्डुलीयकं वालकैः।  
द्राक्षा हिमसमङ्गाभिरुपलेपेन च साधितः॥  
ऊर्ध्वाधोगं द्विमार्गं वा रक्तपित्तं नियच्छति।  
अत्र पादशतावर्या योज्या इत्यपरे विदुः॥ ARKD

The following clinical conditions are coming under this category

1. Hereditary clotting factor deficiencies.
2. Acquired thrombotic disorders.
3. Disseminated intravascular coagulation.
4. Post neonatal vitamin K deficiency.
5. Chronic liver disease.
6. Acquired inhibitors of coagulation.
7. Purpura.

### KRIMIJA HRIDROGA (Infective endocarditis & rheumatic heart disease)

Bacterial or fungal infection of the endocardial surface of the heart or the intimal surface of certain arteries is a rare condition.

#### Essentials of diagnosis for the infective endocarditis

- Pre-existing organic heart murmur
- Persistent fever
- Increasing symptoms of heart disease
- Splenomegaly in 70% cases
- Embolic phenomena in 50% cases
- Leukocytosis, elevated ESR, haematuria, positive blood culture.

#### Other features

- Weight loss
- Cardiomegaly
- Petechiae
- Clubbing, joint pain, hepatomegaly
- Large vegetations can be seen in echocardiography

### YAKRITODARA (Hepatomegaly)

The liver (yakrit) is the largest gland in the human body. It is derived from the foregut. In Ayurvedic view, yakrit is said to be derived from sonita ie, blood. (यकृत्प्लीहनौ शोणितजौ....)

Congenital diseases of the liver commonly occur due to the following reasons.

1. Suklaartavadushti
2. Maaturaahaaravihaaram

Excessive consumption of pittalaahaara by the mother results in raktadushti and rakta in turn is the seat of origin of yakrit. So raktadushti results in yakritdushti. In other way, yakrit is the mulasthaana of raktavahasrotas and most of the yakritvikaaras are expressed as raktapradoshajavikaaras like pleehavridhi, kaamala, raktapitta, etc.

3. Another cause of yakritroga is dushti of annarasa. Dushta annarasa reaches the yakrit and manifest as different diseases.

स खल्वाप्यो रसो यकृत्स्लीहानौ प्राप्य रागमुपैति । S.S.Su. 14/5

Most of the liver diseases end in cirrhosis and ascites. This may be the predominant clinical presentation during the period of brihatrayees. The liver diseases with hepatomegaly and ascites are well mentioned in the context yakrtalyudaram.

वामपार्धाश्रितः प्लीहाच्युतः स्थानाद्विवर्द्धते ।  
 शोणितं वा रसादिभ्यो विवृद्धं तं विवर्द्धयेत् ॥  
 सोऽष्टीलेवातिकठिनः प्राक् ततः कूर्मपृष्ठवत् ।  
 क्रमेण वर्द्धमानश्च कुक्षावुदरमावहेत् ।।  
 श्वासकासपिपासास्यवैरस्याध्मानरुज्जवरैः ।  
 पाण्डुत्वमूर्च्छार्घिर्भिर्दाहमोहैश्च संयुतम् ॥  
 अरुणाभं विवर्णं वा नीलहारिद्रराजिमत् ।  
 उदावर्तरुजानाहैर्मोहतृडदहनञ्जवरैः ॥  
 गौरवारुचिकाठिन्यैर्विद्यात्त्र मलान् क्रमात् ।  
 प्लीहवदक्षिणात्पार्धात् कुर्याद्यकृदपि च्युतम् ॥ A.H.Ni. 12/23 - 27

A comparative study of yakritaalyudaram and common hepatic disorders is given below.

#### Clinical Manifestations

- Hepatomegaly (अष्टीलेवातिकठिनः, कूर्मपृष्ठवत्, कालान्तरात् खरीभूतः)

A.H. Ni. 12/24.

- Increased vertical span.
- Dull on Percussion.
- Jaundice (peetawam)

Types : Conjugated, Unconjugated

- Pruritis
  - ◆ Cholestatic disorders
- Spider angioma (rajeejanma)
  - ◆ Indicative of chronicity
  - ◆ Most prominent in chest and face
- Palmar erythema (अरुणाभं विवर्णं नीलहारिद्राजिमत्) A.H. Ni. 12/26
  - ◆ Mostly seen in Chronic cases
  - ◆ Mostly on thenar and hypothenar eminences
- Xanthoma
  - ◆ Deposition of lipids in the space between dermis and subcutaneous tissue.
- Portal hypertension (udaram)
  - ◆ Variceal haemorrhage (प्रभवत्यसृजः स्थानात्) – A.H.Ni. 3/3
  - ◆ Caput medusae
- Ascites (क्रमेण वर्धमानश्च) - A.H. Ni. 12/25
- Variceal haemorrhage (शोणितं वृद्धं) – A.H. Ni. 1/24
- Encephalopathy (murcha, moham) – A.H. Ni. 12/26
  - ◆ May be mild as poor school performance
  - ◆ Result of impaired BBB (Blood Brain Barrier)
- Endocrine abnormalities
  - ◆ Due to impairment in the protein conjugation of hormones,
  - ◆ More common in adults

- Renal dysfunction (रुक्षास्ति, मूत्रमल्पकम्)
  - ◆ Hepatorenal syndrome
  - ◆ Intense renal vaso constriction with co-existent systemic vaso dilatation
- Pulmonary involvement (swasa – kaasa) – A.H. Ni. 12/25
  - ◆ Hepatopulmonary syndrome - hypoxemia + intrapulmonary vascular dilatations+liver disease
  - ◆ Recurrent cholangitis

The enlargement of liver is known as hepatomegaly. This is a usual observation in clinical practice in paediatrics. The causes of hepatomegaly are enlisted below.

1. Hepatomegaly in the new born
  - a. Congestive cardiac failure
  - b. Neonatal hepatitis
  - c. Extra hepatic biliary atresia
  - d. Erythroblastosis fetalis
  - e. Intrauterine infections
  - f. Septicaemia
  - g. Galactosemia
  - h. Alpha-1-anti trypsin deficiency
  - i. Gangliosidoses
  - j. Cholesterol storage disease
  - k. Wolman's disease
2. Hepatomegaly in the later infancy and childhood
  - a. Infections and inflammations
    - i. Amoebic hepatitis
    - ii. Ascariasis etc.

- b. Haematogenous disease- eg- thalassemia major
- c. Nutritional problems- eg- Kwashiorkor
- d. Vascular/congestive hepatomegaly- hepatomegaly will be an early sign in CCF.
- e. Storage disease
  - i. Glycogen storage disease
  - ii. Wilson's disease etc.
- f. Malignant disease
  - i. Leukaemia
  - ii. Neuroblastoma etc.
- g. Miscellaneous conditions
  - i. Indian childhood cirrhosis
  - ii. Congenital liver cysts etc.

### **PLEEHODARA (Splenomegaly)**

Splenic enlargement ranks only next to hepatomegaly in frequency of occurrence of abdominal distension in infancy and childhood. A palpable spleen means, the organ has enlarged to 2-3 times. Causes of the splenomegaly in children are given below

1. Infections
  - a. Chronic malaria
  - b. Enteric fever
  - c. Tuberculosis
  - d. Kala azar disease etc
2. Hematogenous diseases
  - a. Anaemia
  - b. Thrombocytopenic purpura etc.
3. Congestive splenomegaly- this is occurring secondary to portal or

splenic vein obstruction in the diseases like Wilson's disease.

4. Inborn errors of metabolism

- a. Glycogen storage disease

- b. Hemosiderosis etc.

5. Malignant diseases like Hodkins lymphoma

6. Miscellaneous

- a. SLE

- b. Cysts

- c. Juvenile rheumatoid arthritis etc

### **UCHA-RAKTACHAAPA (Hypertension in children)**

Hypertension in children is defined as blood pressure reading greater than 90<sup>th</sup> percentile for age and sex obtained on three separate occasions. The normal blood pressure at various age is given in the appendix. An exact idea of aetiology is needed to understand the hypertensive condition of children for the effective treatment.

#### **Aetiology**

1. Primary hypertension

Very unusual. It accounts only 5-10% of the total cases.

2. Secondary hypertension

a. Intrinsic renal diseases

- i. Chronic glomerulonephritis

- ii. Obstructive uropathy

- iii. Chronic pyelonephritis etc

b. Renovascular

- i. Renal artery stenosis

- ii. Renal vein thrombosis etc.

c. Endocrine

- i. Pheochromocytoma

- ii. Adreno genital syndrome
- iii. Cushing's disease etc.
- d. Miscellaneous
  - i. Drug induced
  - ii. calcium toxicity etc.

#### Clinical features

- 1. Asymptomatic for years
- 2. Head ache, nausea, vomiting, dizziness and irritability
- 3. Features of renal/endocrine disorders
- 4. Renal damage
- 5. Coarctation of aorta
- 6. CCF extremely rare

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## MAMSA-MEDOVAHA SROTOVIKAARAS

The diseases of rasa, rakta dhaatus are well mentioned in all samhitas as they are having good prognosis with Ayurvedic medicine. Diseases of asthi, majja and sukla dhaatus are mostly incurable diseases. But diseases from maamsa and medo dhaatus are in between these prognoses. They are yaapya or krichrasaadhyा but they are treatable rather than curable either by medical or by surgical interventions. In most of the diseases these dooshyas are running hand in hand due to their functional and structural similarities.

### GALAGANDA (Goitre)

This is one of the kanta rogas explained in Ashtanga hridaya

पवनश्लेष्ममेदोभिर्गलगण्डो भवेत् वहि:।

वर्धमानः स कालेन मुष्कवल्लम्बतेऽतिरुक् ॥ A.H.U. 21/53

The main doshas involved are vaata and kapha vitiating the medas. These three vitiated doshas forms galaganda on the external part of kanta. If untreated elongates forming the shape of vrishana.

- Blackish in colour with black streaks
- Very painful
- Dryness of throat

- Loss of taste sensation-vaatika symptoms

### **Chikitsa**

This is treatable only in the initial stages

- Swedana
- Raktamoksha
- Upanaaham
- On formation of vranaavastha, lepana has to be done with sigru, tilwaka, etc mixed with sura or kaanjika.

### **Kaphaja galaganda**

- Hard
- Colour similar to body
- Itching
- Cold to touch
- Sticky feeling in throat
- Sweetness in mouth
- Heaviness

### **Chikitsa**

- Swedana
- Vimlaapana
- Ajagandhaadi pralepa
- Paana of kshaarataila
- Practice of kaphahara nasya, vamana etc

### **Medoja galaganda**

- Symptoms are similar to those of kaphaja galaganda
- Aggravates and relieves corresponding to dehavidhi and kshaya

### **Chikitsa**

- Siraavedha
- Kaphahara chikitsa

## DIFFERENTIAL DIAGNOSIS OF THYROID MASS

- Thyroid nodule
  - Cold nodule
  - Hot nodule
- Non toxic nodular goitre
- Thyroiditis
  - Acute suppurative thyroiditis
  - Subacute thyroiditis
  - Hashimoto's thyroiditis
  - Riedel's struma
  - Nonspecific inflammation
- Neoplasm of the thyroid

### GANDAMAALA (Cervical lymphadenopathy)

कर्कन्धु कोलामलकप्रमाणैः कक्षांसमन्यागलवड्क्षणेषु।

मेदः कफाभ्यां चिर-मन्दपाकैः स्यादगण्डमाला बहुभिश्च गण्डैः॥ Ma.Ni.

Main doshas : Medas and kapha

Site of lesion : Axilla, scapular region, back of neck, throat, groin

Type of lesion : In the shape of karkandu, kola or aamalaka

It has a chronic course and is many in number around the neck.

The descriptions of gandamaala especially in paediatric context go hand in hand with the references of lymphadenopathy of neck region. The term lymphadenopathy refers to enlargement of lymph nodes irrespective of its etiology. In the context of gandamaala following regional lymphadenopathy has to be taken in to consideration.

- Submental
- Anterior cervical
- Posterior cervical
- Suboccipital

- Postauricular /
- Preauricular
- Submandibular.
- Superficial inguinal lymph nodes.

Lympadenopathy is of mainly two types according to its clinical presentation.

### 1. Acute inflammations and infections

- Acute tonsillitis or pharyngitis
- Infectious mononucleosis, rubella, measles etc.
- Cytomegaloviral infections
- Acute brucellosis

### 2. Chronic clinical conditions

- Tuberculosis
- Malignancies
- Syphilis
- Chronic brucellosis
- Chronic granulomatous disease
- Filariasis
- Kawasaki's disease
- Some drugs like carbamazepine

### Treatment

1. While describing vamanasaadhyas and in the indications of nasya karma, in Kasyapasamhita sidhisthaana, the diseases galaganda and gandamaala are enumerated. So vamana as well as nasya can be adopted in the management of these diseases.
2. Otherwise the conditions are to be managed according to the real cause of the disease.
3. The disease gandamaala is a maamsapradoshaja vikaara according to the references of sootrasthaana of Charakasamhita, Ashtangasangraha

and Sushrutasamhita. So it should be treated by

- a. Sastra karma
- b. Kshaara karma
- c. Agni karma.

### **APACHI (Lymphadenitis)**

Lymphadenitis is the inflammation and/or enlargement of a lymph node. Lymph node enlargement is common in children. Most cases represent a response to benign, local, or generalized infections (usually viral). Lymphadenitis may affect a single node or a localized group of nodes (regional adenopathy) and may be unilateral or bilateral. The onset and course of lymphadenitis may be acute, subacute or chronic.

Most children with lymphadenitis exhibit small palpable cervical, axillary, and inguinal nodes. Approximately 5% of these children have palpable suboccipital or postauricular nodes. Palpable supraclavicular, epitrochlear, and popliteal nodes are uncommon, as are mediastinal or abdominal nodes that are detected with radiographic studies.

#### **Causes**

- Infections
  - Acute, one-sided, pyogenic adenitis is most common. The involved node may be firm and tender, with erythema of the overlying skin. Etiological agents include group A beta-hemolytic streptococci, staphylococcal organisms (especially *Staphylococcus aureus*), and viruses.
  - Tularemia may be accompanied by regional adenopathy, most commonly cervical, with local tenderness, pain, and fever. Generalized lymphadenopathy may also develop.
  - In a child with tuberculosis, generalized lymphadenopathy may indicate hematogenous spread of tubercle bacilli. Localized involvement is most common in the mediastinal, mesenteric, or anterior cervical nodes. Initially, the nodes are discrete, firm, mobile, and tender. If the patient remains untreated, the nodes soften, become fluctuant and matted, and adhere to overlying skin, which may

become erythematous. Bilateral involvement is characteristic of this condition. Pulmonary disease is common.

- Atypical mycobacteria can manifest cervical or submandibular involvement identical to that of tuberculosis, except the involvement is usually unilateral.
- Group B streptococcal cellulitis and adenitis may occur in infants younger than 2 months.
- Brucellosis may accompany chronic or intermittent lymphadenopathy.
- *Y enterocolitica* may be associated with cervical lymphadenitis.
- *Salmonella* infection can correspond to generalized adenopathy.
- Bubonic plague is caused by *Y pestis*.
- In patients with catscratch disease, the site of the scratch determines if axillary, epitrochlear, supraclavicular, femoral, inguinal, or submaxillary lymph nodes are involved. The nodes are nontender, discrete, mobile, and moderately or greatly enlarged. Occasionally, tenderness, redness, warmth, and suppuration may occur. *Bartonella henselae* is the organism that causes catscratch disease.
- Patients with infectious mononucleosis typically present with discrete, firm, nontender lymph nodes. Usually, anterior cervical nodes are involved. Generalized lymphadenopathy may occur, and hepatosplenomegaly is common.
- Cytomegalovirus or toxoplasmosis may cause a mononucleosis like syndrome with generalized adenopathy, fever, atypical lymphocytes, and hepatosplenomegaly.
- Gianotti-Crosti syndrome accompanies generalized lymphadenopathy, hepatomegaly, splenomegaly, nonicteric hepatitis, and crops of papular lesions that persist for 2-8 weeks.

#### Immunological or connective tissue disorders

Juvenile rheumatoid arthritis should be considered in unexplained fever and persistent lymphadenopathy in a child.

- o Serum sickness can correspond with generalized tender lymphadenopathy.
- o Chronic graft versus host disease may occur.
- Primary disease of lymphoid or reticuloendothelial tissue
  - o Acute leukemia
  - o Lymphosarcoma
  - o Reticulum cell sarcoma
  - o Hodgkin disease
  - o Non-Hodgkin lymphoma
  - o Malignant histiocytosis or histiocytic lymphoma
  - o Nonendemic Burkitt tumor
  - o Nasopharyngeal rhabdomyosarcoma
  - o Neuroblastoma
  - o Thyroid carcinoma, chronic lymphocytic thyroiditis
  - o Histiocytosis X
  - o Kikuchi disease
  - o Benign sinus histiocytosis
  - o Angioimmunoblastic or immunoblastic lymphadenopathy
  - o Chronic pseudolymphomatous lymphadenopathy (chronic benign lymphadenopathy)
- Immunodeficiency syndromes and phagocytic dysfunction
  - o Chronic granulomatous disease of childhood
  - o Acquired immunodeficiency syndrome
  - o Hyperimmunoglobulin E (Job) syndrome
- Metabolic and storage diseases
  - o Gaucher disease
  - o Niemann-Pick disease

- o Histiocytosis X

- o Cystinosis

**Hematopoietic diseases**

- o Sickle cell anemia

- o Thalassemia

- o Congenital hemolytic anemia

- o Autoimmune hemolytic anemia

**Other disorders**

- o Kawasaki disease usually presents with cervical adenopathy that is unilateral and with nodes that are firm, nontender, and greater than 1.5 cm in diameter. Overlying skin may be erythematous but not warm.
- o Drug use can affect lymph nodes. Mesantoin use may cause enlargement of lymph nodes (most commonly in the cervical region), fever, eosinophilia, rash, and hepatosplenomegaly. Hydantoin use also may produce lymphadenopathy as an adverse effect.
- o Almost all patients with sarcoidosis demonstrate either generalized or hilar lymphadenopathy. When enlarged, bilateral cervical nodes are firm, rubbery, and discrete, with little tendency to coalesce. Other symptoms include fatigue, cough, fever, dyspnoea, and weight loss. Hyperglobulinemia and eosinophilia are common laboratory findings.
- o Castleman disease or benign giant lymph node hyperplasia may cause lymphadenopathy in the mediastinum, abdomen, neck, or axilla. Some patients experience fever, anaemia, weight loss, and hyperglobulinemia.

### STHAULYA (Childhood obesity)

Obesity is overweight due to the excessive accumulation of fat in the body. The best parameter for evaluating obesity is the Body Mass Index.(BMI).

$$\text{BMI} = \text{weight in (kg)} / \text{Height in M}^2 = \text{kg/M}^2$$

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Obesity basically is of four types

- 1 Exogenous obesity- is resulting from the disproportion in the consumption and utilization of the energy by food and activities.
- 2 Endogenous obesity.- is resulting from different diseases of the individual. Those diseases are mentioned as
  - a. Cushing's syndrome
  - b. Hypothyroidism
  - c. Pseudohypoparathyroidism
  - d. Hypothalamic dysfunction
  - e. Polycystic ovaries
  - f. Prader willi syndrome
  - g. Drugs
3. Genetic syndromes
  - a. Laurence-Moon beidi syndrome(boys with obesity, short stature, MR, polydactyly, retinitis pigmentosa)
  - b. Turner's syndrome
4. Drugs
  - a Steroids
  - b Some anticonvulsants

### Atisthoulya

These are clinical conditions in which irrespective of other dhaatus, only medo dhaatu is getting nourished pathologically by agni maandya at dhaatu level. Still there are chances of getting obese in several aspects. In Ayurvedic view three types of sthalyata are mentioned.

1. Atisthaulya due to dhaatwaagni maandya
2. Sthulya by adyasana (over feeding)
3. Sthulya by maataapitra anukaranat (genetically determined)

### Clinical features

अयथोपचयोत्साहश्चलस्फिगुदरस्तनः।  
अतिस्थूलः स्मृते.....॥ A.S.SU.24/14

- Disproportionate growth pattern
- Loss of vigor and vitality
- Flabby buttocks and breasts

### Saamaanya chikitsa

योज्यं तत्रान्नं मारुतापहम्।  
 इलेष्म मेदोहरं यच्च कुलतथा यवकायवाः॥  
 जूर्णश्यामाक मुद्गाद्याः पानेऽरिष्टां मधूदकम्।  
 मस्तु तक्रं च तीक्ष्णोष्णं रुक्षं छेदि च भेषजम्॥  
 चिन्ता व्यवाय व्यायाम शोधनास्वपनं भजेत्।  
 देहापेक्षी तथा रुक्षं स्नानमुद्वर्तनानि च॥ A.S.SU.24/15

### Regulation of Food

- Sleshma medoharam, vaataharam
- Kulatha, yava, mudga etc
- Arishta paanam
- Madhoodaka paanam

### Exercises

- Chinta
- Vyavaaya
- Vyaayaamam
- Aswapna

### Drugs

- Rooksham, chedi, tikshnam, ushnam
- Sodhanachikitsa
- विडंगं नागरं क्षारं काललोहं रजोमधुं  
यवामलकं चूर्णं च योगोऽतिस्थौल्यं दोषजित्। A.S.Su. 24/19

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# MUTRAVAHASROTOVIKAARAS (Diseases of Urinary System)

Mootra is the chief drava mala which eliminates excess of kleda from the human body. Almost all diseases which are mentioned for adults like mootraaghaata, mootrakrichra, prameha, asmari, etc are also met with children but with in variable frequency and incidence. According to Ayurveda asmari is more common in paediatric age group.

### ANURIA (Mootraaghaata)

Anuria is absence of any urine output.

- Normal, healthy newborns may have no urine output for 24 hours after birth
- Oligouria is decreased urine output.

Infants : <0.5 ml/kg per hour for 24 hours

Older children : < 500 mL/1.73 m<sup>2</sup> body surface area per day

Oliguria is much more common than anuria but can lead to anuria, resulting in serious renal damage that requires specialised care.

### CAUSES OF ANURIA

#### Neonates

- Prerenal

Perinatal asphyxia

Respiratory distress syndrome

Hemorrhage

Sepsis or shock

Congenital heart disease

Dehydration

Drugs (indomethacin, maternal use of ACE inhibitors or nonsteroidal antiinflammatory drugs)

- Renal

Acute tubular necrosis

Exogenous toxins (aminoglycosides, amphotericin B)

Endogenous toxins (hemoglobin, myoglobin, uric acid)

Congenital kidney diseases

Vascular (renal vein thrombosis, renal artery thrombosis)

- Postrenal

Posterior urethral valves

Meatal stenosis

Bilateral ureteral obstruction

Neurogenic bladder

### **Children**

- Prerenal

Dehydration

Hemorrhage

Burns

Third-space loss (surgery, trauma, nephrotic syndrome)

Renal loss (diabetes mellitus, diabetes insipidus, diuretics)

Shock

Decreased cardiac output

- Renal

Acute tubular necrosis

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### Glomerulonephritis

Exogenous toxins (aminoglycosides, amphotericin B)

Endogenous toxins (hemoglobin, myoglobin, uric acid)

Vascular (hemolytic-uremic syndrome, vasculitis)

- Postrenal

- Posterior urethral valve

- Meatal stenosis

- Bilateral uretral obstruction

- Neurogenic bladder

### VRIKKASOTHA

(Acute Glomerulonephritis and Nephrotic Syndrome)

### ACUTE GLOMERULO NEPHRITIS

This condition accounts for almost 90% of the childhood renal diseases. More frequently, it affects the male children above the age of 2 years. It is characterised by sudden onset of hematuria, oliguria, oedema and hypertension.

#### Etiopathogenesis

This condition is identified as an immune-mediated disease and may be involved in pathologies like:

- Primary Streptococcal infection of throat or skin
- IgA Nephropathy
- Henoch – Schonlein Purpura
- Membranoproliferative glomerulonephritis
- Glomerulonephritis of Systemic Lupus Erythematosus (SLE)
- Hereditary glomerulonephritis

#### Clinical features

1. Sore throat is the first symptom
2. Acute onset of fever, puffiness and smoky bloody urine follow in sequence within 7 – 14 days
3. Vomiting

4. Headache
5. Malaise
6. Oliguria
7. Hypertension

### **Diagnosis**

1. Urine analysis: the total urine output is reduced and analysis reveals mild to moderate albuminuria, red cells, pus cells and granular casts.
2. High ASO titre
3. High ESR
4. Elevated levels of blood urea and potassium
5. Presence of streptococci in throat swab may be occasionally identified

### **Complications**

1. Hypertensive encephalopathy
2. Congestive cardiac failure
3. Acute renal failure

## **NEPHROTIC SYNDROME**

A common syndrome of the paediatric age group, this condition is characterized by profound hypoproteinemic oedema, gross albuminuria and hyperlipidemia.

### **Etiopathogenesis**

It is known to have two types:

1. Idiopathic: almost 90% of the childhood cases fall under this group. It is an auto-immune condition responding well to immunosuppressive therapy.
2. Secondary: children are only occasionally affected by this type. This is primarily preceded by:
  - Chronic glomerulonephritis
  - Focal glomerulonephritis
  - Membranous glomerulonephritis
  - Membranoproliferative glomerulonephritis

- Mesangial proliferative glomerulonephritis with IgM or IgA-IgG deposition
- Diabetes mellitus
- Renal vein thrombosis
- Systemic lupus erythematosus
- Malignant hypertension
- Amyloidosis
- P. malaria infection
- Henoch – Schonlein Purpura
- Syphilis
- Hepatitis B
- Infective endocarditis
- Sickle cell disease
- Lymphomas
- Varicella
- Ventricular atrial shunt infection
- AIDS
- Drug toxicity
- Congenital anomalies of renal structure

### Clinical features

This condition is twice as common in males as in females. The age of onset ranges between 1 – 5 years (peak being 2-4 years). Clinical features show a gradual onset including:

- 1 Weight gain
- 2 Periorbital puffiness
- 3 A well developed case presents with massive anasarca, hydrothorax, massive ascites, and respiratory embarrassment.
- 4 Diarrhoea due to waterlogging in the gut
- 5 Hepatomegaly
- 6 Occasionally raised BP
- 7 Anaemia

- 8 High ESR
- 9 Reduced urine output
- 10 Reduction in immunoglobulins may result in respiratory, skin and peritoneal infections.

3

### Diagnosis

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- 1 Urine analysis: Gross proteinuria (2-20 gm/24 hours)  
Slight hematuria may be present
- 2 Blood analysis: Hypoproteinemia.  
Serum albumin/globulin ratio is reversed  
Hypogammaglobulinemia  
Serum cholesterol and triglyceride levels moderately raised  
Low creatinine clearance  
Blood urea nitrogen increased  
Hypomagnesemia  
Low ASO titre  
Raised serum IgG and IgE, with reduced IgM

### 3 Kidney biopsy

#### MUTRAKRICHRA (Dysuria)

Dysuria means uneasy or painful micturition. It may be primary or secondary.

In the primary variety the etiology involves the structures of the urinary tract itself. Contrarily, in the secondary variety, dysuria is due to the involvement of urinary tract secondary to any other systemic disease. The common causes that can lead to dysuria are:

- 1 Physiological dysuria: due to decreased fluid intake in hot climates or febrile conditions
- 2 Urinary tract infection: dysuria associated with hot urination, urgency, frequency, dribbling, foul-smelling urine, recent onset of enuresis or daytime incontinence, fever, anorexia, abdominal pain, irritability and vomiting. Mucous membrane of the external genitalia is inflamed. May

occasionally be associated with symptoms of sepsis, jaundice or hematuria. Urine culture is the tool for diagnosis.

- 3 Acute glomerulonephritis: after an incidence of pharyngitis or impetigo, dysuria may manifest among the symptoms of glomerulonephritis that may follow the infection.
- 4 Local factors urinary tract structures:
  - a Anterior urethritis: dysuria with postvoiding spotty urethral bleeding.
  - b Prostatitis: dysuria with frequency and urgency of micturition, fever, purulent discharge per urethra and perineal or low back ache.
  - c Meatal stenosis: dysuria with terminal hematuria or urinary spotting due to narrow meatal orifice following perimeatal inflammation or post circumcisional ulceration.
  - d Urethral valves: dysuria may be caused due to hyperplastic folds of tissue located in posterior urethra. This condition is diagnosed by voiding cystourethrogram.

## ANYABAALAVIKAARAS (Miscellaneous Paediatric Disorders)

### VAAMANATWAM (Short Stature)

#### निरूक्ति

- हस्वाकृति - C.S.Sa 3/15
- अत्यन्तहस्वशरीरः - S.S.Su 24/5
- अतिहस्वदेहत्वम् - C.S.Su 20

The main nidaanas of vaamanatwa attributed by Ayurveda are:

- Dauhridavimaanam
- Suklaartavadushti
- Aahaara and vihaara of garbhini

The general causes of congenital deformities are mentioned in the fourth chapter of saareerasthaana in Charakasamhita.

#### Types

1. Primary short stature- due to intrinsic defect in the skeletal system  
• as a result of genetic or prenatal damage.
2. Secondary short stature- impairment of bone age and height to the same extent. The potential for reaching adult height is subject to availability of suitable treatment.

- Proportionate short stature- nutritional dwarfism, IUGR, genetic disorders etc are coming under this category
- Disproportionate short stature
  - With short limbs- achondroplasia, hypochondroplasia, mesomelic dysplasia etc are coming under this group
  - With short trunk- mucolipidosis, caries spine, spondylo epiphyseal dysplasia is examples in this group.

### Differential diagnosis of short stature

- Genetic short stature
- Constitutional short stature
- Primordial dwarfism
- Nutritional dwarfing
- Emotional deprivation
- Chronic visceral diseases
- Endocrinopathies eg:- hypothyroidism
- Skeletal disorders eg:- achondroplasia
- Chromosomal disorders

### JADATWAM (Floppy Baby Syndrome)<sup>1</sup>

The term jadatwam (nispandata) denotes that the baby is unable to do the motor activities. There occurs no muscular reaction to the particular stimuli. However, the baby may cry, respire, digest food, defecate and micturate. This proves that only the peripheral muscular activities governed by Vyaanavaayu becomes functionless. 2 (prasaaranananakunjana.....)

If the baby expresses any of the paitika vikaaras like jaundice (CNS

1 गुरुता सर्वगात्राणां सर्वसन्ध्यस्थिजा रुजः ।  
व्याने कफावृते लिंगं गतिसंगस्तथाऽधिकः ॥ C.S.Chi. 28/228

2. प्राणवृते समाने स्युर्जडगदगदमूकता: । C.S.Chi. 28/204

जड - cold, frigid, stiff, motionless, paralysed, void of life.

जडत्वम् - Stiffness, Senselessness. (Ref : Sir Monier Nomies Williams)

kernicterus, Chromosomal anomalies ) the vyaana vaayu becomes aavruta by pitta but such cases are rare.

Commonly kaphaavruta symptoms like sithila sandhi maamsata, etc. are observed in floppy baby syndrome.

### Differential Diagnosis of Floppy Baby Syndrome

1. Benign Congenital Hypotonia
2. Werdnig - Hoffmann Disease
3. Myasthenia Gravis
4. Cerebral Palsy
5. Congenital Hypothyroidism
6. Down's Syndrome
7. Prader - Willi syndrome
8. Marfan Syndrome

### PANGUTVAM

This is a vaatavyaadhi. The vitiated vaata localizes in katipradesha and later enters the kandaras of both legs, arresting or impairing their motor activities. This condition is termed as pangulavaata by Dalhana and the person is termed pangu.

वायु कट्यां स्थितः सकृथनः कण्डरामाक्षिपेद्यदा।  
तदा खञ्जो भवेत् जन्तु पङ्गुः सकृन्दोद्वयोरपि॥ A.H.Ni. 15/45

Here the pathology is limited to the lower limbs not affecting the gross body. The kandaras where the sampraapti occurs is four in number - 2 on each leg.

षोडश कण्डराः तासां चतस्रः पादयोः॥ S.S.Sa. 5/11

Those kandaras originating from urvi and extending to the tip of nails are described as "Mahaasnaayu" by Dalhana Acharya. They can be the larger nerves of thigh originating from lumbo sacral region. This view brings to light the fact that pangulavaata is a neurological lesion rather than an orthopaedic deformity.

The clinical conditions associated with diplegia are

1. Post polio paralysis.
2. Lumbo sacral cord lesions
3. Some stages of spino muscular atrophy
4. Limp Girdle Muscular Dystrophy etc.

### **MOOKATWAM**

Mookatwa is caused due to a defect in the development of language in a child. Language may either be deficient or completely absent.

**मूकत्वं निर्वक्तव्यमल्यवचनं वा।**

Language development is a conjoined action of brain, tongue, larynx and associated structures. Production of intelligible sound modified by an underlying mental act results in language. A language disorder indicates a defect in either mind (manas) or body or both.

As per the view of ancient Indian scholars, language is produced in the following manner: when aatma approaches a substance, together with budhi, induces manas to produce sound. Mana mobilizes jatharaagni and which in turn mobilizes the vaayu from its sthaana. This vaayu moves upwards, gets obstructed at siras and comes through mouth as varnas.

In medical perspective, this vaayu is praana and udaana (A.S.Su.20/1) manodhaarana (praana) manobodhana (udaana) and vaakpravriti (udaana) are the chief psycho physical fuctions governed by these vaayu. Whenever these functions of vaayu or manas get upset mookatwa can be produced. Causes of such upset in Ayurveda are given below.

1. Siroabhigaata (C.S.Si 9/60) can happen as birth injury
2. Neela-manyamarmaabhigaata -S.S.Sa. 6/2-this can happen in the assisted delivery.
3. Praanaavrita samaana(C.S.Chi 28/204).
4. Iatrogenic. c.s.su 5/38 (dhoomapaana atiyoga or akaaladhoomapaana)
5. An exclusive somatic factor can produce mookatwa, i.e. jihwastambha

(A.S.Ni 15/13) as a swatantra roga. It is mentioned by Sushruta as an individual vaatavyaadhi.

Expressive language disorders, phonological disorders, stuttering and dumbness are some of the underlying conditions of mookatwa.

### The causes of pathological speech and language delay/disorder

#### 1. Neurological

- a. Global learning disability (Mental retardation)
- b. Cerebral palsy
- c. Autism
- d. Developmental dysphasia
- e. Selective mutism
- f. Congenital supra bulbar palsy
- g. Acquired epileptic aphasia
- h. Acquired brain injury

#### 2. Neuromuscular

- a. Duchenne muscular dystrophy
- b. Dystrophia myotonica
- c. Congenital bulbar palsy(nuclear agenesis)

#### 3. Local structural

Malformations of tongue,lips,palate, teeth

#### 4. Sensory

- a. Bilateral sensory neural hearing loss
- b. Deaf blindness
- c. Severe visual impairment.

#### 5. Mixed

त्रिकटु त्रिफला धन्या यवानी सालमलिका।  
वचा ब्राह्मी तथा भाङ्गी चूर्णज्व धनुना हितम्।  
वाक्पटुत्वज्व बालानां नादो वीणासमस्वरः

This yoga is explained in Hareetasamhita for the improvement of language and vocabulary. This may be useful in expressive language disorders.

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## CHILD PSYCHIATRY - Common Disorders

### 1. Mental retardation

### 2. Learning disorders

- Reading disorders.
- Mathematics disorders.
- Disorder of written expression.

### 3. Disorder of motor skills

Developmental co-ordination disorder is significantly impaired development of motor co-ordination and cannot directly attributed to either a neurological disorder or a general mental retardation.

### 4. Communicative disorders

- Expressive language disorder
- Mixed receptive expressive language disorder
- Phonological disorder
- Stuttering

### 5. Pervasive developmental disorder

#### Attention deficit disorders

- Adult manifestation of attention deficit/hyperactivity disorders.

There are early onset conditions characterized by delay in the development of social, communicative and other skills. Eg. autism.

### 6. Disruptive behavior disorder

### 7. Feeding eating disorders of infancy and early childhood

Eg. Pica, bulimia.

### 8. Tic disorders

### 9. Elimination disorder (enuresis, encorpescis), suicide in children & adolescence

### 10. Anxiety disorders in children

- Obsessive compulsive disorder.
- Post-traumatic stress disorder in children & adolescence.

11. Separation anxiety disorder & other anxiety disorder
12. Selective mutism
13. Early onset of schizophrenia

### MENTAL RETARDATION

Mental retardation is defined as significant sub average general intellectual function, existing concurrently with deficits in adaptive behaviour and manifest during the developmental period.

#### **Classification**

Category	IQ level
Mild	50-55 to 70
Moderate	35-40 to 50-55
Severe	20-25 to 35-40
Profound	<20-25

#### **Aetiology**

1. Chromosomal abnormalities
  - Down's syndrome, fragile X syndrome etc
2. Metabolic and endocrine causes
  - Hypothyroidism etc
3. Multiple congenital anomaly syndromes
4. Teratogens
  - Infections (TORCH)
  - Drugs like warfarin etc
5. CNS malformations
  - Neural tube defects
  - Hydrocephalus etc
6. Perinatal difficulties
  - Extreme prematurity
  - Hypoxic ischemic encephalopathy, etc.

7. Post natal insult to brain
  - Meningitis/ encephalitis
  - Malnutrition etc
8. Unknown etiology

### **UNMAADAM**

Psychiatric disorders have developed as a separate branch of medicine in Ayurveda right from the ancient period. The definition of unmada is found to be applicable in the paediatric age group too

उन्मादं पुनर्मनोबद्धसंज्ञानस्मृतिभक्तिशीलचेष्टाचारविभ्रमं विद्यात्। C.S.Ni. 7/5

#### **Analysis of nidaana**

Each causative factor mentioned in the nidaana shows its own clinical feature which varies from that of adulthood. The contributory factors of unmaada can be summarized as:-

- **Saaririka causes:** Aahaara- virudha, dushta, asuchi  
Vihaara- vishamacheshta
- **Maanasika causes:** bipolar in nature- either भयपूर्वक or हष्पूर्वक

#### **Analysis of sampraapti**

The susceptible persons are found to be strictly alpasatwa. The rasadhaatu located in its sthaana; hrudaya, is vitiated by the saaririka and maanasika causes mentioned in the nidaana. The functions of budhi and manas are performed by the same rasadhaatu. Hrudaya(somatic) and dasadhamanees (psychic) are the moolasthaana of rasavahasrotas. The dasadhamanis are equalated to manovahasrotas by Chakrapani. From the above said postulation, it is obvious that rasadhaatu dushti can be otherwise considered as manovahasrotodushti.

#### **Lakshana**

धीविभ्रमःसत्वपरिप्लवश्च पर्याकुलादृष्टिरधीरता च।  
अबद्धवाक्त्वं हृदयं च शून्यं सामान्यमुन्मादगदस्य लिङ्गम्॥  
स मूढचेता न सुखं न दुःखं नाचारधर्मां कुत् एव शान्तिम्।  
विन्दत्यपास्तस्मृतिबद्धसंज्ञो भ्रमत्ययं चेत इतस्ततश्च॥ C.S. Chi. 9/6-7

- Perverted intellect.
- Psychic agitation.
- Restless eyes.
- Impatience.
- Incoherent speech.
- Vacant mind.
- Wandering.

### CHILDHOOD SCHIZOPHRENIA

Psychotic reactions in older children are almost similar to the pattern of adult psychosis. But in childhood schizophrenia, prominent symptom include

- Thought disorder
- Disorganized speech
- Delusions and hallucinations
- Significant pre morbid maladjustments like social withdrawal, disruptive behavior, and developmental delay and speech and language problems.

The latter two symptoms, in addition to later onset, high IQ, and a few perinatal complications differentiate schizophrenia from autism.

### AKSHEPAKA

यदा तु धमनीः सर्वाः क्रुद्धोऽस्येति मुहूर्महुः

तदाऽङ्गमाक्षिपत्येष व्याधिराक्षेपकः स्मृतः ॥

A.H.Ni. 15/16

The disease originates from vaata kopa in whole body (sarvaanga samsrita vaayu) making its sthaanasamsraya especially in dhamanees or snaayu. The vaatakopa and its manifestations are acute and intermittent.

गते वेगे भवेत् स्वास्थ्यं सर्वेषाक्षेपकेषु च । A.H.Ni 15/28

This presenting feature is indicative of maargaavarana either by pitta (kernicterus, septicaemia, etc.) or by kapha (asphyxia, meconium aspiration syndrome etc.). The vaatakopa may sometimes be due to dhaatuukshaya (eg:hypoglycemia)

Aakshepaka vaatavyaadhi can be differentiated from apasmaara by features like phenasraava, urdhwadrishti, apaagata smriti, etc.

Convulsions in neonates are life threatening and needs immediate and intensive care unit management.

### Neonatal Seizures

Seizures are one of the most important signals of neurological disease in the new born period. It is critical to recognize the stigma to determine the aetiology and treat them for 3 basic reasons.

- Seizures imply significant illness, often requiring specific treatment.
- Seizures may be sustained for considerable periods of time & may interfere with important functions like ventilation & alimentation.
- Seizures may be a cause for permanent brain injury.

### Basic Mechanisms

Primarily seizures are caused by excess synchronous electrical discharges which may be due to

- Failure of  $\text{Na}^+ \text{-K}^+$  pump secondary to a decrease in ATP levels.
- Membrane alteration with an increased sodium permeability.
- Relative excess of excitatory neurotransmitters.

### Neuro anatomical & neurophysiological features

In the brain of a neonate, there is a poor orientation, alignment & layering of cortical neurons with poor axonal & dendritic connections of ramifications with poor synapse formation of an incomplete myelin deposition. Also, the inhibitory activities predominate and the excitatory activities develop later on. Thus the anatomical & physiological immaturity explains why the electrical discharges spread incompletely and tend to remain localized to one hemisphere with slow diffusions from one point of origin in the hemisphere and bilateral synchronous discharge being a rarity. Hence, generalized tonic-clonic seizures patterns so obvious in older children are not seen in newborns as it is a primarily brain stem controlled animal.

Therefore, oral buccal phenomena (sucking, lip smacking, chewing) and focal movements with gaze abnormalities and apnoea occur due to advanced development of limbic structures and their connections to brainstem and diencephalons.

### APASMAARA (Epilepsy)

अकस्मादट्टहसनमपस्माराय कल्पते ॥ K.S.Su. 25-20

Apasmaara is a convulsive disorder resulting from a chronic pathology with 3 levels of nidaanas & sampraapti leading to a temporary unconscious stage.

स्मृत्युपायो ह्यपस्मारः A.H.U. 17/1

1. Nidaanas producing उपहत चेतस् and doshadushti at primary level.

These nidaanas work at the constitutional level of mind and body, from the time of conception during delivery or may be an inherited factor. Altogether these nidaanas create a child susceptible for apasmaara. This may be considered as the samavaayi kaarana of apasmaara.

रजस्तमोभ्यामुपहतचेसामुद्भ्रान्तविषमबहुदोषाणां  
समलविकृतोपहितान्यशुचीन्यभ्यवहारजातानि  
वैषम्ययुक्तेनोपयोगविधिनोपयुज्जानानां  
तन्त्रप्रयोगमपि च C.S. Ni. 8/4

2. Nidaanas causing दोषावतिष्ठनम् in indriyas and hridaya

These nidaanas have long term influence making a susceptible child of apasmaara prone to produce clinical features in presence of instigating factors. These can be controlled by medication. This is the asamavaayi kaarana of apasmaara.

विषमाचरतामन्याश्च शरीरचेष्टा  
विषमाः समाचरतामत्युपक्षयाद्वा दोषाः  
प्रकुपिता रजस्तमोभ्यामुपहतचेतसामन्तरात्मनः  
श्रेष्ठतमायतनं हृदयमुपसृत्योपरितिष्ठन्ते । C.S. Ni 8/4

3. Nidaanas causing immediate अभिपूरणम् of doshas at hridaya and indriyas.

These trigger factors produce the clinical features of apasmaara in a child who have gone through the previous two stages.

कामक्रोधभयलोभमोहर्षशोकचिन्तोद्वेगादिभिः । C.S.Ni. 8/4

These are the nimitta kaarana and can be avoided by advices and precautions.

In neonatal epilepsy, the first level of nidaanas along with the third stage are sufficient to produce symptoms. Presence of 2nd stage is not compulsory as neonates are more heenasatwa.

## EPILEPSY

### Pathophysiology

#### 1 Hereditary/genetic theory

- Epilepsy can be familial eg. Petitmal & Grandmal epilepsy
- EEG abnormalities can be inherited from parents to child (may be autosomal dominant)
- Multifactorial/polygenic inheritance eg. Bronchial asthma, R. Arthritis are other diseases similar to epilepsy
- Mendelian inheritance is seen eg. Autosomal recessive-PKU, enzyme defects; dominant inheritance-tuberous sclerosis
- Inborn errors of metabolism

#### 2 Biochemical theory

##### A Na<sup>+</sup>-K<sup>+</sup> ATP are theory

In epileptic cortices-

Level of Na<sup>+</sup>-K<sup>+</sup> ATP ase low

Na<sup>+</sup> leaks into the neuronal cells & K<sup>+</sup> remains

outside the cell

RMP altered

Depolarisation

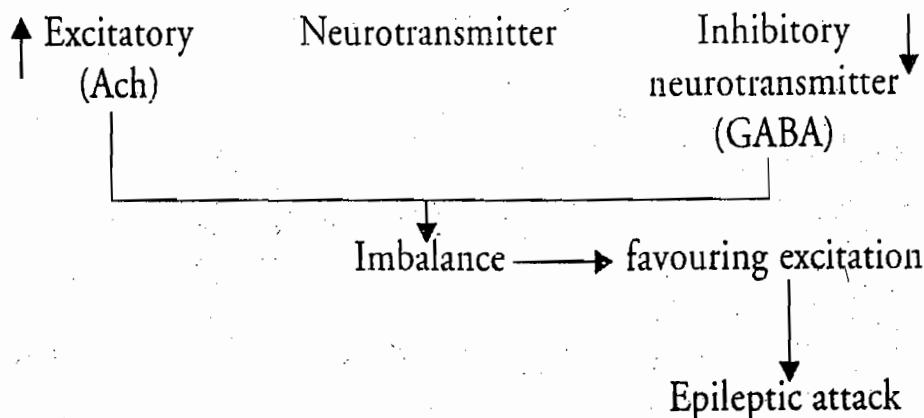
Electrical discharges

K<sup>+</sup> present outside causes excitation of neuron allowing synchronization of firing of neurons

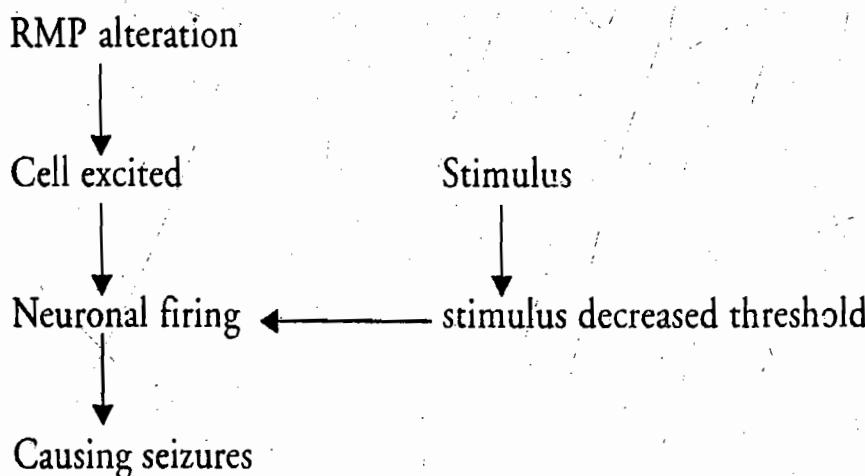
Duration of accumulation of K<sup>+</sup> is correlated with excitability of neurons

### B Neurotransmitter theory

Seizures occur due to imbalance of neurotransmitter



### 3 Electrophysiological theory



### 4. Neuropathological

Pathological lesions like tumour, scar, infection, inflammation, vascular blockade etc can lead to seizures.

## KUSHTAM

### Nirukti

त्वगादीन् कुष्णादि इति कुष्टम्। C.S.Ni.

कालेनोपेक्षितं यस्मात् सर्वं कुष्णाति तद्वयः॥ A.H.Ni. 14/4

From the above nirukti, it is clear that kushta is a chronic skin disease

ty of

### General features of kushta

- It is a raktapradoshaja vikaara. This roga occurs with pitta predominance and rakta and twak as adhishtaana.
- It is called as deergha roga by Charaka. (दीर्घरोगाणां श्रेष्ठम्). The disease is of chronic origin, duration & progression.
- It is a paaparoga (genetic or hereditary disorders). The disease can be of psychosomatic origin or aggravation
- The adhistaana of kushta is 4<sup>th</sup> & 5<sup>th</sup> layers of skin (taamra and vedini)
- The dooshyas involved in maximum treatable and curable kushta numbers 4 (twak, lasika, asrik, maamsa)
- Clinical features of kushta range from stabdhata, suptata and vaivarnyata to स्वदार्यापत्यबाधनम्, दुर्गन्धिप्रियकुष्टम् etc

### Clinical features of kushta according to doshik predominance (according to Kasyapasamhitा)

#### Vaatika kushta

तत्र श्यावारुणशूलकण्डूचिमिचिमखरत्वपारुष्य -  
संस्तम्भायामैर्वातोत्तराणि विद्यात्। K.S.Chi.9/2

#### Paittika kushta

दाहवेदनाज्वरविद्युभेदोषायनपाकस्वावकोठानिकर्णक्षिप्रोत्थानैः  
शीतमधुरकषायसार्पिरनुशयैश्च पित्तोत्तराणि विद्यात्। K.S.Chi.9/2

#### Kaphaja kushta

श्वेतपाण्डुघनोत्सेधगुरुस्तौमित्यस्तम्भमहापरिग्रहाग्निसादैः  
शीतादितरानुशयैः कफोत्तराणि विद्यात्। K.S.Chi.9/2

#### Sannipaatika kushta

व्याविद्धरूपबहुस्फुटितपरिस्वावकृमिदाहरुजोपेतशरीरावयव-  
पातनमशुचिविग्निशोथबहुलमनेकोपद्रवं सान्निपातिकम्। K.S.Chi.9/2

#### Treatment of kushta

In vaatika kusta frequent drinking of ghrita without mixing with manda.  
In paittika and kaphaja, tiktasarpi should be given; emesis, purgation etc can be done.

scular

sease

## PARIDAGDHACHAVI

There is no mentioning of any nidaanas or lakshanas regarding this disease in the classical text books of Ayurveda.

In the commentary by Indu, he states यस्य बालस्य त्वक् परिदग्धा पित्तादिवशात् भवति। paridagdha lakshanas occur in a child's skin as a result of pitta dosha vitiation.

The name of the disease is indicative of the morphology of the skin lesion. The skin may be erythematous with or without blisters as seen in the cases of burns and scalds.

परिदग्धच्छविं बालं दिश्याद्वृत्तिलोल्पलैः।  
शमीपत्रशिरीषत्वक्षारिबामधुकाभयैः॥ A.S.U. 2/94

Lepa made of murva, tila, ulpala, sameepatra, sirishatwak, sariba, madhuka and abhaya has to be applied over areas of paridagdhachavi.

These are seemed to be erythematous skin lesions of the children. Whether it is associated with other systemic manifestations are not clear from the Ayurvedic reference. Following erythemas are noteworthy in this context.

1. Erythema of palmar region in liver diseases- these are seen in chronic liver disorders. Mostly they are blotchy erythema noticed on thenar and hypothenar eminences of the hand. These may be due to the vasodilatation and increased blood flow.
2. Erythema infectiosum- this is the most common manifestation of parvovirus B 19. This condition is also known as 'fifth disease'. This is a benign, self limiting exanthematous disease of the childhood. Incubation period ranges from 4-28 days. The disease can recur with exposure to sunlight, heat, exercise and stress.
3. Erythema marginatum- this is quite rare but characteristic rash of acute rheumatic fever. It consists of erythematous, serpiginous, macular lesions with pale centres that are not pruritic. It occurs primarily on the trunk and extremities, but not on the face. It usually accentuated by the application of heat.
4. Erythema migrans- this is the first symptom of Lyme disease (a type

- of vector borne disease). Lesion is annular in this disease.
5. Erythema nodosum-this is usually seen in rheumatic diseases. Usually these are characterized by pretibial tender erythematous nodules seen in deep dermis and subcutaneous tissue.
  6. Erythema toxicum in neonates- these are maculo papular or vesicular rashes with erythema around, that appear on 3<sup>rd</sup> day and disappear by first week. Scrapping shows eosinophils and denote normal response of the nature skin to various stimuli and do not indicate toxic state.

### **AN OVER VIEW ON PAEDIATRIC SKIN DISORDERS**

#### **Developmental defects**

- Hamangioma
- Aplasia cutis congenital- the developmental absence of skin is mostly noted on the scalp
- Ectodermal dysplasia
- Cutaneous nevi
- Vesico bullous disorders
- Skin infections
- Scabies
- Pediculosis
- Fungal infections
  - Tinea capitis
  - Tinea corporis
  - Tinea cruris
  - Tinea versicolor
- Bacterial infections
  - Impetigo
- Viral infections
  - Warts
  - Molluscum contagiosum

### Pigmentary disorders

- Vitiligo
- Albinism

### Inherited disorders

- Alkaptonuria-a disorder coming from the metabolic impairment of amino acids tyrosine and phenyl alanine.
- Ichthyosis-abnormal thickness of the skin and poor functioning of the sweat and sebaceous glands.
- Porphyrina cutanea tarda-this is occurring secondary to SLE, liver disorders etc.
- Erythropoetic porphyria-a rare disorder characterized by passage of red colored urine.
- Epidermolysis bullosa.

### Allergic skin disorders

- Atopic dermatitis(infantile eczema)
- Urticaria (Hives)
- Food allergy
- Adverse drug reactions

### Miscellaneous disorders

- Napkin dermatitis
- Miliaria(prickly heat)
- Drug eruptions
- Bedsores
- Psoriasis

## TARUNYAPITAKA

Synonymous with युवनपिडका, मुखदूषिका

शाल्मलीकण्टकप्रख्या कफमारुतशोणितैः

जायन्ते पिडका यूनां वक्त्रे या मुखदूषिकाः ॥ S.S.Ni. 13/68

Dosha - कफम्, वातम्, शोणितम्

Features of पिङ्का - शाल्मलीकण्डकाकारम्

(similar to the thorns of bombax)

सरुजा (associated with pain)

मेदोगर्भा (filled with sebum)

घना (deep rooted)

Treatment

लोध्रकुस्तुम्बुरुवचाः प्रलेपो मुखदूषिके

वटपल्लवयुक्ता वा नालिकेरोत्थशुक्तयः ॥ A.H.U. 32/3

Any one among the following drugs is made into lepa with water and applied on the site of mukhadooshika

लोध्रं	- पाचेष्टोर्जीवेत्ताली
कुस्तुम्बुरु	- केंद्रात्तग्वालयति
वचा	- वयग्य
वटपल्लवं	- पेणालीन्त तङ्गीर
नालीकेरोत्थसुक्ति	- नालीकेरो चीरु

अशान्तौ वमनं नस्यं ललाटे च सिरव्यधः।

A.H.U. 32/4

If not cured by samana therapy

- Vamanam
- Nasyam
- Siravedham

### ACNE VULGARIS

Acne is one of the most common adolescent problem with a high cosmetic concern. Most common type of acne is acne vulgaris.

Basic pathology

- Acne develops as a result of blockages in follicles. Hyperkeratinisation and formation of a plug of keratin and sebum (a microcomedo) is the earliest change. Enlargement of sebaceous glands and an increase in sebum production occur with increased androgen production.

- The microcomedo may enlarge to form an open comedone (blackhead) or closed comedone (whitehead). Whiteheads are the direct result of skin pores becoming clogged with sebum and dead skin cells.
- In these conditions the naturally occurring largely commensal bacteria *Propionibacterium acnes* can cause inflammation, leading to lesions (papules, infected pustules, or nodules) in the dermis., around the microcomedo or comedone, which results in redness and may result in scarring or hyper pigmentation.

### **Primary causes**

1. Familial/genetic theory- it can run in families
2. Hormonal theory-during puberty, the androgen excess can cause acne.
3. Stress - may lead to increased adrenal secretions and finally leads to acne
4. Hyperactive glands
5. Accumulation of dead cells
6. Infection by above said bacteria
7. Use of anabolic steroids
8. Medicines like lithium, androgens etc
9. Exposure to some chemicals, halogens and chronic use of amphetamines.
- 10 Dietary factors like chocolate, milk etc.

### **Clinical features**

Acne vulgaris is characterized by four basic types of lesions. They are

- Open and closed comedones
- Papules
- Pustules
- Nodulocystic lesions.

Lesions are limited to comedones on the central area of the face. Marked involvement on the trunk is most often seen in males. Lesions often heal with temporary post inflammatory erythema and hyperpigmentation; pitted, atrophic, or hypertrophic scars.

### MAHAAPADMA

विसर्पस्तु शिशोः प्राणनाशनो वस्तिशीर्षजः ।  
 पद्मवर्णो महापद्मरोगो दोषत्रयोत्थवः ॥  
 शाखाभ्यां हृदयं याति हृदयाच्च गुदं ब्रजेत् ।

Y.R. Balam-13

Mahaapadma is a disease with tridosha involvement initially affecting the skin over urinary bladder and head. The lesions resemble the colour of lotus and later spread to the extremities, chest and anal region. This condition is considered to be fatal.

The fate of this disease is death because of the involvement of its sampraapti on marma sthaanas of madhyama roga marga like moordha, hridaya and vasti through abhyantara roga marga. The description of antarvisarpa has many similarities with mahaapadmam.

मर्मोपघातात् संमोहादयनानां विघट्टनात् ।  
 तृष्णातियोगात् वेगानां विषमाणां प्रवर्त्तनात् ॥  
 विद्याद्विसर्पमन्तर्जमाशु चाग्नि बलक्षयात् । C.S.Chi. 21/26-27

This is an evident picture in many cutaneous and subcutaneous staphylococcal infection. It starts from skin as impetigo, cellulitis and necrotizing fascitis; gradually leading to complications like glomerulonephritis, septicaemia and death.

### NIRUDDHAPRAKASAM

वातोपसृष्टमेवं तु चर्म संश्रयते मणिम् ।  
 मणिश्चर्मोपनद्वस्तु मूत्रस्रोतो रुणद्वच ।  
 निरुद्धप्रकाशे तस्मिन् मन्दधारमवेदनम् ।  
 मूत्रं प्रवर्त्तते जन्तोर्मणिन् च विदीर्यते ॥  
 निरुद्धप्रकाशं विद्यात् दुरुदां वातसंभवम् । S.S. Ni. 13/54-56

This is a disease condition where the prepuce is adherent over glans penis so that retraction is not possible. Vaata is the predominant dosha leading to following presentations.

- Narrowing of urethra
- Slow stream of urine

- Painful micturition

### Chikitsa

- Introduction of a rod made of loha, wood or laaksha, smeared with ghritha into the urethra.
- Parishekam of penis with vasa or majja of pig, crocodile etc.
- Replacement of the rod with thicker ones every third day.
- Intake of snigdha aahaara.

### PHIMOSIS

When the orifice of the prepuce is too small to permit its normal retraction over the glans penis, the condition is called phimosis. In children up to three years the prepuce is normally adherent to the glans penis. Aetiologically the phimosis is of two types.

- Congenital phimosis
  - o Here the orifice of prepuce is narrowed by birth. In extreme conditions, the prepucal sac balloons out when the patient micturate.
- Acquired phimosis
  - o Inflammatory- may be after balanitis, posthitis or balanoposthitis.
  - o Traumatic- an injury on the prepuce may later causes fibrosis of the skin and may finally leads to phimosis
  - o Neoplastic - this is not so common in children. Underlying carcinoma is the usual reason. This should be suspectd if an older case approaches with phimosis.

### MADHYA KARNA SOTHA (Acute Otitis Media)

The term otitis media refers to the infection of the middle ear. This condition is of several types. Of which most common is acute otitis media. Acute otitis media in children is most common due to the following factors

- The Eustachian tube of the children is wide, very short and more horizontal in nature.
- Baby always lie in supine position, so as the proper drainage of fluid will not occur.

- Frequent upper respiratory infections are common in childhood.
- Obstruction of tube by the lymphoid tissue is common
- Spread of infection from the congested gums during the tooth eruption is common in paediatric group.

### Organisms

Commonly, following are the organisms responsible for the otitis media in children.

- S.pneumoniae
- H.influenzae
- Moraxella catarrhalis

### Clinical features

- Pain
- Restlessness
- Discharge from the ear
- Fever
- Parenteral diarrhoea and vomiting may occur.

### POOTI KARNAM

स्थिते कफे स्रोतसि पित्ततेजसा  
 विलायमाने भृशसंप्रतापवान्  
 अवेदनो वाप्यथवा सवेदनो  
 खनं स्रवेत् पूर्ति च पूतिकर्णकः। (S.S.U.20/15)

These are the mucoid or pustular discharges from the ear produced after the liquefaction of kapha dosha by the heat of pitta dosha. This condition may be associated with or without pain usually.

The following treatments are proposed for this condition.

1. Saamaanya karnarogachikitsa
2. Dhoopana chikitsa- guggulu is an ideal drug for this dhoopana chikitsa.
3. Sirovirechanam is also a treatment of choice.
4. Oushadha pooranam- honey is said to be good drug for karnapoorana with other herbs. Churna pooranam also mentioned.

### 5. Pramaarjanam & dhaavanam- with surasaadiganam

घृतं रसाज्जनं नार्याः क्षीरेण मधुसंयुतम्  
 तत्प्रशस्तं चिरोत्थेऽपि सासावे पूतिकर्णके  
 निर्गुण्डी स्वरसस्तैलं सिंधुर्धूमरजो गुडः  
 पूरणः पूतिकर्णस्य शमनो मधु संयुतः S.S.U. 21/49-50

### Otorrhoea

Otorrhoea simply means the discharge from the ear. The discharge may be of different types. It may be mucoid, muco purulent and/or bloody in nature.

The causes of otorrhoea in children are enlisted below.

1. Cholesteatoma
2. Foreign body in ear
3. Myringitis
4. Otitis externa
5. Otitis media
6. Perichondritis
7. Swimmer's ear
8. Fractured skull
9. Perforated ear drum due to infection

The term karnasraava mentioned in saalakya diseases are correlated to this clinical condition.

### KARNASRAAVA

शरोभिघातातथवा निमज्जतो ।  
 जले प्रपाकादथवाऽपि विद्रधेः ॥  
 स्वेतु पूयं श्रवणोऽनिलावृतः ।  
 स कर्णसंस्नाव इति प्रकीर्त्ततः ॥ S.S.U 20/10

Here also following reasons are mentioned for the otorrhoea

- Trauma to skull
- Immersion bath
- Due to boils

The treatment mentioned for the pootikarna roga can be adopted here also.

## BAALA PAKSHAAGHAATA

A special reference of baalapakshaaghaata is not found in any of the samhitas. So pakshavadha among the vaatavyaadhis has to be taken into consideration in this context.

### Nidaana

Most prominent reasons are:

- Sahaja
- Garbhaja
- Peedakrita
- Kaalaja

### Sampraapti

Aggravation and vitiation of vaayu is basically two folded.

1. Due to dhaatuukshaya (hypoglycaemic shock)
2. Due to margaavarana (mostly arterial and venous thrombosis)

Vaayu makes sthaanasamsraya mainly in two dooshyas to produce features of stroke, they are

1. Sira (vascular reason)
2. Snaayu (neurological reason)

Snaayu are structures which extensively distribute in body (900 in numbers). Since all the activities of the body are controlled by them, injury to sira and snaayu causes maximum harmful effects. Vitiation of doshas in snaayu causes aakshepaka pakshavadha like symptoms. So they are nothing but nerves.

Concludingy, stroke is caused by

1. Rakta/pitta aavruta vaayu
2. Meda aavruta vaayu (snaayu is the upadhaatu of medas)

### Lakshanam

पक्षमन्यतरं हन्ति सन्धिबन्धान् विमोक्षयेत्।

कृत्स्नोऽर्धकायस्तस्य स्यादकर्मण्यो विचेतनः॥ A.H.Ni. 15/39

## ACUTE STROKE SYNDROMES

The basic pathology of hemiplegia in children are

- Arterial and venous thrombosis
- Intracranial hemorrhages
- Arterial embolism
- Miscellaneous causes

### Causes of stroke in children

1. Cardiac disease
  - Aortic stenosis
  - Kawasaki diseases etc.
2. Hematological abnormalities
  - Sickle cell diseases
  - Polycythemia etc.
3. Inflammatory disorders
  - Meningitis
  - SLE
  - Juvenile rheumatoid arthritis etc.
4. Metabolic diseases
  - Mitochondrial disorders
  - Homocystinuria etc.
5. Intracerebral vascular process
  - Ruptured aneurysm
  - Migraine head ache etc.
6. Trauma and other external causes.
  - Child abuse
  - Head trauma, etc.

18

## BEHAVIORAL DISORDERS OF CHILDREN

### SAYYAAMUTRAM (Enuresis)

A child should have obtained bladder control when his mental age is 5 years. This ability is attained by sufficient pakwata of doshadhaatu functions (children are aparipakwa dhaatu). Any condition which hinders the pakwata of doshadhaatus can lead to the condition of sayyaamutram.

The basic pathologies involved are:

1. Defective functioning of apaanavaayu which controls the evacuation of the urine and stools.
2. Disturbances in the general vaayu functioning which controls manas (नियन्ता प्रणेता च मनसा)

If the disease is secondary to any other causes like manovikaara (rasavahasrotas), vastivikaara (mutravahasrotas), pakwaasayavikaara (purishavahasrotas), the underlying problem should be corrected.

#### Treatment

The following attributes should be there for an ideal therapy for sayyaamutram.

- Medhyam
- Brimhanam

- Vaataanulomanam
- Krimiharam.

बिंबीमूलरसः पानात् शव्यामूत्रं प्रशाम्यति । B. R.

According to this reference, the enuresis can be managed with the administration of swarasa of bimbeemoola.

### Definition

Enuresis can be defined as involuntary passage of urine by a child beyond an age when they might reasonably be expected to have toilet training and control.

### Classification

Based on

- Time of the day
  - Nocturnal enuresis 80%
  - Diurnal enuresis 5%
  - Both nocturnal & diurnal enuresis 15%
- Achievement of control
  - Primary enuresis
  - Secondary enuresis – after a period of dryness.

### Causes of primary enuresis

#### Organic

- Bladder neck obstruction
- Ectopic urethral opening
- Epispadias
- Sacral agensis
- Meningomyelocele
- Lipoma of the cauda equina
- Rarely hydrocephalus, diabetes mellitus, diabetes insipidus.

#### Non organic

- Developmental or neuromaturational delay.
- Psychosocial factors – anxiety

- Genetic factors
- Sleep disorders

#### **Causes of secondary enuresis**

- Urinary tract obstruction
- Emotional difficulties and stressful situations.
- Illness
- Birth of a sibling
- Death in a family
- Change of school/house
- Diabetes mellitus
- Diabetes insipidus
- Lesions of lumbosacral spinal cord.

#### **Management**

- Counselling
- Parental instructions
- Bladder training
- Bladder stretching
- Conditioning therapy
- Pharmacological therapy
- Management of diseases

### **AUTISM**

Autism is a poorly understood psychosis in children characterized by marked deficit in the interpersonal and communication skills.

#### **Aetiology**

The real etiology of autism is uncertain. Several pre disposing factors are enlisted below. Autism can be produced even without these factors.

- Prenatal complications
- Fragile X syndrome
- Maternal rubella
- Phenyl ketonuria

- Meningitis
- Encephalitis

### **Pathophysiology**

This includes several theories.

1. Neurologic theory- there are certain neuronal damages at the time of intrauterine life especially at the time of reticular formation of brain stem.
2. Genetic predisposition-running in identical pairs.
3. Psychological theory-though it is not an acceptable theory, parents mode of rearing the kid is responsible to develop autism.
4. Organic theory – EEG seen to be abnormal in many cases. Claims are existing to the neurological damage.

### **ATTENTION DEFICIT HYPERACTIVITY DISORDERS (ADHD)**

This is one of the most prevalent neurodevelopmental dysfunction of the child hood characterized by the cardinal features viz Inattention, Impulsivity and Hyperactivity. ADHD is a functional manovikaara in which the child is affected with the dhritibhramsa along with some basic impairment in the Manovishayas. (चिन्ता, विचारं, ऊहं, संकल्पं).

### **Etiology**

A heterogenous group of causes is responsible for the manifestation of ADHD. Among these, genetic and environmental factors play a vital role. Children are basically alpasatwa in nature. In the presence of Suklaartava Dushti or Garbhaja Kaaranas (prenatal) supplemented by an appropriate environment favoring vaata pitta aggravation, the child becomes prone to a number of clinical conditions, one of which is ADHD.

### **Clinical Manifestation**

Symptoms are similar to the condition of Vaata paittika unmada. They are enlisted below.

V  
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1.

Vatika	Paittika
Emotional Instability	Prominent anger
Tics/convulsions/such actions	More disruptive
Echopraxia/echolalia	Upasaya with cool articles
Talkativeness	Self ruining behavior
Symptoms aggravate - at the end of digestion	Increased surface temperature
Less body Mass Index	Discolouration of eye/sclera/skin

### Diagnostic criteria

#### A. Either 1 or 2

1. Six or more of the following symptoms of inattention, which have persisted for at least 6 months to a degree that is maladaptive and inconsistent with development level.

#### *Inattention*

- a. Often fails to give close attention to details or makes careless mistakes in school, work or other activities.
- b. Often has difficulty sustaining attention in tasks or play activities.
- c. Often does not seem to listen when spoken to
- d. Often does not follow instructions and fails to finish schoolwork, or duties in the work place.
- e. Often has difficulty organizing tasks and activities
- f. Often dislikes to engage in tasks that require sustained mental effort.
- g. Often loses things necessary for tasks.
- h. Often gets easily distracted by extraneous stimuli
- i. Often becomes forgetful in daily activities.

2. Six or more of the following symptoms of hyperactivity – impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level.

### Hyperactivity

- a. Often fidgets with hands or feet or squirms in seat
- b. Often leaves his seat in the classroom or from other situations in which remaining seated is expected.
- c. Often runs about or climbs excessively in inappropriate situations.
- d. Often has difficulty playing and engaging in leisure activities quietly.
- e. Is often "on the go" or often acts as if "driven by a motor"
- f. Often talks excessively.

### Impulsivity

- g. Often blurts out answers before questions have been completed.
  - h. Often has difficulty waiting for his turn.
  - i. Often interrupts or intrudes on others.
- B. Some hyperactive – impulsive or inattentive symptoms that caused impairment were present before 7 years of age.
- C. Some impairment from the symptoms is present in 2 or more settings (e.g. at school or at home)
- D. There must be clear evidence of clinically significant impairment in social, academic or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a pervasive developmental disorder, schizophrenia or other psychotic disorder and are not better accounted for by another mental disorder. (eg. mood disorder, anxiety disorder etc.)

### Treatment

- Psychosocial intervention
- Behavioral therapy
- Training and medication is effective.

As this is a Vaata pitta predominant condition, following treatment can be adopted.

### Treatment principles

- Srotosodhanam
- Brimhanam
- Medhyam
- Vaata pitta unmaadaharam
- Mridu sodhanam
- Rasaayanam

### Chikitsa

Sodhanam	Samanam
Snehanam	Sankhupushpee churnam
Swedanam	Maha kalyaanakam ghritam
Vasti	Maha paishaachikam ghritam Himasaagaram tailam

### BREATH HOLDING SPELLS

- This is a common phenomenon in children below 2 years of age
- This is comparatively less dangerous condition.
- The course of such attacks are benign

**Definition** – It is a conduct disorder due to some cause when the child holds his/her breath in expiration which may lead to cyanosis with or without hypoxia and convulsion.

### Incidence

- Age- it can occur from 6<sup>th</sup> month to 5 years of age (peak in 18 months to 4 years)
- Sex- it is equally common in both sexes
- Family history will be positive in up to 33%
- Frequency- extremely variable, once in a month to 10 times per day
- The child is usually very energetic and seems to react more completely to stress,

## Types

Clinically there are two types:

### 1. Cyanotic breath holding spells

- a. This usually observed after an incidence of thwart or hurt of the child. The crying is followed by an expiratory hold for some time often less than 15 seconds. Then cyanotic episode comes and child loses his consciousness later. Before the gross cyanosis develops the child can be aroused by cold water sprinkling or with a deep and sudden stimulus.
- b. Following this embarrassing episode the child may resume normally after some time. A generalized seizure may set in soon. There are chances of vomiting and involuntary passage of stool and urine.

### 2. Pallid type of breath holding spells.

- a. This type often follows after a minor injury, after a fall when child starts to walk, or sudden fright etc.
- b. The clinical feature is consisting of pallor, limping and a collapse that mimic fainting in adults. There won't be cyanosis in this type.

## Management

- As the age advances the incidence of breath holding spells comes down
- Dealing with an episode is very important
- Re assurance and counselling to the parents are very important
- The management of co running factors like anaemia is important.

## ATYAAYIKA BAALAROGA PRABANDHANA (Paediatric Emergency Management)

### ANAPHYLAXIS

Removal from offending environment/stop offending drug

↓  
Inj.Epinephrine 0.01 ml/kg(IM)

Repeat up to 3 times at 15 mnts.interval. half dose of epinephrine dissolved in 2 ml normal saline can be infiltrated locally at sting or injection site

↓  
 $O_2$  100% 5L/mt

↓  
Airway breathing maintenance

↓  
20 ml/kg.isotonic saline (may be repeated if needed)

↓  
Epinephrine infusion if still B.P. is low(0.1mcg/Kg/mt)

H1 and H2 antagonists

(IM/IV anti histamine preferably diphenhydramine(img/kgm)

IV ranitidine 1mg/Kgm)

↓  
Steroid

10 mg/Kgm Hydrocortisone stat, IV, 5mg/Kg Q6H

Observe for 12 hours after improvement.

## POISONING

All children with history of poisoning should be hospitalized and a minimum of 24 hours observations should be done.

1. Evaluation of severity and initial stabilization A (Airway), B(Breathing),C(Circulation). Record pulse, BP, RR, GCS (Glasgow Coma Scale), reaction of pupils and airway patency.
  - a. Keep the child in left lateral decubitus position
  - b. Suck out secretions from airway by a rigid large bore suction catheter
  - c. Administer 100%oxygen by face mask or nasal catheter. If necessary proceed to intubation and ventilatory support.
  - d. Secure IV line. Correct circulatory failure
2. Identify the poison

By careful history, smell, physical examination assess type, amount and time of poisoning.

3. Removal of the remaining poison
  - a. Copious irrigation of external surface or oral cavity with normal saline or plain water.
  - b. Gastric lavage.
4. Prevention of absorption of poison
  - a. Activated charcoal 1-2 gm/kgm/dose. Dissolve 1 gm in 8 ml water to make it in to a slurry. Administer it through nasogastric tube after gastric lavage.
  - b. Milk and egg white in copper sulphate and croton oil poisoning.
  - c. Cathartics- Sorbitol 1 gm/Kg Dilute in 5 ml/Kgm of water

5. Promotion of excretion of poison
  - a. Fluid intake – 1-5 times maintenance requirement orally or parenterally
  - b. Diuresis- With furosemide or mannitol.
  - c. Sodium bicarbonate 2ml/kg/dose to alkalinize urine

- d. Ammonium chloride to acidify urine in amphetamine poisoning.
- e. Exchange transfusion and dialysis.

### STATUS EPILEPTICUS (SE)

Single seizure or recurrent seizure, lasting more than 30 minutes, during which time, consciousness is not regained is known as SE. Mortality or serious sequale is resulting from hypotension or aspiration of secretions. Steps for the management of SE is as follows.

1. Stabilization for
  - a. Airway,
  - b. Breathing,
  - c. Circulation.
    - i Keep the child in left lateral decubitus position
    - ii Suck out the secretions from the airway
    - iii Decompress stomach by orogastric or nasogastric aspiration
    - iv Administer 100% oxygen by face mask or nasal catheter.
    - v Secure IV line.
2. Control of seizures- these steps are dependent on the nature of the control of seizures. All steps may not be needed in a single patient.
  - a. Administration of IV diazepam
  - b. Administration of IV phenytoin
  - c. Correction of metabolic errors
  - d. Administration of IV phenobarbitone
  - e. Diazepam IV constant infusion
  - f. Alternatives for IV diazepam infusion.

### NEAR DROWNING

#### Prediction of poor prognosis

1. Apnoea
2. Coma
3. Raised ICP

**Monitoring**

1. RR
2. HR
3. BP
4. Temperature
5. GCS
6. Head and neck injuries

**Investigations**

1. S. electrolytes
2. Blood sugar
3. PCV
4. Urine RE
5. Chest X-ray

**Treatment: establish ABC**

1. Airway
  - a. Suction
  - b. Gastric decompression
  - c. Head in neutral position if there is doubt regarding head and neck injury
2. Breathing
  - a. Mouth to mouth breathing or bag and mask ventilation till tracheal intubation or ventilation is started.
  - b. Repeatedly administer bronchodilators
  - c. IV sodabicarb 1-2 meq/kg equally diluted slowly every hour
  - d. Treat pulmonary edema
3. Circulation
  - a. Closed chest massage for cardiac arrest

- b. IV normal saline for the prevention of circulatory failure
- c. IV dopamine
- 4. Raised ICT  
Mannitol
- 5. Antibiotics  
Broad spectrum

### **ACUTE RENAL FAILURE**

- 1. History and physical examination - identify the cause
- 2. Assess hydration status-stop all nephrotoxic drugs
- 3. Investigations
  - a. RFT, S.electrolyte-12<sup>th</sup> hourly
  - b. Fluid intake, peripheral smear, urine RE, USG abdomen, R/O obstructions
- 4. Monitor
  - a. Vitals
  - b. RFT and S.Na+, S.K+
  - c. Fluid intake and output chart
- 5. Fluid and electrolyte management
  - a. Presume all oliguria as pre renal unless there is evidence of over hydration, CCF, and pulmonary edema.
  - b. Difficult situations assess hydration by CVP (central venous pulse) monitoring.
  - c. Fluid challenge NS 20 ml/kg in 1 hr. IV

If no urine out put

- Rpt.NS 20 ml/kg in next one hour IV followed by inj. Ferusomide 3-6 mg/kg IV

If no urine out put

- Consider as oliguric renal failure and treat accordingly.

- Consider dialysis- peritoneal/hemodialysis
- On going fluid management- once euvolaemia has been achieved further fluid intake should match insensible water loss(400 ml/m<sup>2</sup>) plus all measures loss.
- Document all fluid losses as well as intake meticulously.

#### 6. Nutrition

- a. Proteins-0.6-1 gm/Kg/day
- b. Calories-50-100 cal/Kg/day
- c. Glucose containing fluids and foods can be used
- d. Salt restriction if hypertensive.
- e. Calcium supplementation as indicated.

#### 7. Treatment of complication-hyperkalemia

#### 8. CCF and pulmonary edema

Dialysis and cardiac support.

### STATUS ASTHMATICUS

Severe attack of bronchial asthma with extensive bronchial obstruction from the beginning or during the course of the episode manifests as status asthmaticus.

#### Aetiology

- Excessive exposure to allergens
- Infections
- Psychogenic stress
- Inadequate therapy
- Excessive use of aerosol
- Inappropriate use of aerosol, tranquilisers etc

#### Management

- Humidified oxygen
- Hydration

- Correction of metabolic acidosis
- Maintain S.electrolytes in normal range
- Anti biotics if bacterial infection is suspected.
- Drug therapy
- Mechanical ventilation psychological support.
  - Indications
    - $\text{Pco}_2 > 50 \text{ mm of hg}$
    - $\text{Pco}_2 \text{ rising} > 5-10 \text{ mm of hg/hr.}$
    - Increasing dyspnoea/Fatigue
    - Decreased alertness
    - Pulsus paradoxus  $> 30 \text{ mm of Hg}$
    - Acidosis

## FEBRILE CONVULSIONS

Convulsions occurring with the fever of  $38^{\circ}\text{C}$  or more without evidence of documented CNS infection is known as febrile convulsions.

### Management

- If the child is convulsing
  - IV diazepam
  - Maintain airway with periodic suction,  $\text{O}_2$  if required
  - Protect child from injuries
  - Semiprone position
  - Maintain patent IV line
- If the child is not convulsing or stops convulsing
  - Treatment of fever
  - Look for the etiology of fever and treat accordingly
- Further management.
  - Counselling of parents
  - Decide the role of long term prophylaxis with anti convulsants

## FOREIGN BODIES IN THE RESPIRATORY TRACT

### Types

- Laryngeal foreign bodies
  - Diagnosis is made by x-ray neck lateral view and direct laryngoscopy
- Tracheal foreign bodies
  - Bronchoscopy is needed for definitive diagnosis in addition to chest X-ray
- Bronchial foreign bodies
  - Diagnosis is made by X-ray of chest

### Management

- Laryngeal FB needs to be removed by rigid endoscope. Tracheotomy may be required in severe degrees of dyspnoea.
- Bronchoscope is necessary for the removal of bronchial and tracheal FB.
- Chest physiotherapy and bronchodilators should not be given.

### If the FB is in Nose

- Explain the procedure beforehand in detail to patient and parents. Explain that it will be a little uncomfortable, and that aspiration of the foreign body into the trachea is a real but remote possibility.
- After initial inspection using a nasal speculum and bright light, suction out any purulent discharge and insert a cotton pledge soaked in 4% cocaine or a solution of one part phenylephrine (Neo-Synephrine) and one part tetracaine (Pontocaine) to shrink the nasal mucosa and provide local anesthesia. Be careful to avoid pushing the foreign body posteriorly. Remove the pledge after approximately 5-10 minutes.
- If the patient is able to cooperate, have him try to blow his nose to remove the foreign body. With an infant it is sometimes possible to have the parent blow a sharp puff into the baby's mouth while holding the opposite nostril closed to blow the object out of the nose.

- Before attempting any removal using surgical instruments, a potentially uncooperative child must be firmly restrained and sedated
- Alligator forceps should be used to remove cloth, cotton, or paper foreign bodies. Pebbles, beans, and other hard foreign bodies are more easily grasped using bayonet forceps or Kelly clamps, or they may be rolled out by getting behind it using an ear curette, single skin hook, or right angle ear hook. A soft-tipped hook can be made by bending the tip of a metal-shaft calcium alginate swab (Calgiswab) to a 90 degree angle. An additional approach is to bypass the object with a Fogarty, biliary or small Foley catheter, passing it superior to the foreign body, inflating the balloon with approximately 1ml of air and pulling the object out through the nose.
- Any bleeding can be stopped by reinserting a cotton pledge soaked in the topical solution used initially.
- To irrigate loose foreign bodies and particulate debris from the nasal cavity and posterior nasopharynx, simply insert the bulbous nozzle of an irrigation syringe into one nostril while the patient sits up and forward, ask the patient to close off the back of his throat by repeating the sound "eng" and flush the irrigating solution out through the opposite nostril into an emesis basin.
- After the foreign body is removed, inspect the nasal cavity again and check for additional objects that may have been placed in the patient's nose. Look also for unsuspected foreign bodies in the ears.

20

## BAALAGRAHA

The term 'graha' holds a lot of mystery in it. In Ayurveda, the term means:

ग्रहणात् ग्रहः इत्युच्यते। (Dahhana)

The one which CAPTURES or SEIZES is known as 'graha'.

### Definition

The grahas are unknown factors (during ancient period) which suddenly and negatively affect the health and well being of children leading to several spectrum of diseases.

The definition of graham projects a general impression of both 'psychiatric' and 'acute physical disease manifestations'. But in the context of Kaumarabhritya most of the grahas are physical diseases.

### Facts on the general concept of grahas

- 'Bhutavidya' and 'grahachikitsa' are used synonymously as one of the 8 angas of Ayurveda. This branch mostly deals with psychiatric illnesses/ personality disorders.
- The term 'graha' used in the definition of Kaumarabhritya should not be confused with 'bhuta'. Majority of grahas in Kaumarabhritya are physical entities.

..... ग्रहसमुत्थानां च व्याधीनामुपशमनार्थम् । Su. Sa. Su. 1/5

- Mostly breast fed babies are affected by Grahas.
- The symptoms of grahas explained in the '*Baalagrahapratischeda adhyaaya'* strictly confines to somatic features. Hence the duty of a paediatrician is to treat these physical symptoms and not psychiatric disorders. Although the chapter deals with physical features it begins with a mythological story.
- First sign of each graham is fever and excessive crying.

### Fate of the disease

Graha affects an individual with the help of super natural powers with three aims.

1. हिंसा - Death(the disease which finally results in to death-fatal somatic disease)
2. रति - Coitus (the disease in which the patient shows excessive interest in the sexual act-psychiatric disorder).
3. अर्चना - Worship(By performing some religious activities like Homam etc, the patient will be relieved from the diseases- self limiting disorder/or relieved by Daiva vyapaasraya chikitsas)

Out of these rati (coitus)is not applicable in children since none of the grahas explained in the ancient texts showed features of sexual affinity. So graha baadha ends either in psychological trauma and death or gets cured by treatment.

### Number of grahas

- |                            |    |
|----------------------------|----|
| • Sushruta, Bhaavaprakasha | 9  |
| • A.H., Yogaratnakara      | 12 |
| • Kasyapasamhita           | 20 |

Vaghbhata explains 12 grahas while Sushruta explains only 9 Grahas and are classified according to lingabheda.

ग्रहभेदम्	सुश्रुत	वाम्भट
पुरुषग्रहम्	स्कन्दग्रहम् स्कन्दापस्मारम् नैगमेषम्/पितृग्रहम्	स्कन्दग्रहम् स्कन्दापस्मारम्/विशाखग्रहम् मेषग्रहम्/नैगमेषग्रहम् श्वग्रहम् पितृग्रहम्
स्त्रीग्रहम्	शकुनी पूतना शीतपूतना अन्धपूतना मुखमण्डितिका रेवती	शकुनी पूतना शीतपूतना अन्धपूतना रेवती शुष्करेवती मुखमण्डितिका

### Poorvaroopam

तेषां ग्रहीष्यतां रूपं प्रतं रोदनं ज्वरः। A.H.U. 3/3

Upon affliction with graha, acute fever manifests in an apparently healthy child prompting it to cry constantly. This has to be considered to be a grave condition.

### Lakshanam

In vyaktaavastha the symptoms become clearer.

सामान्यं रूपमुत्त्रासजृंभाभूक्षेपदीनताः  
फेनस्त्रावोर्ध्वदृष्ट्योष्ठदन्तदंशप्रजागराः।  
रोदनं कूजनं स्तन्यविद्वेषः स्वरवैकृतम्  
नखैरकस्मात् परितः स्वधात्र्यङ्गविलेखनम्॥ A.H. 3/4-5

- Yawning - Tired, ( $O_2$  deficiency)
- No sleep, painful disease, discomfort
- Aversion to breast feeding - loss of appetite
- Twitches – convulsions - febrile convulsions  
froth from mouth

- Rodanam – Koojanam – Swaravaikritam – grasping mother – due to pain.

In the post natal period if an infant presents with fever, excessive cry and later on with convulsions, the usual condition is an infection. Further symptoms are to be looked on for locating the site of infection.

The treatment for affliction with graha is mainly of daivavyapaasraya type. All other diseases explained in Ayurvedic classics are chronic or acute or chronic. They have a definite progressive pathology. But grahas possess an acute onset as well as progression. Besides, the nidaana, sampraapti and doshaavastha have not been explained. The main systems affected are the CNS, GIT and Respiratory System.

### 1. SKANDA GRAHAM

तत्रैकनयनस्त्रावी शिरो विक्षिपते मुहः ।  
 हतैकपक्षः स्तब्धाङ्गः सस्वेदो नतकन्धरः ॥  
 दन्तखादी स्तनद्वेषी त्रस्यन् रोदिति विस्वरम् ।  
 वक्रवक्त्रो वमन् लालां भृशमूर्ध्वं निरीक्षते ॥  
 वसासृग्गन्धिरुद्धिनो बद्धमुष्टिशकृच्छुः ।  
 चलितैकाक्षिगण्डभूः संरक्तोभयलोचनः ॥  
 स्कन्दार्तस्तेन वैकल्यं मरणं वा भवेद्ध्रुवम् ।

A.H.U. 3/6-8

1. Watering of one eye
2. Unsteady Head
3. Hemiplegia, restriction in movement of one eye
4. Hypertonicity of muscles(spasticity/rigidity)
5. Excessive Sweating
6. Drooping of head
7. Lethargy
8. Aversion to breast milk
9. Excessive cry, dysphonia
- 10 Facial palsy
- 11 Vomiting
12. Rolling up of eye ball
13. Clenching of palm

#### 14. Reddishness of eye

- Every graha starts with fever and excessive cry. The clinical profile of each graha should be read in connection with this statement.
- Here in skanda graham rigidity (stabdhaanga), facial palsy (vaktravakrata), hemiplegia (nataiká paksha:), vomiting (vaman), clenching of palm(baddhamushti) and neck rigidity (शिरो विक्षिप्ते) indicates the affected area is nothing but brain or meninges. All these symptoms are indicative of meningitis of infectious origin.

#### Meningitis (Mastishkaavarana sophā)

Meningitis is the inflammation of the coverings of the brain. Inflammation of the brain parenchyma is known as encephalitis. Although traditionally called meningitis, there is always a combination of meningitis and encephalitis(meningo encephalitis) in cases of clinical meningitis.

- Clinical presentation
  - Classic symptoms are fever, head ache and vomiting. Suspect meningitis in a febrile child if the child has any one of the following
    - Undue irritability or drowsiness for which no reasonable cause is identified
    - Signs of meningeal irritation(nuchal rigidity, positive kernig's sign and Brudzinski's sign). These are not reliable below 1 ½ years of age
    - Seizures
    - Bulging fontanel in small infants.
- Organisms
  - Bacteria  
H influenza, pneumococci, meningo cocci,E coli and other gram negative enteric bacilli, group B streptococci, entero cocci
  - Virus  
Enterovirus, mumps, herpes simplex etc.
  - Fungus  
In immuno compromised and hospitalized patients, it is a possibility and it can have a variable presentation.

The lakshanas of skanda graha resemble most of the features of Acute Bacterial Meningitis.

## 2. VISAAKHA GRAHAM/ SKANDAPASMAARAM

संज्ञानाशो मुहुः केशलुञ्चनं कन्धरानतिः।  
 विनम्य जृम्भमाणस्य शकृन्मूत्रप्रवर्तनम्॥  
 फेनोद्वमनमूर्धेक्षा हस्तभूपादनर्तनम्।  
 स्तनस्वजिह्वासंदंशः संरम्भज्वरजागराः॥  
 पूयशोणितगन्धश्च स्कन्दापस्मारलक्षणम्। A.H.U. 3/9-11

- 1 Occasional loss of sensorium
- 2 Pulling of hair (pain)
- 3 Drooping of head
- 4 Opisthotonus
- 5 Frequent yawning
- 6 Simultaneous faecal and urinary discharge
- 7 Froth discharge
- 8 Rolling up of eyes
- 9 Tics/convulsions of hands and legs
- 10 Biting of tongue/breast
- 11 Fever
- 12 Sleeplessness
- 13 Smell of pus and blood

Features of skandapasmaara are much similar to that of Febrile Convulsions.

### Febrile convolution

Definition-the convulsions in a baby occurring when the child has fever of  $38^{\circ}\text{C}$  or above and without the evidence of documented CNS infections.

This is one of the commonest causes of convulsions in children. Febrile seizures are age dependant and are rare before 9 months and after age of 5 years. The peak age of onset is 14-18 months of age. Genetic predisposition is common and the history of the same should be enquired in the family history(siblings and parents).

### Clinical features

- Simple / Typical
  - 75% of patients
  - generalized tonic/clonic/tonic-clonic
  - lasts for < 15 minutes
  - immediate recovery of sensorium
  - no residual neurological deficit
  - more than one episode may occur on the same day
- Complex/ Atypical
  - 25% of patients
  - focal in onset
  - lasts >15 minutes
  - prolonged unconsciousness may be seen
  - residual neurological deficit may be present.

### Jwaraanubandha aakshepakaam

The akshepaka (convulsions) in association with jwara can be seen in many ways.

The jwara roga is basically a disease of rasadhāatu. When the jwara samprāpti proceeds to maamsadhāatu and asthi dhaatu aakshepaka may be a presenting complaint. The very same convulsive disorders can also be observed with sannipaatika jwara also. *Geeta nartana haasyaadi vikriteha pravartanam-* A.H.Ni.2/27

### 3. NAIGAMESHA GRAHAM

आध्मानं पाणिपादास्य स्पन्दनं फेननिर्वमः।  
 तृणुष्टिबन्धातीसारस्वरदैन्यविवर्णता ॥  
 कूजनं स्तननं च्छर्दिकासहिध्माप्रजागराः।  
 ओष्ठदंशाङ्गसंकोचस्तम्भबस्ताभगन्धताः ॥  
 ऊर्ध्वं निरीक्ष्य हसनं, मध्ये विनमनं, ज्वरः।  
 मूर्छ्छकनेत्रशोफश्च नैजमेषग्रहाकृतिः ॥      A.H.U. 3/12-14

1. Abdominal distension
2. Focal convulsions at face, limb, hand
3. Excessive thirst

4. Clenching of hands
5. Diarrhoea
6. Feeble sound
7. Cyanosed/ pale
8. Excessive cry
9. Vomiting
10. Cough
11. Hiccough
12. Sleeplessness
13. Biting of lips
14. Convulsions
15. Hypertonicity of muscles(spasticity/rigidity)
16. Rolling up of eyes
17. Opisthotonus,
18. Fever
19. Loss of sensorium
20. Monocular inflammatory signs

These features are similar to symptoms produced by Acute Gastroenteritis.

#### 4. SWAGRAHAM

कम्पो हृषितरोमत्वं स्वेदशक्तिनीलनम्।  
बहिरायामनं जिह्वादंशोऽन्तः कण्ठकूजनम्॥  
धावनं विट्सगन्धत्वं क्रोशनं च श्ववच्छुनिः।

A.H.U. 3/15

1. Convulsions
2. Horripilation
3. Excessive sweating
4. Drooping of eye lid
5. Opisthotonus
6. Biting of tongue
7. Hoarseness of voice & laryngeal spasm
8. Hyperactivity
9. Smell of faeces
10. Barking voice(laryngeal palsy)

Neurologic phase of rabies produce similar features. Any Encephalopathy can also cause these symptoms.

### 5. PITRUGRAHAM

रोमहर्षो मुहुस्त्रासः सहसा रोदनं ज्वरः।  
 कासातिसार वमथु जृम्भातृट्शवगन्धता ॥  
 अंडगेष्वाक्षेपविक्षेपशोषस्तम्भविवर्णताः।  
 मुष्टिबन्धः स्रुतिश्चाक्षणोर्बालस्य स्युः पितृग्रहे॥ A.H.U. 3/16-17

- 1 Horripilation
- 2 Tics
- 3 Frequent cry
- 4 Watering of eye
- 5 Fever
- 6 Cough
- 7 Diarrhoea
- 8 Vomiting
- 9 Frequent yawning
- 10 Excessive thirst
- 11 Smell of cadaver
- 12 Convulsions
- 13 Emaciation
- 14 Hypertonicity of muscles(spasticity/rigidity)
- 15 Cyanosis/pallor
- 16 Pain/severe discomfort

Symptoms are suggestive of Acute Gastro Enteritis with Respiratory Tract Infection.

### 6. SAKUNIGRAHAM

सस्ताङ्गत्वमतीसारो जिह्वातालुगले ब्रणाः।  
 स्फोटाः सदाहरुक्पाकाः सन्धिषु स्युः पुनः पुनः॥  
 निश्यह्नि प्रविलीयन्ते पाको वक्त्रे गुदेऽपि वा।  
 भयं शकुनिगन्धत्वं ज्वरश्च शकुनिग्रहे॥ A.H.U. 3/18-19

- 1 Flaccidity of extremities
- 2 Diarrhoea
- 3 Ulcers-on tongue, palate, throat

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- 4 Papules/pustules-on joints
  - 5 Arthritis
  - 6 Excoriations on anal region, buccal cavity
  - 7 Frightened look
  - 8 Fever
  - 9 Smell of birds

Symptoms are suggestive of,

- Inflammatory bowel disease
- Behect syndrome
- Yercinia colitis

### 7. PUTANAAGRAHAM

पूतनायां वमिः कम्पस्तन्द्रा रात्रौ प्रजागरः  
हिथ्माऽधानं शकुद्भेदः पिपासा मूत्रनिग्रहः  
स्वस्तहष्टाङ्गरोमत्वं काकवत्पूतिगन्धिता । A.H.U. 3/20-21

- act
- 1 Vomiting
  - 2 Convulsions
  - 3 Drowsiness
  - 4 Lack of sleep
  - 5 Hiccough
  - 6 Abdominal distension
  - 7 Diarrhoea
  - 8 Excessive thirst
  - 9 Anurea
  - 10 Loss of muscle tone
  - 11 Smell of crow

### 8. SITAPUTANAA

शीतपूतनया कम्पो रोदनं तिर्यगीक्षणम् ।  
तृष्णाऽन्त्रकूजोऽतीसारो वसावद्विस्वगन्धिता ॥  
पार्श्वस्यैकस्य शीतत्वमुष्णत्वमपरस्य च । A.H.U. 3/22

- 1 Convulsions
- 2 Excessive cry
- 3 Deviation of eyeball /anxious look

- 4 Excessive thirst
- 5 Increased bowel sounds
- 6 Smell of fat
- 7 Rise/loss of temperature on one side

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S

## 9. ANDHAPCOTANAA GRAHAM

अन्धपूतनयाछ्विर्जरः कासोऽल्पनिद्रता ।  
 वर्चसो भेदवैवर्ण्यदौर्गन्ध्यान्यङ्गशोषणम् ॥  
 दृष्टेः सादातिरुक् कण्डूपोथकीजन्मशूनताः ।  
 हिथोद्वेगस्तनद्वेषवैवर्ण्यस्वरतीक्ष्णता ॥  
 वेपथुर्मत्स्यगन्धत्वमथवा साम्लगन्धता । A.H.U. 3/23-25

- 1 Vomiting
- 2 Fever
- 3 Cough
- 4 Reduced sleep
- 5 Diarrhoea-stool with altered colour and foul smell
- 6 Emaciation
- 7 Dimness of vision
- 8 Pain in eye (dry eye)
- 9 Pothakee
- 10 Inflamed eye
- 11 Hiccough
- 12 Aversion to breast milk
- 13 Altered colour of body (hyperkeratotic skin lesions)
- 14 Severe shrilled cry
- 15 Convulsions
- 16 Smell of fish/ amlam

The above features may be seen in multiple infectious diseases involving respiratory system, gastro intestinal tract and eye.

## 10. MUKHAMANDITIKA

मुखमण्डितया पाणिपादास्यरमणीयता ।  
 सिराभिरसिताभाभिराचितोदरता ज्वरः ॥  
 अरोचकोऽङ्गग्लपनं गोमूत्रसमगन्धता । A.H.U. 3/26

- 1 Hands, feet and face with poor appearance
- 2 Prominent veins on the abdomen
- 3 Fever
- 4 Loss of appetite
- 5 Weakness
- 6 Smell of gomutra

Symptoms are similar with portal hypertension.

### 11. REVATI GRAHAM

रेवत्यां श्यावनीलत्वं कर्णनासाक्षिमर्दनम्।  
कासहिध्याक्षिविक्षेपवक्र वक्त्रत्वरक्ता ॥  
बस्तगन्धो ज्वरः शोषः पुरीषं हरितं द्रवम्। A.H.U. 3/27-28

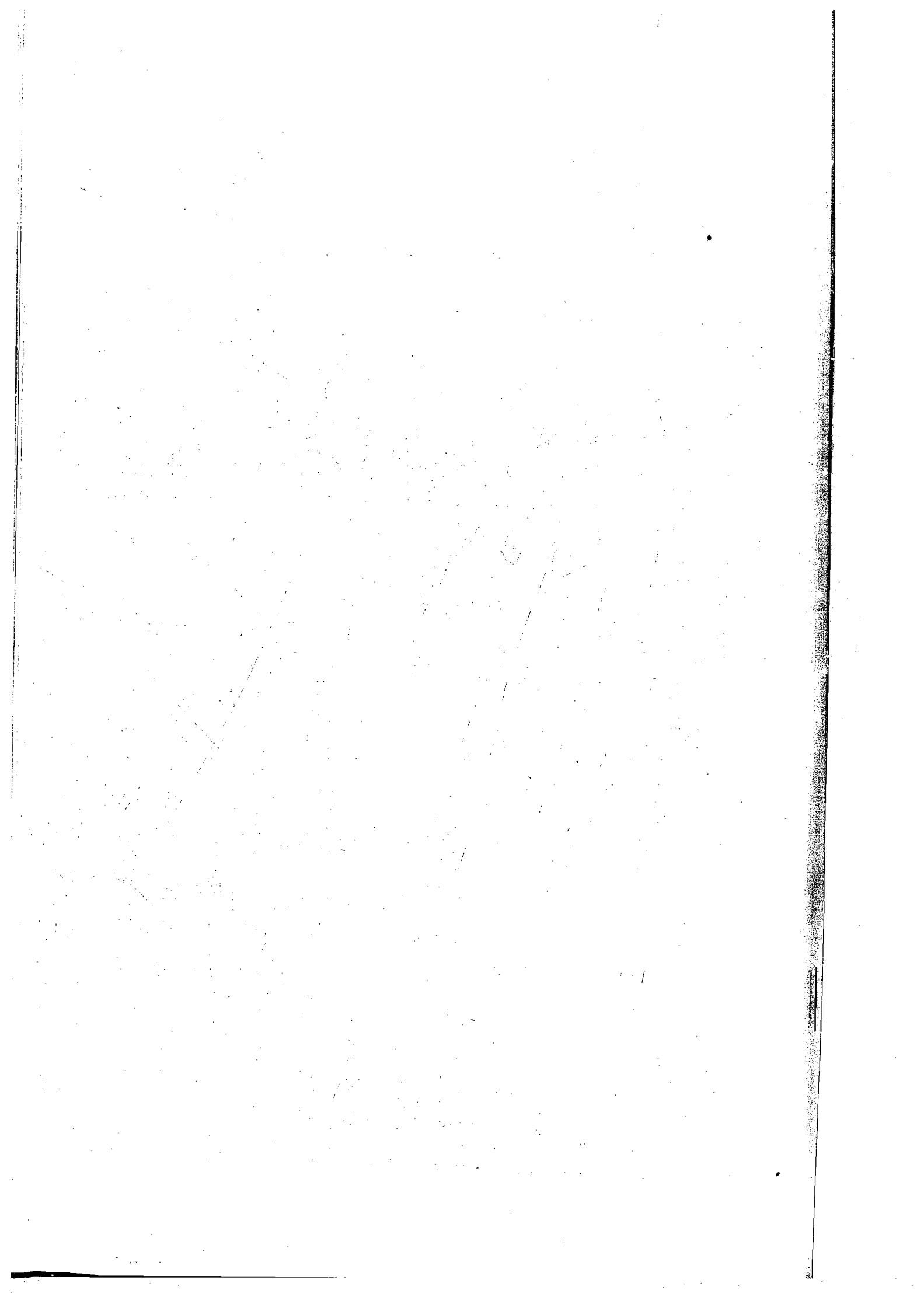
- 1 Cyanosis
- 2 Rubbing of eyes, ears and nose
- 3 Cough
- 4 Hiccough
- 5 Blinking of eyes
- 6 Deviation of mouth to one side
- 7 Smell of goat
- 8 Fever
- 9 Emaciation
- 10 Stool of greenish colour

### 12. SUSHKAREVATI GRAHAM

जायते शुष्करेवत्यां क्रमात् सर्वाङ्गसंक्षयः। A.H.U. 3/29-31

Emaciation is the characteristic feature in this graha. The failure to thrive can also be correlated to this clinical condition.

Symptoms may me correlated with PEM especially marasmus.



## **APPENDICES**

Appe

A

B

A.

B

Appendix No. 1

## MEASUREMENTS AND VALUES

### Growth Velocity

A	0 - 4 month	1.0 Kg/month (30 g/day)
	5-8 month	0.75 kg/month (20 g/day)
	9 - 12 months	0.50 Kg/month (15 g/day)
	1 - 3 years	3.0 Kg/year
	3 - 12 years	2.0 Kg/year
	12 - 18 years	5.0 - 6.0 Kg/year (0.5 Kg/month)
B	Weight at 4.5 months	2 x birth weight
	Weight at 1 year	3 x birth weight
	Weight at 2 years	4 x birth weight
	Weight at 7 years	7 x birth weight
	Weight in Kg = (Age in years + 3) x 2	

### Height Velocity

A.	At birth	20 inches (50 cm)
	Gain during 1 <sup>st</sup> year	10 inches (25 cm)
	Gain during 2 <sup>nd</sup> year	5 inches (12.5 cm)
	Gain during 3 <sup>rd</sup> year	3.4 inches (7.5 - 10 cm)
	Gain during 3-12 years	2-3 inches /year (5.0 - 7.5 cm)
	Adolescence	8cm/year - girls 10 cm/year - boys
B	Expected height upto 12 years	
	Length or height (inches) = Age in years x 2.50 + 30	
	Length or height (cm) = Age in years x 6 + 77	

### C Prediction of adult height

- a) The calculation of mid-parental height is useful to evaluate the child's genetic endowment for linear growth. The determination is made by using the following formulae.

Boy = (Mother's height in cm + 13 cm) + (father's height in cm)/2

Girls = (Father's height in cm - 13 cm) + (Mother's height in cm)/2

The projected adult height by this method corresponds to within +8cm or 2SD.

- b) Tanner's formula

Adult height = height at 2 years x 2

Adult height = height at 3 years x 1.37

- c) Weech's formula

Adult height in inches

Boys = 0.545 H<sub>3</sub> + 0.544 A + 14.84

Girls = 0.545 H<sub>3</sub> + 0.544 A + 10.09

Where in H<sub>3</sub> is the height of the child at 3 years and A refers to mean height of parents.

### HEAD CIRCUMFERENCE

Head circumference (cm) in under - five children (10<sup>th</sup> - 90<sup>th</sup> percentile)

Birth	32.0 - 35.5
1 month	34.0 - 37.5
2 months	36.0 - 39.5
3 months	38.0 - 41.5
6 months	40.0 - 43.5
9 months	42.0 - 45.0
1 year	43.5 - 46.5
1 ½ years	44.5 - 48.0
2 years	45.5 - 49.0
2 ½ years	46.5 - 50.0
3 years	46.8 - 50.3
3 ½ years	47.1 - 50.6
4 years	47.5 - 50.9
4 ½ years	47.8 - 51.2
5 years	48.1 - 51.5

## MID UPPER ARM CIRCUMFERENCE

Arm circumference for different heights

Mid – upper arm circumference (cm)	Height (cm)
16.50	133.00
16.0	129.00
15.50	125.00
15.0	121.00
14.75	118.00
14.50	116.00
14.25	113.50
14.0	110.00
13.75	106.50
13.50	103.50
13.25	97.50
13.0	90.00
12.75	80.00

## Span

It is the distance between the tips of middle fingers of both arms outstretched at right angles to the body. The arm span is measured across the back of the child.

In under five children, span is 1 – 2 cm smaller than body length.

During 10 – 12 years, span is equal to the height

In adults, span is more than height by 2 cm

## NORMAL HAEMATOLOGICAL VALUES AT DIFFERENT AGES

(Mean + SD)

Age	RBC count	Haemoglobin	Haematocrit	Corpuscular values		
				MCV (fl)	MCH (pg)	MCHC (g/ldl)
Days 1-13	5.1±1.0	19.5±5.0	54.0±10.0	106.98	38.33	36.34
Days 14-60	4.7±0.9	14.0±3.3	42.0±7.0	90	30	33
3 months to 10 years	4.5±0.7	12.2±2.3	36.0±5.0	80	27	34
11-15 years	4.8±0.6	13.0±2.1	39.0±5.0	82	28	34
Adults				7.6		
Females	4.8±0.6	14.0±2.0	42.0±5.0	90±7	29±2	34±2
Males	5.4±0.9	16.0±2.0	47.0±5.0	90±7	29±2	34±2
						7.5+0.3
						7.5+0.3

## NORMAL VALUES ON URINE ANALYSIS

	Determination	Age	Normal range
1	Volume (ml/day)	New borns	50-300
		Infants	350-550
		Children	500-1000
		Adolescents	700-1400
2	Specific gravity (random)	Infants	1.001 – 1020
		children	1.001 – 1.030
			>1.025 (after fluid restriction)
3	Osmolarity (m Osm/l)	Prematures/ newborns	50-600
		Infants &	50-1400
		Children	>850 (after fluid restriction)
4	pH	New borns & infants children	5.0 – 7.0
			4.8 – 7.8
5	Sugar (qualitative)		Negative
6	Protein (qualitative)		Negative 10 – 100
7	Microscopic (per HPF)		
		Leukocytes	0.4
		Erythrocytes	Rare
	Casts		Rare
8	Addis count (per mm <sup>3</sup> )		
		Leukocytes	<10
		Erythrocytes	<5
		Casts	Occasional hyaline

## NORMAL BLOOD PRESSURES AT VARIOUS AGES

Age	Mean systolic + 2S.D		Mean diastolic + 2S.A.	
	(KPa)	(mmHg)	(KPa)	(mmHg)
New Born	10.6+2.1	(80+16)	6.1+2.1	(46+16)
6-12 months	11.8+3.9	(89+29)	8.0+1.3	60+16
1 year	12.8+4.0	(96+30)	8.8+3.3	(66+25)
2 years	13.2+3.3	(99+25)	8.5+3.3	(64+25)
3 years	13.3+3.3	(100+25)	8.9+8.1	(67+23)
4 years	13.2+2.7	(99+20)	8.6+2.7	(65+20)
5-6 years	12.5+1.9	(94+14)	7.3+1.2	(55+9)
6-7 years	13.3+2.0	(100+15)	7.5+1.2	(56+9)
7-8 years	13.6+2.0	(102+15)	7.5+1.1	(56+8)
8-9 years	14.0+2.1	(105+16)	7.6+1.2	(57+9)
9-10 years	14.2+2.1	(107+16)	7.6+1.2	(57+9)
10-11 years	14.8+2.3	(111+117)	7.7+1.3	(58+10)
11-12 years	15.0+2.4	(113+18)	7.8+1.3	(59+10)
12-13 years	15.3+2.5	(115+19)	7.8+1.3	(59+10)
13-14 years	15.7+2.5	(118+19)	8.0+1.3	(60+10)

## CHRONOLOGY OF HUMAN DENTITION

## Primary or Deciduous Teeth

Teeth	Eruption		Shedding	
	Mandibular	Maxillary	Mandibular	Maxillary
Central incisors	5-7 months	6-8 months	6-7 years	7-8 years
Lateral incisors	7-10 months	8-11 months	7-8 years	8-9 years
Canines	16-20 months	16-20 months	9-11 years	11-12 years
First molars	10-16 months	10-16 months	10-12 years	10-11 years
Second molars	20-30 months	20-30 months	11-13 years	10-12 years

## SECONDARY OR PERMANENT TEETH

Teeth	Age of eruption
Central incisors	8 years
Lateral incisors	8 years
Canines	11-12 years
First molar	6 years
Second molar	12-13 years
Third molar	17-25 years
Bicuspid (anterior)	9 years
Bicuspid (posterior)	10 years

## Appendix No. 2

### QUESTIONS

1. Write the definition of baala and classifications of baala according to age and aahara (5 marks)
2. Explain praana pratyagamanavidhi (Resuscitation method) (5)
3. Write stanya sampat lakshanas. What are the stanya doshas mentioned in Kasyapasamhita (5)
4. Describe the time and method of naabhi naadi chedanam and the management (5)
5. Explain kreedaaagaram and describe the qualities of kreedanakaani (5)
6. Write down the causes of stanyanasa and its treatment (5)
7. Define upavesana samskaara. What are the ill effects due to over indulgence of upavesanam (5)
8. Write short note on neonatal asphyxia and caput succidanum
9. What is praasa? Write down in brief about phalapraasa and annapraasana, samskara Write down the yoga and phalaruthi of Rajanyadi choornam (10)
10. Type of baalagrahas according to the Ashtangahrdayam write down the graha saamanya lakshana
11. Explain mritbhakshana janya paandu and its management
12. Define phakka roga and its treatment
13. What are the clinical features of prameha and arsas mentioned in Kasyapasamhita
14. Write down ksheeralasaka and its treatment

15. Explain krimiroga in the children and its management.
16. What are protective measures mentioned in jaatakarmasisu paricharanam
17. Explain kumaaragaaram
18. Write the method of naabhi naadi chedanam mentioned in Ashtangahridayam and its management
19. Write the feeding schedule of the new born up to 4 days after delivery
20. What are the complications of improper cutting of umbilical cord
21. What is ulbakam?
22. What is praasa explain suvarna praasavidhi. Write the importance of medhya rasayanas in balaroga
23. Explain praanapratyagamanavidhi (resuscitation method)
24. Name Ashtavidha swedas mentioned in Kasyapasamhita. Explain pradehasweda
25. Write the features of ardas according to Kasyapasamhita.
26. Explain upaseershakam
27. Explain kreedanakani and its importance
28. What are the clinical feature of prameha according to Kasyapasamhita
29. Explain garbhaposhanam
30. What are the normal developmental milestones upto the age of 1 year
31. What are the features and case of akaalajaata sisu (preterm baby)
32. Define kaumaarabhrithya
33. Describe the qualities of a good 'dhaatri' (wet-nurse)
34. Summarize the care of the new-born child for the 1<sup>st</sup> week
35. What are the qualities of "sudha stanya"?
36. Write down the "ksheera doshas" described by Charaka. Classify them according to dosha predominance
37. Describe the lakshanas (features) of "prameha" in children
38. What do you mean by "stanya apanayana"? write down a scheme for "stanya apanayana"
39. What are the features of danta sampat in children?
40. Explain the features of a normal new-born child
41. Write a short note on "artificial feeding"

42	Explain the features of "kumaarasosha"	69
43	Differentiate between "parigarbhika" and "garbhaja Phakka"	70
44	Write down the management principle of 'Phakka'	71
45	Summarise the "vata rogas" of children due to "prashava aakhaata"	72
46	Classify the aetiological factor (nidana) of convulsive disorders in children	73
47	Write short note on "neonatal jaundice"	
48	Write down the features of ksheeralasaka and its management in children	74.
49	What are the "saahja danta doshas" found in children	75.
50	Explain the pathogenesis of "jala seershaka" (hydrocephalus) in children	76.
51	Detail the contributions of Kasyapa samhita in the field of kaumarabhrithya	77.
52	Define pre- term baby and explain its features.	78.
53	Explain praanapratyagamana vidhi and compare with modern updates	79.
54	Explain baalaka parichaya and highlight its importance in the causation of diseases	80.
55	Give a short description of samskaaras applicable to children and detail upavesana samskaara	81.
56	Give a description of kreedabhoomi according to different age groups	82.
57	Detail the disease caused due to dushta sthanya sevanam	83.
58	Explain danthotbhava vyadhi and its treatment pattern	84.
59	Elaborate the growth and development pattern during adolescence	85.
60	Give a short note on 'uramarunnu'	86.
61	Give a detailed description of pem ( protein energy malnutrition) and plan on appropriate treatment pattern	87.
62	Detail the modifications that should be adopted while doing panchasodhana in children	88.
63	Point out the method of transference of hereditary disease according to Ayurvedic point of view	89.
64.	Explain mritbhakshanajanya paandu with its treatment	90.
65.	Explain the psychological problems encountered in children	91.
66.	Yoga and phalaruthi of Rajanyadi choornam	92.
67.	Detail charddi nidaana and chikitsa	
68.	Detailed description of "swagraha"	

69. Short notes on measles, chicken pox and taalukantaka
70. Write classification of children according to different aspects
71. Write the time and method of 'naabhee naalachedanam'
72. What are stanya doshas mentioned in Charakasamhita? Write stanyadushti chikitsa
73. Write dantasampat lakshanas mentioned in Kasyapasamhita write the disorders from improper dentition
74. Explain kreedagaaram, write the attributes to ideal kreedanakani
75. Briefly describe the praanapratyaagamana vidhi of neonate
76. Name astha vidhasweda, explain patasweda and hasthasweda
77. Write the feeding schedule of baala in first three days after delivery
78. Write the ingredients and indications of Rajanyaadi churnam
79. Explain ksheeraalasaka and its management
80. Explain phakka roga saamaanyalakshanas, classification and its management
81. What are birth injuries? Explain its different manifestations
82. write short notes on  
upaseerashakam, skandaapasmaram, upavesanam and APGAR.
83. Write the kaphaja krimilakshanas and management
84. Write the features and care of akaalajaata sisu (preterm baby)
85. What is meant by primary complex? Describe the clinical features of it?
86. Describe the qualities of breast milk. How long the baby is to be feeded?  
Write the advantages of breast milk both Ayurvedic and modern view (10)
87. Derive the words baala, kumaara and yuva (5)
88. Describe 'karnavedhana samskaara' and symptoms produced due to improper pricking of the ears (5)
89. Write the methods adopted to determine the dosage of medicine in children(5)
90. What are the common psychosomatic disorders seen in children? Explain one of them in detail (5)
91. Write the time of eruption of teeth (5)
92. Write the lakshanas of keetadamsa, sirasoola, apasmara as mentioned in Kasyapasamhita (6)

93. Describe the etiological factors for vaamanatvam (5)
94. Write 'skandagraha' lakshana in detail (4)
95. Explain the features of congenital syphilis (5)
96. Explain the cause of malnutrition in children (5)
97. Write the etiological factors in connection with mental retardation. Explain two diseases related with this (10)
98. Explain one disease in children where Jalaukaavacharana is indicated (5)
99. Write down the causes of praanaavarodham (asphyxia) in newborn (5)
100. Write short notes on immunization schedule, jalaseershakam, poliomyelitis and cerebral palsy (5)
101. Explain the details of "naabhinaadi parikalpanam" in a new born child (6)
102. write down the normal feeding procedure of the new-born for the first 3 days after birth (4)
103. Explain the aetiological factors of 'sthanya dushti' write down an one 'yoga' to purify stanya (6)
104. Define 'garbha' give details of the means of foetal nutrition (6)
105. Explain the main developmental milestones of a child during the first year of life (5)
106. What are the different methods used to determine the dosage schedule for a child? (6)
107. Explain 'sthanya doshas' what are the effects of sthanya doshas in a breast fed child? (6)
108. Narrate the special clinical features of alasaka in children described by Kasyapa (6)
109. Write a short note on 'kreedaabhoomi' (5)
110. what do you mean by janmabala pravitta roga explain giving suitable examples (7)
111. describe the form of genetic transmission of kushta in a child (6)
112. explain the actiological factors and types of vaamanatvam in children (4)
113. Write down the important psychosomatic disorders found in children. Plan a management schedule (6)
114. explain the important features of 'vyadhija fakka' state the important step in its management (6)

115. what do you mean by 'kukoonaka' explain it's features as well as management (4)
116. write down the features of skanda graha in children summarise the management of graham rogas in children (6)
117. define 'visarpa' and classify the different types of visarpa found in children (5)
118. Write down the features of paandu roga in children. Plan a treatment schedule for mrit bhakshana janya paandu in children (6) July 2002
119. what do you mean by kreedaika write down the qualities of a good kreedankaka
120. What are the sthanya doshas described by Charakā?
121. Name the drugs included in 'stanya sodhana maha kashaya'
122. Describe the causes of stanyanaasa
123. What are the protective measures mentioned in jaatamaatra sisu paricharam?
124. Describe anna praasana samskara
125. Define 'upavesana' what are the ill-effects due to over indulgence of upavesana?
126. Explain the scientific basis of 'suvarna praasana' in newborn child
127. Explain the gabhavridhikara bhaavas
128. Describe aadibala pravrutta rogas giving suitable exercise
129. Explain the features of sahaja phiranga
130. What are the different causes of 'vaamanatwa' in children?
131. Write down the management principles of "praanavarodham" (asphyxia) in newborn children?
132. Describe the clinical manifestations of 'prameha' in children
133. Write down the features of ksheeraalasaka
134. What are the principles of management of dantobedha janya vyadhis?
135. Write a short note on navajaata sisu kaamala (neonatal jaundice)
136. Which are the "grahas" that have 'chardi' 'atisara' as important features? Describe any one of them in detail
137. Write a short note on "upaseershaka"

### Appendix No. 3

# **KAUMARABHRITHYAM ENTRANCE PREPERATION NOTES**

## Texts of kaumarabrithya

- Kasyapasamhita
  - Paarvatakatana
  - Hiranyaakshatantra
  - Yogasudhanidhi
  - Baandhakatantra
  - Kaumarabhrithya is important in sareerasthana- by Sushruta
  - Ulbam is – vernix caseosa
  - Drug used for prasuti klesha of child- balatailam
  - Drugs used for first bath of an infant
    - o Ksheerivriksha kashayam
    - o Any fragrant drug
    - o Lukewarm water.

## Pedigree of Ayurveda according to Kasyapasamhita

BRAHMAA → PRAJAPATI → ASWINI TWINS → INDRA

↓

VATSYAYA ← ANAYASA ← VRIDDHA ← JEEVAKA ← KASYAPA  
YAKSHA VASISHTA  
ATRI, BRUGU

## **Order of kaumarabhritya in different texts**

- o Sushruta-5<sup>th</sup> position
  - o Vagbhata-second
  - o Kasyapasamhita-first

### Classification of pediatric age group

Susrutha	Kshirada (1yr), Kshirannada (2 yrs), Annada (above 2yrs)
Sarngadhara	Dugdhasi, Dugdhannasi, Annasi Baalyam-up to 10 yrs.
Kasyapa	Garbha, Bala, Kumara Youvanam, madhyamam,vridham
Parasara smriti	Gauri (8yrs), rohini (9yrs), kanya (10), rajaswala(>10)

### Care of new born

- Instrument used for cutting of umbilical cord - Ardha dhara sastra.
- Length at which it is to be made-
  - o 4 Angula according to Ashtanga hridaya
  - o 8 Angula as per Charaka & Susrutha
- Caraka mentions Lodhradi taila for Nabhi parisheka.

### Samskaras

- Namakarana to be performed on
  - o 10th day according to Caraka and Ashtanga Hridaya.
  - o 12th day or after 1 year as per Ashtanga Samgraha.
- Nishkramana —>
  - 4th month (Kasyapa, Ashtanga Samgraha)
- Upavesana
  - 5<sup>th</sup> month- A.S.
  - 6th month —>Kasyapa.
- Phalapraasana— 6th month (Kasyapa)
- Annapraasana — 6th month (Ashtanga Hridaya), 10th month (Kasyapa)
- Snanotsava for Sutika - to be performed on 10th day.

### Stanya

- 8 Kshira doshas
  - o Vaivarnya, Dourgandhya - Paittika
  - o Vaivarnya, Phena samghata, Roukshya - Vatika
  - o Atisneha, Gourava, Paichilya - Kaphaja.

### Diseases

- The type of Stanya dushti responsible for Baalasosha - Kaphaja.
- Consumption of breast milk of pregnant woman is responsible for - Paarigarbhika.
- Synonyms of Paarigarbhika – Paribhaya, Ahindi.
- Jalashirshaka is (Sheershambu) described in Bhaishajya ratnavali.
- Kukunaka is described as stanyadoshaja by Sushruta and Kasyapa.
- Chakra taila mentioned in the treatment of Nirudha prakasa by Susrutha.
- Rasaanjana is mentioned in the treatment of Gudakuttaka.
- Kshiralasaka due to Tridosha stanyadushti.
- Ulbaka - mentioned by Ashtanga Samgraha. (Syn) Sahajavyadhi, Ambupurna. Chagala mutra mentioned in the treatment of Ulbaka.
- Maha padma visarpa mentioned by Ashtanga Samgraha.  
Considered as Asaadhyा.
- Snehapichu in Srotrasringaataka - Adviced by Ashtanga Samgraha.
- Ratnakethu dharini as part of Raksha karma (Ashtanga Samgraha).
- Complication arise due to breast feeding in case of
  - o AtiPeenastana - Kandharasthambha
  - o Urdhwasthana chuchuka Urdhwaksha.
  - o Urdhwastani Karaala
  - o Lambasthani Maranam.
- Ingredients of Balachaturbhadrām - Ativisha, Mustha, Pipali, Karkata sringi.
- Samangaadi ghrītam - for Dantodbheda janya vyadhis.
- Parvanuplava described by Ashtanga Samgraha.
- In Parvaanuplava pain starts from Hands.
  - o Hands - Head - Back - Scrotum - Legs.
- Pratisara banda in the management of Baala grahas - described in Ashtanga Samgraha.
- Utphullika mentioned in
  - o Harita Samhita.
  - o Vaidya vinodam.
- Dosha kopa in Aja gallika - Vata, Kapha

- Bala grahas
- o Ashtanga hrdaya - 12
- o Sushruta - 2
- o Kasyapa - 20.

### Peculiar features of Grahabadha

Graham	Eyes	Smell	others
Skanda graham	Ekanayanasaavam, urdwa nireekshanam Chalitaikashi Raktobhaya lochanam	Vasa Asrik	Hemiplegia Death
Visakham/ Skandaapasmaaram	Urdhwaksham	Puyam Sonitam	Hasta/bru/paada Nartanam
Naigamesham/ Meshaasyam	Urdwam nireekshya Ekanetra sopham	Bastha	Paani paada - Spandanam
Swagraham	Chakshurnimeelanam	Vahaavit	Kroshanam Swavatchuni
Pitrugramam	Srutischakshno:	Savam	
Sakuni			Sakuni Skin manifestations
Putana			Kaaka
Mutranigraham			
Sitaputana	Tiryageekshanam	Vasa	Parswasaya ushnam
Andhaputana	Drshti saadam Akshiruk Pothakee	Malsyam Amlam	Aprasya seetam Maximum eye problems
Mukha manditika		Gomutram	Veins prominent
Revati	Akshi vikshepam	Basta gandam	Green stool
Sushka revati		Gridhram	Deerkha kaalanubandham

### Posology - Susrutha

- For Kshirapa - Anguliparvadwaya grahana - Sammitha
- Kshirannada - Kolasthisammitha
- Kshirada - Kola sammitha.
- Treatment for Masthulunga kshayam -For Pana, Abhyanga → Madhurakaih sritham sarpih (Kakolyadi ghritam), Seethambu udwejanam.

### Complications of improper Naabhinaalacheda –

- Aayaama – Dairghyam
- Vyaayaama – Visthaaram
- Uttundika - Dirgha peenathwa.
- Vinaamika - Anthashoona madhyanimna.
- Pindaalika - Parimandalayutha.
- Vijrimbhika - Muhurmuhurvridhimatee.
- Beeja dushti-progenies
  - If Garbhaasaya bijabhaaga of Sonita is vitiated – Vandhya
  - If Garbhaasaya bijabhaagaavayava of Sonita is vitiated - Putipraja.
  - If Garbhasaaya bijabhaagaavayava + Streekara bhaavanam ekadesa vitiated – Vartha
    - In Sukra if Bijabhaga vitiated – Vandhya
    - In Sukra if Bija bhaagaavayava vitiated – Putipraja
    - In Sukra if Bijabhagavayava + Purushakara bhaava vitiated - Trinaputrika
- Ayu pariksha

In Ayupriksha of new born caraka mentions the following as markers of longevity.

- Atapatropamam - Siras
- Ardhachandraakruthi - Lalaatam
- Mahaachidra - Karna
- Vamsa sampanna - Naasika
- Pradakshinaavartha - Naabhi
- Urasthribagaheena - Kati

### A go through in Kasyapa Samhitha

- First chapter in available Kasyapa Samhita - Lehaadhyaya.
- Dose for Jatamatra - Vidanga phala maatra.(always with madhu&sarpi:)

- Then increase the dose per month.
- Maximum provable dose- Aamalaka maatra
- Indications of lehanakarma
  - Aksheera
  - Dushta ksheera
  - Dushprajaata
  - Vaatapaittika rogas
  - Unsatisfactory child with his mother's breast milk
  - Mahaasana: constipation up to three days etc.
- For Kalyaanamathrika, kaphaja roga, hridroga, swaasa, kaasa- Lehana is contraindicated.
- Within one month of administration-Medhavee-by lehana of suvarna
- Common drugs used for lehana
  - Braahmee, Manduka parni, triphala, chitraka, vacha, Satapushpa, sataavari, danti, naagabala, trivrit, Kalyaanaka ghritam, paachagavyam, brahmee ghritam
  - Suvarna praasanam - Gold + Honey + Ghee.
  - Samvardhana ghrita indicated for Pangu, Mooka, Asruthi, Jadata.
  - If Stanya is
    - o Swaadu - Bahuvinmutrata.
    - o Kashaaya - Mutravitgraha.
    - o Tailavarna – Balee
    - o Ghritavarna – Mahaadhana
    - o Dhumavarna - Yasaswee.
  - Vajram - Trinam, keetam, Tusham, Sukam etc. responsible for Stana kilake.
  - Suddha stanyalakshana in Kasyapa samhita
    - o Avyaahata balam
    - o Anga vardhanam
    - o Ayurvardhanam
    - o Sisu anaapatti
    - o Dhaatri anaapatti
  - First line of treatment of Stanakilaka - Snehapanam.
  - Last line of treatment is –vidradhi chikitsa
  - Teeth - 8 Sakriijaata

- 24 Dwija.
  - 4 types of Dentition -
 

1. Saamudga	Kshayi, nityasampataat
2. Vivrutam	Veetam, Nityalalopahatam
3. Samvrutam	Adhanyam, Malishtam
4. Daatasampat	Best
  - Female child- easy eruption of teeth, less discomfort  
Causes- sushiratwam, mrduswabhaavaat
  - Late eruption-in male child  
Sthiratwaat
  - Appropriate time for Dentition - 8th month.
  - If primary dentition starts in
    - 4th month - Durbala, Aashukshayi, Aamaya bahula
    - 5th month - Syandana, Praharshinee, Aamayabahula.
    - 6th month - Pratheepa, Malagrahi, vivarna, Ghunadanta
    - 7th month - Dwiputa, sphotina, Raajimanta, khanda.
  - Amangalya dantaa
 

Sadanta janma	purvamuttaradantajanma	viraladanta
Heenadanta	adhikadanta	karaaladanta
Vivarnadanta	sphutitadanta	
  - Snehana is contra indicated for
  - Garbhini, Sutika and Ksheerapa.
  - 8 types of swedas indicated -
 

Hasta sweda	Samkara
Pradeha	Upanaaha
Nadi sweda	Avagaaha
Prastara	Parisheka
  - Hasta sweda is indicated upto 4th month.
- Vedanaadhyaya - specific symptoms of diseases.**
- Avakujathi Aratimaam - Siroruk.
  - Naasa swaasee - Mukharoga.
  - Mukhasya vivrutatwam - Adhijihwika.
  - Dhaatreemaaleeyathe Akasmaat. Paadayo saityam - Jwara

- Deha vaivarnyam - Atisaaram
- Mukhasweda - Sula
- Aniimitham, Abhikshnam Udgaara - Charddi
- Akasmaat maarutodgaara - Hikka
- Visaala stabdha nayana - Aanaaha.
- Akasmaat Attahasanam - Apasmaara.
- Pralaapa, Arati, Vaichinthyam - Unmaada.
- Roma harsha, Angaharsha - Mootrakrichra.
- Akasmaat mootranirgama - Prameha
- Swaadu seetopasaayitwam - Visarpa
- Hrit sulam - Visuchika
- Suptasya chopalipyanthe chakshushee - Akshiroga
- Asnaatah Snaatarupascha Snaatascha Asnaatadarsanah - Aamam.
- Naabhyaaam Samantata sopha - Paandu.
- Nirutsaaha, Nashtaagni, rudhiraspriha - Paandu, kaamala.
- Dhaatridwesha, Arati, Bhrama - Madaatyaya.
- Muhiurmukhena Vihwasithi - Peenasa
- Koojatyapi kapotavat - Grahroga.
- Supreme among chatushpada is Rogi is the opinion of Vridha Jivaka.
- Vyaadhi or Dukham is Dhaatusthoonaatma Vaishamyam
- Prakriti or Sukham is Dhaatusthoonaatma saatmya,
- Main seat of kapha - Hridaya
  - Yatha vaktram tatha vrittam
  - Yatha chakshustatha manah 1
  - Yatha swarastatha saaro
  - Yatha rupam tatha gunah 1
- 18 satwas              Saatwika    8  
                            Raajasa      7  
                            Taamasa     3
- Kasyapa has included
  - o Prajaapathyā satwa among saatwika group
  - o Yaksha satwa among raajasa group.
  - o In place of Pretha satwa - Bhutha satwa

- Satwam – Prakaasakam
- Rajas – Pravartakam
- Tamas - Niyaamakam
- Proposed that Koumarabhritya is the first and foremost among 8 tantras.
- Description of duration of Ritukaala according to caste.

#### Nature of vaginal secretion

- Tantree varna, Alpa sraava —> for male progeny.
- Kimsukodaka Samkaasa —> for female progeny.
- Chikitsa is of 2 types -
  - o Oushadham - Dravya samyogam - Deepanadi
  - o Bheshajam - Hutavrata tapodaanam, Santikarma.
- Indraaneeghritam
  - o Indicated in Raajayakshma,
  - o As a remedy for vandhyatwa.
  - o Main ingredient - Lasuña.
- Saishuka ghrita - indicated in vaatagulma
- Vipareetam pramehebhyo is the treatment principle of Mootrakrichra.
- Upakramas for vrana —>
  - o Dhaatreebalanigraha
  - o Samsamana
  - o Bandhana
  - o Utklinna prakshaalanam
  - o Kalka pranidhaanam
  - o Sodhanam
  - o Ropanam
  - o Savarneekaranam
- Arakeelika - A type of allergic skin disease
- Pratisyaaya - Vaatasleshmotara tridoshaja
- Uroghaata - Pittasleshmotara thridoshaja
- Uroghaatham - 4 types
- Katutaila vasti in krimi chikitsa
- Kaphaja stanya dushti - responsible for kshiraja phakka
- Phakka - 3 types - kshiraja, garbhaja, vyadhija

- Phakka - treatment - Raaja tailam, tricycle
- Meenatailam - indicated in vaatavyadhis of Dhaatri  
(Prepared with fish)
- Trayo dushkara karinah
  - Bhishak
  - Dhaatri
  - Baala

#### Regarding administration of vasti

"Janmāprabhriti Baalaanaam"

Vastikarmopakalpayet" - opinion of GARGYA

"Adhasthano Annabhakta chā yada" - opinion of Kasyapa

- Patasweda is to be performed from 6th year of age
- for nasyakarma in kshirapa - katutaila or Ghee with saindhava
- Various dhoopas mentioned in dhoopakalpa adhyaaya
  - Koumaara
  - Bhadrakara
  - Dosaaghna
  - Moha
  - Sisuka
  - Chaturcugika
  - Swastika

#### Lashuna

- Rasa of Bija Katu
- Naala Lavana, Tiktha
- Vipaaka Madhura

#### Dose of Aardra Lashuna

- Utama 8 pala
- Madhyama 6 pala
- Avara 4 pala

#### Dose of Sushka lasuna

- Utama maatra 100 numbers
- Madhyama 60 numbers

- Avara 50 numbers
- Due to consumption of cold foods or water after Lasuna sevana - Jalodara as complication
- Lasuna - 2 types - Girijam and kshetrajam
- Shatkalpa in Akshirogas-Chakshushya, pushpaka, Rochana, Rasaanjanam, Kataka, abhaya
- Panchabhoutika tailam - Panchendriya vivardhanam
- 100 pala of satapushpa is to be consumed in the treatment of vandhyatwa

### **Jaatahaarini**

- Pushpaghatinyah - Asaadhyya
- Garbhopaghaatikah - saadhyya
- Varanabandha - for Garbharaksha - to be done before 8th month
- Vaatapaittika Sannipaata - Vidhu
- Pitta kaphaja Sannipaata - Pralgu
- Sannipaata in which all 3 doshas are abundantly aggravated - Kootapaakala
- Honey is contraindicated in all sannipaatas

### **Specific posology:**

- Dose of Ghee
  - o For new born - Kolaasthi
  - o At 20 days age - Kolaardham
  - o 1 month - 1 kolam
  - o 3 months - 2 kolam
  - o 4 months - Sushka aamalaka
  - o 5 and 6 months - Aardra aamalaka.
- Upto 8th month, Medicines are to be administered with ghee. From 8th month medium can be changed to water.

### **For churnas**

- Deepaniya - Agraparvaanguligraahya maatra.
- Jivaniya, Samsamana - 2 times to this
- Vamana, Virechana - 1/2 to this

### **For Kashaaya**

- Vaata pitta kaphaghna - 2 prasrita
- Jivaniya, Samsamana - 4 prasrita
- Vamana, Virechana - 1 prasrita

### Kalka

- Dipaniya - 1 Aksha
- Jivaniya, Samsamana - 2 Aksha
- Vamana, Virechana - 1/2 Aksha
- Aarogya lakshana described in Bhojyopakramaniya adhyaaya
- Chaturbhadra kalpa - method of administration of vasti
  - 4 Anuvaasana
  - 4 Asthaapana
  - 4 Anuvaasana
- 'Jaraayujaanam Bhutaanaam Viseshena tu Jeevanaijn' - Ksheeram
- Katuka Bindu Lehā indicated in Sotha
- Charmadala - occurs only in Kshiraada and Kshirannaada age groups - Not in anjaada group.
- 'Dussahah sukuMaaraanaam kumaaraanaam viseshathah'
- Koutuka Anjanam in Kukunaka chikitsa
- Prasoota - term applied only after the expulsion of placenta.
- 64 Sutikarogas.
- Kumaaraprasave -tailam
- Ku'mareeprasave -ghritam.

### Jaatahaarini

- No menarche upto 16 years - Sushkarevati
- Amenorrhoeas, Hirsutism (PCOD?) - Pushpaghni
- Garbha not pulsating - Stambhani
- Krosha of Udarastha garbha - Kroshana
- Jaayathe tu mritham nityam - Naakini
- Jatam Jatamapatyam sadyo vinasyati - Pisaachi
- Fetal death in 2nd day - Yakshi
- 3rd day - Aasuri
- 4th day - Kaali
- 5th day - Vaaruni
- 6th day - Shashti
- 7th day - Bhesmka
- 8th day - Yaamya

- 9th day - Matangi
- 10th day - Bhadrakaali
- 11th day - Roudri
- 12th day - Vardhika
- 13th day - Chandika
- 14th day - Kapaalamaalini
- 15th or after - Pilipichika
- Sons die, Daughters not affected - Kulakshaya kari (X linked Recessive)
- Male offsprings die before 16 years - Pourushaadani
- Tirascheena Jatahaarini is of - 5 types.

### GROWTH & DEVELOPMENT

PRENATAL PERIOD	
Ovum	0-14 days
Embryo	14 days up to 9 weeks
Fetus	9 weeks to birth
PERINATAL PERIOD	28 weeks of gestation to 7 days After birth
POST NATAL PERIOD	
New born	First 4 weeks of life
Infancy	First year
Toddler	1-3 years
Preschool	= 5 years of age
ADOLESCENCE	
Pubescent	Boys 14-16 years Girls 12-14 years

### Few important mile stones

- At 8 weeks of age, the fetus weighs approx. 1 gm. and is about 2.5 cm length
- The third trimester of pregnancy ending by about 28 weeks, is characterized by rapid fetal growth, especially in linear dimension

- Fetal erythropoiesis
- The heart beat begins by about 4 weeks
- Meconium is present by 16<sup>th</sup> week
- The daily caloric need of the new born is 55 cal/kg/24 hrs.
- The Hb content of a new born is 17-19 gm/dl
- Most full term infants regain their birth weight by the age of 10 days
- Double the birth weight by 5<sup>th</sup> month and triple by first year and quadruple by 2 years
- Closure of ant. Fontanella-9-18 months, post. fontanella -4<sup>th</sup> month
- There are 6 fontanell in neonates
- Chest circumference is less than head circumference, but they are same at 1 year.
- Social smile - 2 months
- Neck holding - 4 months
- Sitting - 6 months
- Crawling - 8 months
- Standing - 11 months
- As a rule, the infant eye is hypermetropic
- At birth the cornea is 10mm and attains adult size (12mm) by 2 years

#### Attributes of Normal Full Term infant :

- Length - around 50 cm
- Head circumference - 34-35 cm
- Chest Circumference - 31-32 cm
- Heart rate - 120-140/mt
- Respiratory rate - 35-40/mt

	Reflex	Appearance	Disappears
1	Moro	Birth	3 mo
2	Stepping	Birth	6 weeks
3	Placing	Birth	6 weeks
4	Sucking & rooting	Birth	4 mo awake, 7 mo sleep
5	Palmar grasp	Birth	6 mo
6	Plantar grasp	Birth	10 mo

Moro reflex disappears at 12 weeks.

Tonic Neck reflex - Prominent at 2-4 months, Disappears by 6-9 months.

### Clinical attributes

- Marasmus - Characterised by gross wasting of muscles.
  - Show voracious appetite.
- Kwashiorkor - Edema
  - Flag sign
  - Flaky paint dermatosis
  - Crazy pavement dermatitis
- Clinical features of Rickets
  - Craniotubes
  - Frontal bossing
  - Rachitic rosary
  - Pigeon chest
  - Harrisons groove
  - Pot belly
- Clinical features of Scurvy
  - Scorbustic rosary
  - Pseudoparalysis
  - Gum bleeds
- Trisomy 21 - Down's syndrome
- Trisomy 18 - Edward's syndrome
- Trisomy 13 – Patau's syndrome
- 45 X 0 - Turner's syndrome
- 47 XXY - Klinefelter's syndrome.
- Bilirubin encephalopathy (Kernicterus) is a complication of Neonatal Jaundice.
- Phototherapy helps to convert native bilirubin to Lumirubin which is excreted through kidneys
- Teratogenic effects –
- Streptomycin – Deafness
- Chloroquin – Deafness
- Tetracycline - Stained teeth, Cataract

- Thalidomide - Limb defects
- Methyl Mercury - Meena matta syndrome
- Rubella - PDA, Cataract, Deafness (Classical Triad of Congenital Rubella Syndrome)
- Respiratory distress syndrome in new born is otherwise known as -Hyaline Membrane Disease.
- CSF pressure in new born - 50 - 80 mm water. (50-150 in infants and children 80-200 in Adults)
- Hydrocephalus - Collection of excess CSF due to either increased production, obstruction in its path or decreased absorption.
  - 2 types - Obstructive - Non communicating
  - Non-obstructive – Communicating
- Major infectious agent of Ophthalmia neonatomm - Gonococcus.
- Spot diagnosis
 

- Horder's spot-	facial macules in psittacosis
- Koplik's spot-	bluish grey buccal spots in measles
- For Scheimer's spots	soft palate lesions in rubella
- Roth's spots-	pale-centered retinal infarcts ins SABE
- Rose spots-	truncal rash in typhoid patients (20%)
- Facts about vaccination

VACCINE	DOSE	ROUTE
BCG	0.1ml	Intra dermal
DPT	0.5ml	Deep I/M
Killed polio	0.5ml	IM
OPV	2 drops	Oral
Measles	0.5ml	Subcutaneous
MMR	0.5ml	Subcutaneous

## Appendix 4

### IMPORTANT OUSHADHA YOGAS

#### चूर्णम्

##### रजन्यादि चूर्णम्

रजनीदाः सरलश्रेयसी बृहतीद्वयम् ॥  
पृश्निपर्णा शताह्वा च लीढं माक्षिकसार्पणा ।  
ग्रहणीदीपनं श्रेष्ठं मारुतस्यानुलोमनम् ॥  
अतीसारज्वरश्वासकामलापाण्डुकासनुत् ।  
बालस्य सर्वरोगेषु पूजितं बलवर्णदम् ॥

A.H.U.2/38-40

##### पुष्करादि चूर्णम्

पुष्करातिविषाश्वृङ्गीमागधीधन्वयासकैः ।  
तच्चूर्णं मधुना लीढं शिशूनां पञ्चकासनुत् ॥

B.R. Bala. 71/75

##### दाढिमादि चूर्णम्

दाढिमस्य च बीजानि जीरकं नागकेसरम् ।  
चूर्णितं शर्कराक्षौद्रलीढं तृष्णानिवारणम् ॥

B.R.Bala. 71/76

##### घनादि चूर्णम्

घनकृष्णारुणाश्वृङ्गीचूर्णं क्षौद्रेण संयुतम् ।  
शिशोर्ज्वरातिसारज्ञं कासं श्वासं वर्मि हरेत् ॥

Y.R.. B.Chi.52

##### विडङ्गादि चूर्णम्

विडङ्गान्यजमोदा च पिप्पलीतण्डुलानि च ।  
एषामालिह्यं चूर्णानि सुखतप्तेन वारिणा ॥

Y.R.. B.Chi.56

##### लाजादि चूर्णम्

लाजाः सयष्टिमधुका शर्करा क्षौद्रमेव च ।  
तण्डुलोदकयोगेन क्षिप्रं हन्ति प्रवाहिकाम् ॥

Y.R.. B.Chi.59

**लोक्रादि चूर्णम्**

लोक्रेन्द्रयवधान्याकधात्रीहीबेरमुस्तकम्।  
मधुना लेहयेत् बालं ज्वरातीसारनाशनम्॥

Y.R.. B.Chi.60

**पौष्ट्ररादि चूर्णम्**

पौष्ट्ररातिविषशृङ्गीमागधीधन्वयासकैः।  
कृतं चूर्णं तु सक्षोद्रं शिशूनां पञ्चकासजित्॥

Y.R.. B.Chi. 63

**द्राक्षादि चूर्णम्**

द्राक्षावासाभयाकृष्णाचूर्णं क्षौद्रेण सर्पिषा।  
लीढं श्वासं निहत्याशु कासं च तमकं तथा॥

Y.R.. B.Chi. 67

**पिप्पल्यादि चूर्णम्**

पिप्पलीत्रिफला चूर्णं घृतक्षौद्रपरिप्लुतम्।  
बालो रोदिति यस्तस्मै लेहुं दद्यात्सुखावहम्॥

Y.R.. B.Chi. 99

**कर्कटकादि चूर्णम्**

कर्कटनागरमेधकड्कोलातिविषाभवम्।  
चूर्णं दुधेन सम्मिश्रं पाययेन्मातरं भिषक्॥  
धात्रिं वा पाययेत्सद्यः क्षीरदोषनिवारणम्।

Y.R.. B.Chi. 190-191

**आप्रसारादि चूर्णम्**

मुखपाके तु बालानामाप्रसारमयो रसः।  
गैरिकं क्षौद्रसंयुक्तं भेषजं सरसाज्जनम्॥

Y.R.. B.Chi. 97

**विदारीकन्दादि चूर्णम्**

यथा तु दुर्बलो बालः खादन्नपि च वहिनमान्।  
विदारीकन्दगोधूमयवचूर्णं घृतप्लुतम्॥  
खादयेत्तदनु क्षीरं श्रृतं समधुशर्करम्।

Y.R.. B.Chi. 78

**सैन्धवादि चूर्णम्**

घृतेन सिन्धुविश्वैलाहिङ्गुभाङ्गीरजोलिहम्।  
आनाहं वातिकं शूलं हन्यात्तोयेन् वा शिशोः॥

Y.R.. B.Chi. 76

**हीबेरादि चूर्णम्**

हीबेरशर्कराक्षोद्रं लीढं तृष्णाहरं परम्॥

Y.R.. B.Chi. 72

### आम्रास्थ्यादि चूर्णम्

हिककां प्रशमयेत्क्षिप्रं छर्दि चापि चिरोत्थिताम्।

आप्रास्थिलाजसिन्धूत्यं सक्षोद्रं छर्दिनुदभवेत्॥

Y.R.. B.Chi. 69

### पिप्पली चूर्णम्

मधुना पिप्लीचूर्णं लिहेत् कासज्वरापहम्।

हिककाश्वासहरं कण्ठं प्लीहघं बालकोचितम्॥

Sh. Sa Ma. 6/8

### शृङ्गीचूर्णम्

शृङ्गीं प्रतिविषां कृष्णां चूर्णितां मधुना लिहेत्।

शिशोः कासज्वरच्छर्दिशान्त्वैर्वा केवलां विषाम्॥

Sh. Sa Ma. 6/43

## कषायम्

### हरिद्रादि क्षवायम्

हरिद्राद्वयष्ट्याह्वसिंहीशक्रयवैः कृतः।

शिशोज्जरातिसारञ्चः कषायः स्तन्यदोषनुत्॥ B. R. Bala. 33

### समझगादि क्षवायम्

समझगाधातकौलोध्रसारिबाभिः शृतं जलम्।

दुधेरेऽपि शिशोर्देयमतीसारे समाक्षिकम्॥

Y.R. B.Chi. 55

### नागरसंदि क्षवायम्

नागरातिविषामुस्तवालकेन्द्रयवैः शृतम्।

कुमारं पाययेत्प्रातः सर्वातीसारनाशनम्॥

Y.R. B.Chi. 58

### घातक्यादि क्षवायम्

धातक्याविल्वलोध्राणि वालकं गजपिष्ठली।

एभिः कृतं शृतं शीतं शिशुभ्यः क्षोद्रसंयुतम्॥

प्रदद्यादवलेहं वा सर्वातीसारशान्तये। Sh.Sa. Ma. 2

### मक्कीप्पुवाती क्षवायम्

मक्कीप्पुवेवाटुमाशाक्कुं मक्कीजातीक्के पुङ्कुठकी

क्कुक्का तुङ्गलौपत्रें क्कुक्कागेत्ताक्कु तिप्पुली

ज्ञीरकउयवेह्नुङ्कुङ्कु झुवीलय्क्कुङ्कु तेत्तुक्कुं

मावीलय्क्कुङ्कु तेत्तुं चेत्तुत्तुक्कुं क्काम्मं शीशुक्कली

अक्करप्पेक्कीटां, पत्तीत्तुं चुम्मुक्कल्लुं

शमीच्चुस्सुवमार्क्कीटुं मक्कीप्पुवातीयन्नुपेरि.

(वेवड्यतांरकं अ. 7/51-53)

### शारिबादि कषायम्

शारिबातिललोध्राणा कषायो मधुकस्य च।  
संसाविणी मुखे शस्तो धावानार्थं शिशोः सदा॥ Y.R. B.Chi. 96

### वटाङ्कुरादि कषायम्

वटाङ्कुरवृषाम्भोदरजनीशरिबाद्वयैः  
पटोलबृहतीनिष्विशाला पत्तकेसरैः।  
दूर्वाग्रकुहलीपुष्पधनिकाधन्वयाषकैः  
सोमवल्लीहमोशीरपारन्तीमुलवारिभिः॥  
मधुस्नुहीपटोलेन्द्रयवैलावेल्लयष्टिभिः  
खदिरामलकाभीरुकन्दैच सकणाद्वयैः।  
सिद्धः कषायो मध्वाढ उल्बारुपरमौषधम्॥— A.K.D. 19/43-46

### विल्वमूलादि क्वायथम्

विल्वमूलकं नीरदो वृकी त्रैफलं तथा सिंहिकाद्वयम्।  
गौणिमिश्रितं क्वायितं समं पाययेत् शिशुमुत्फुल्लिकापहम्॥ Y.R.B. Chi. 193

## గులికా

### కొనుచుండి గృహిక

అర్ట్టుం, మాట్టుం, తమాపోతత్తుం కాణ్ణామ్యగమత్తుం తమా  
కలభాగివయణిగ్గె కొనుచుం నల్ల కృత్తమత్తుం  
వయస్యుం విటయం పికరెళ్లుం, ముక్కు, చోరయ్యుం  
కాష్టవ్యుం, జాతితరిపత్రీ, మల్యం, శ్రావ్యవ్యుకాయవ్యుం  
ఆరియాగ్నిత్తిత్తుం రకతచండం కృమిశత్తువ్యుం  
జీరకట్టయవ్యుం, సర్పుం తుల్యమాయిద్దక్కుకణుం,  
ఉణాఖిప్పాకియాకెణుం, తుపుచ్ఛార్థిలరయ్యకెనుం  
పిలు పావడునీర నల్ల త్యుత్తసైనీరత్తుం తమా  
పగిక్కురుక్కయ్యుద నీర్చుం కణ్ణివెర్ధిలునీరత్తుం  
మురిండతతల్లిరుతనునీర్చుం చెగుంచారణానీరవి  
చేరుతటయ్యక్కుకమార్చుం పోరోరోనీరిలరచ్చత్తుం  
ఉణాఖిప్పాకియాక్కుద్దువెనుం వీణ్ణుమరయ్యక్కువానీ  
ఉచ్చవిల్ల కుక్కుడచ్చూరచ్చేరుతటరచ్చుషణోపమం  
ఉర్వుక్కీటత్తుణకెనుం నిషిలేకొల్లిచ్చువెన్డపోతే.  
స్ఫుర్చిచ్చువెచ్చు నఱకెనుం వ్యాయికొతుకుపానుమాయ  
పగి, వాయ్యక్కుశీ, విమిష్టం కరపున బాలపీయత్తుం  
అపస్మారమత్తుం మార్చుం ‘కొనుచుండి’యితెక్కుకిల్ల  
(వెవ్వుతారకం అ. 7/72-79)

### స్వర్యప్రాణ్ణులిక

స్వతం గణయక రామం వర కట్ట కృత్యా యవానీసమం  
సరువాం షోయశబ్దాగమర్త చ విషం జంబీరుసమర్పితం  
గృణింజామార్చునిబుశ్యష్టిక్కగృణికా శ్యలాపహర్ణీపరం  
కాసశాసహరీ మహాజురహరీ నావునాతు స్వర్యప్రా  
(సహస్రాయోగం)

### ഗോപിചന്നാദി ഗൃഹിക.

ഗോപി, ചന്ദനവ്യം സേവ്യം ത്രിഫലാ, ത്രിരുവേലിയും  
മുസ്താ ജാതിത്രയം ചാതുർജാതം ത്രികടുചേരവ്യം  
വാലുഷണം, ത്രിജീരം, ഷട്ക്കണ്യാലം, കിരിയാത്തുമായ  
ആശാളിശ്വാടം കസ്തുരി കുകുമപ്പുവു ഭാരുവ്യം  
മധുകം ലശുനം കായ, മക്രാവ്യം ചതകുപ്പയും  
ചെപകപ്പുവുലുനിംബം രൂദ്രാക്ഷം പഴുപാശിയും  
രോചനം, സെസാസ്യവം, പഞ്ചസാരയും മുന്തിരിഞ്ഞയും  
പാടക്കിഴങ്ങു കല്ക്കണ്ടം കർപ്പൂരം ച വിഡംഗവ്യം  
അയമോദകവ്യം ചവ്യം മാരാക്കും സമഭാഗമായ  
പൊടിച്ചു കുർക്കിലച്ചാലിരച്ചുപോടുണക്കണം  
വീണകും പൊടിച്ചു ചെന്തേങ്ങിൻകരിക്കിൻ ജലയുക്തമായ  
നല്ലപോലെയരയ്ക്കേണം മാഷതുല്യമുതുടക്കം  
വേണ്ടപോലെയുണക്കീട്ടു ബാലകനുകൊടുക്കുകിൽ  
കർപ്പുനെല്ലാം പോയിട്ടും പനിയും ബാലപീഡയും  
നീരും ശ്രഹണിയും ഭൂതശ്രഹാപസ്മാരരോഗവ്യം  
പേരും ഗോപിചന്നാദിയന്നാത്യം ഭേദജത്തിനെ  
കരിക്കിനുള്ളിലാക്കീട്ടു കഷായംവച്ചുമേകിടാം.

(വൈദ്യത്വാരകം അ. 4/81-88)

### മുകാമുകടുകാദി ഗൃഹിക

മുകാമുകടുജീരകദയവചാകിര്യാത്തുകർപ്പൂരവ്യം  
ജാതിക്കാപട്ട ചെറിനായക കരാസ്യവള്ളിതക്കോലവ്യം  
കൊടം ഹിംഗുലവംഗചോരമയമോതം കേളിന്യാസകേ  
നിർഗ്ഗണ്യീസ്യരസേന പിഷ്ടഗൃളികാം കോഷ്ണാംബുനാ പായയേത്

(ചികിത്സാമത്തം ജാരചികിത്സ 133)

## घृतम्

### बालचाढ़गर्णीघृतम्

चाढ़गर्णीस्वरसे सर्पिशछागक्षीरसमं पचेत्।  
 कपित्थव्योषिसन्धूत्थसमझगोत्पलबालकैः॥  
 सविलवधातकीमोचैः सिद्धं सर्वातिसारनुत्।  
 गृहणीं दुस्तरां हन्ति बालानान्तु विषेषतः॥

B.R. Bala. 133-134

### कुमारकल्याणघृतम्

शंखपुष्पी वचा ब्राह्मी कुष्ठं त्रिफलया सह।  
 द्राक्षा सराकरा शुण्ठी जीवन्ती जीवकं बला॥  
 शटी दुरालभादिल्वं डाइनं सुरसा स्थिरा।  
 मुस्तं पुष्करमूलज्व सूक्ष्मैला गजपिप्पली॥  
 एषां कर्षसमैर्भागेघृतप्रस्थं विपाचयेत्।  
 कषाये कण्टकार्याश्च क्षीरे तस्मिंश्चतुर्गुणे॥  
 एतत्कुमारकल्याणं घृतरत्नं सुखप्रदम्।  
 बलपुष्टिकरं धन्यं पुष्ट्यनिबलवर्धनम्॥  
 छायासर्वग्रहालक्ष्मीक्रिमिदन्तगदापहम्।  
 सर्वबालामयहरं दन्तोत्पेदं विरोषतः॥ B.R. Bala. 138-142

### पिप्पल्यादं घृतम्

पिप्पलीधातकीपुष्पधात्रीफलकशेरुभिः।  
 वचामूर्च्छमृतापाठाकटुकातिविषाधनैः॥  
 जीवनीयैर्घृतंसिद्धं शस्तं दशनजन्मनि।  
 सुखोष्णेन यथामात्रं पथसैतत्रयोजयेत्॥ B.R. Bala. 143-144

### भूतवारधृतम्

त्रिकटुकदलकुड्कुमग्रन्थिकक्षारसिंही-  
 निशादारुसिद्धार्थयुग्माम्बुशकाहवयैः  
 सितलशुनफलत्रयाशीरतिक्तावचा-  
 तुत्ययष्टीबलालोहितैलाशिलापदमकैः।  
 दधितगरमधुसारप्रियाहवानिशाख्या  
 विषाताक्ष्यशैलैः सचव्यामयैः कल्कितैः  
 घृतमभिनवमरेषमूत्रांशसिद्धं मतं  
 भूतवारहवयं पानस्तस्तद् ग्रहणं परम्॥ B.R. Bala. 160-161

### समझगादि घृतम्

समझगाधातकीलोध्रुकटन्नबलाद्वयैः।  
 महासहक्षुद्रसहामुद्गविल्वशलादुभिः।।  
 सकार्पासीफलैस्तोये साधितैः साधितं घृतम्।।  
 क्षीरमस्तुयुतं हन्ति शौष्ठं दन्तोद्भवोद्भवान्।।  
 विविधानामयानेतत् वृद्धकाश्यपर्निर्मितम्।। A.H.U. 2/41-42

### स्थिरादि घृतम्

स्थिरावचाद्विब्रुहतीकाकोलीपिप्पलीनतैः।।  
 निचुलोत्पलवर्षाभूभाङ्गीमुस्तैश्च कर्षिकैः।।  
 सिद्धं प्रस्थार्धमाज्यस्य स्रोतसां शोधनं परम्।। A.H.U. 2/48-49

### रासनादि घृतम्

रासनाद्यंशुमतीवृद्धपञ्चमूलबलाधनात्।।  
 क्वाये सर्पिः पचेत्पिष्टैः शारिबाव्योषचित्रकैः।।  
 पाठाविडङ्गमधुकपयस्याहिङ्गुदारुभिः।।  
 सग्रन्थिकैः सेन्द्रयवैः शिशोस्तत्सतं हितम्।।  
 सर्वरोगग्रहरं दीपनं बलवर्णदम्।। A.H.U. 3/51-52

### इन्द्राणि घृतम्

लशुनानां पलशातं निस्तुषं जर्जरीकृतम्।।  
 जलद्रोणेषु दशसु क्षपयेत् पादशोषितम्।।  
 घृताढकद्रव्यं तत्र विपचेज्जीवनैः सह।।

आजस्य पयसो द्रोणं कवाथं च दशमूलिकम् ॥

आवपेतदधृतं गोप्यं प्रयोज्यं मासतः परम् ।

इन्द्राणीघृतमित्येतद्राजयक्षमविनाशनम् ॥

वन्ध्याषण्डकवृद्धानां कामदं पथ्यभोजिनाम् । K.S.Chi. 7/24-26

### महापैशाचिकं घृतम्

जटिला पूतना केशी चारटी मर्कटी वचा ।

त्रायमाणा जया दीरा चोरकः कटुरोहिणी ॥

वयस्था सूकरी छत्रा सातिच्छत्रा पलङ्कषा ।

महापुरुषदन्ता च वायस्था नाकुलीद्वयम् ॥

कटम्भरा वृश्चिकाली शालिपर्णी च तैर्घृतम् ।

सिद्धं चातुर्थिकोन्मादग्रहापस्मार नाशनम् ॥

महापशाचकं नाम घृतमेतद्याथाऽमृतम् ।

बुद्धिमेधास्मृतिकरं बालानां चाढ्वर्धनम् ।

A.H.U. 6/34-37

### अश्वगन्धा घृतम्

पांडकल्केऽश्वगन्धायाः क्षीरेऽष्टगुणिते पचेत् ।

घृतं देयं कुमाराणां पुष्टिकृत्वलवर्द्धनम् ॥

Y.R. B. Chi. 84

### काकोल्यादि घृतम्

क्षीरिवृक्षकषायेण काकोल्यादिगणेन च ।

विपक्तव्यं घृतं पश्चात् दातव्यं पयसा सह ॥ Y.R. B. Chi. 134

### देवदार्वादि घृतम्

देवदारुणि रासनायां मधुरेषु गणेषु च ।

सिद्धं सर्पिश्च सक्षीरं पातुमस्मै प्रदापयेत् ॥ झ.ड. ए. कण्ठ. ११८

### अष्टमङ्गलघृतम्

वचा कुष्ठं तथा ब्राह्मी सिद्धार्थकमथापि वा ।

शारिबा सैन्धवज्यैव पिप्पली घृतमष्टमम् ॥

मेध्यं घृतमिदं सिद्धं पातव्यज्य दिने दिने ।

दृढस्मृतिः क्षिप्रमेधा कुमारो बुद्धिमान् भवेत् ॥

न पिशाचा न रक्षांसि न भूता न च मातरः ।

प्रभवन्ति कुमाराणां पिबतामष्टङ्गलम् ॥

B.R. Bala. 135-137

## तैलम्

### लाक्षादितैलम्

लाक्षारससमं तैलप्रस्थं मस्तु चतुर्गुणम् ॥  
 अश्वगन्धानिशादारुकौन्तीकुष्ठाङ्गचन्दनैः ।  
 समुवारोहणीरास्नाशताह्वामधुकैः समैः ॥  
 सिद्धं लाक्षादिकं नाम तैलमध्यञ्जनादिदम् ।  
 बल्यं ज्वरक्षयोन्मादधासापस्मावात्मनुत् ॥  
 यक्षराससभूतह्नं गर्भिणीनां च शस्यते ।

A.H.U. 2/54-56

### गोमूत्रादि तैलम्

ग्रामूत्रं बस्तमूत्रं च मुस्ताममरदारु च ।  
 कुष्ठं च सर्वगन्धांश्च तैलार्धमवचारयेत् ॥

Y.R. B. Chi. 172

### प्रियङ्गवादि तैलम्

प्रियङ्गुसरलानन्ताशतपुष्टाकुटन्टटैः ।  
 पचेत्तैलं सगोमूत्रं दधिमस्त्वम्लकाञ्चिकैः ॥

Y.R. B. Chi. 183

### निशादि तैलम्

नाभिपाके निशालोध्रिप्रियङ्गुमधुकैः श्रुतम् ।  
 तैलमध्यञ्जने शस्तमेभिश्चात्रावधूलनम् ॥

Y.R. B. Chi. 89

### मीनतैलम्

मीनतैलं च मीनानां कषायेण रसेन च ।  
 पक्वं बलातैलमिव वातव्याधिषु शस्यते ॥

K.S.Chi. 18/45

व्याघ्रीतैलम्

व्याघ्रीवासकविलचनां केशराजस्य चाम्बुना।  
काञ्जिकेन तथा कल्कैमुस्तमोचरसाञ्जनैः॥  
शताह्वादारुयव्याह्ववररास्तानिशायुगैः।  
चन्दनद्वयमञ्जिष्ठाप्रियङ्गूत्पलकेशरैः॥  
शालपर्णीपृश्नपर्णीचातुर्जातकबालकैः।  
मृदः पात्रे पचेत्तैलमरिष्टेन्धनवह्निना॥  
शासं कासश्च बालानां ज्वरं वह्नश्च वैकृतम्।

व्याघ्रीतैलमिदं हन्यात् त्वगदोषान् निखिलानपि!      B.R. Bala. 71/151-154

## अवलोहम्

च्यवनप्राशम्

पाटलाऽरणिकाश्मर्य विल्वारलुक गोक्षुराः।  
पण्यो बृहत्यौ पिप्पल्यः शृङ्गीद्राक्षामृताभयाः॥  
बला भूम्यामली वासा ऋद्धिर्जीवन्तिका शठी।  
जीवकर्षभकौ मुस्तं पौष्करं काकनासिका।  
मुद्गपर्णा माषपर्णा विदारी च पुनर्नवा।  
काकोल्यौ कमलं मेदे सूखमैलागरुचन्दनम्॥  
एकैकं पलसम्मानं स्थूलचूर्णितमौषधम्।  
एकीकृत्य महत्पात्रे पञ्चामलशतानि च।।  
पचेत् द्रोणजले क्षिप्त्वा ग्राहयमष्टावशेषितम्।  
ततस्तु नान्यामलकानि निष्कुलीकृत्य वाससा॥  
दृढहस्तेन संपीड्य क्षिप्त्वा तत्र ततो घृतम्।  
पलसम्मितं तानि किञ्चित् भृष्टवाल्पवहिना॥  
ततस्तत्र क्षिपेत् कवाथं खण्डं चार्द्धतुलोन्मितम्।  
लेहवत् साधयित्वा च चूर्णानीमानि दापयेत्॥  
पिप्पली द्विपला देया तुगाक्षीरि चतुष्पला।  
प्रत्येकं च त्रिशार्ण स्यात्त्वगेलापत्रकेसरम्॥  
ततस्त्वेकीकृतं सर्वं क्षिपेत् क्षौद्रं च षड्पलम्।  
इत्येतच्च्यवनप्रोक्तं च्यवनप्राशासंशितम्।  
लेहं वाहनबलं दृष्ट्वा खादेत् क्षीणो रसायनम्।  
बालवृद्धक्षतक्षीणा नारीक्षीणाश्च शोषिणः॥  
हृतोगिणः स्वरक्षीणा ये नरास्तेषु युज्यते।  
कासं श्वासं पिपासां च वातास्मुरसो ग्रहम्॥

वातपितं शुक्लदोषं मूत्रदोषं च नाशयेत्।  
मेधां स्मृति सीषु हर्षं कान्ति वर्णप्रसन्नताम्॥  
अस्य प्रयोगादाप्नोति नरो जीर्णविर्जितः।

Sh. Sa Ma. 8

### कणादि लेहम्

कणोषणसिताक्षौद्रसूक्ष्मैलासैन्धवैः कृतः।  
मूत्रग्रहे प्रयोक्तव्यः शिशूनां लेह उत्तमः॥

B.R.Bala. 71/83

### बालकुटजावलेहम्

मूलत्वचं वत्सकस्य पलमेकं सुकुट्टितम्।  
अष्टभागं जलं दत्वा चतुर्भागाव शेषितम्।  
अतिविषा च पाठा च जीरकं विल्वमेव च।  
आप्रास्थेशतपुष्टा च धातकी मुस्तकं तथा॥  
जातीफलं च सञ्चूर्यं निक्षिपेत्तत्र यत्ततः।  
बालानामामशूलघ्नो रक्तस्रावं सुदारुणम्॥  
अपि वैद्यशतैस्त्यकं जयेदेतत्र संशयः।

B.R.Bala. 102-104

### व्याघ्रीकुसुमाद्यवलेहिका

व्याघ्रीकुसुमसंजातकेसरैरवलेहिका।  
मधुर्नार्चिरसंजातान्शिशोः कासान् व्यपोहति॥

Y.R.B. Chi. 65

### कूशमाण्डावलेहम्

निष्कुलीकृत्य कूशमाण्डखण्डात् पलशतं पचेत्।  
निक्षिप्य द्विगुणं नीरमर्द्दशिष्टं च गृह्यते॥  
तानि कूशमाण्डखण्डानि पीडयेत् दृढवाससा।  
आतपे शोषयेत् किञ्चित् शूलाग्रैर्बहुशो व्यधेत्॥  
क्षिप्त्वा ताप्रकटाहे च दद्यादष्टपलं धृतम्।  
तेन किञ्चित् भर्जयित्वा पूर्वोक्तं तज्जलं क्षिपेत्॥  
खण्डात् पलशतं दत्वा सर्वमेकत्रं पाचयेत्।  
सुपक्वे पिष्पली शुण्ठी जीरकं द्विपलं पृथक्॥  
पृथक् यलाद्द्वं धान्याकं पत्रैला मरिचं त्वचम्।  
चूर्णाकृत्य क्षिपेत्तत्र धृताद्द्वं क्षौद्रमावपेत्॥  
खादेदग्निबलं दृष्ट्वा रक्तपिती क्षयीज्वरी।

शोषतृणाभ्रमच्छिंधासकासक्षतातुरः ॥  
कूशमाण्डकावलेहोऽयं बालवृद्धेषु युज्यते ॥  
उरः सन्धानकृद्धृष्टो बृहणो बलकृन्पतः ॥

Sh.Sa. 8

आसवम्

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## अरविन्दासवः

अरविन्दमुशीरञ्ज्व काश्मरी नीलमुत्पलम् ।  
प्रज्ञिष्ठैलाबलामांसीरम्बुदं शारिबां शिवाम् ॥  
विभीतकवचाधात्रीः शटी श्यामा सनीलिनीम् ।  
पटोलं पर्पटं पार्थं मधुकं मधुकं मुराम् ॥  
पलमानेन संगृहय द्राक्षायाः पलविंशतिम् ।  
धातकीं षोडशपलां जलद्रोणद्वये क्षिपेत् ॥  
शर्करायास्तुलां तत्र तुलाद्वं माक्षिकस्य च ।  
मासं संस्थापयेद् भाण्डे मृत्तिकापरिनिर्मिते ॥  
बालानां सर्वरोगघ्नं बलपुष्ट्यग्निवर्धनः ।  
अरविन्दासवः प्रोक्त आयुष्टो ग्रहदोषहत् ॥

B.R. Bala. 71/162-166

हर

सा

## शिवामोदकम्

शिवा तामलकी मूर्वा शतपुष्णा निशाद्वयम् ।  
आत्मगुप्ता बला विल्वं देवपुष्णं शतावरी ॥  
मुरा मधुरिका मांसी विदारी विश्वभेषजम् ।  
अनन्ताऽमलकी श्यामा भार्गोकरिकणाकणा ॥  
चातुर्जतं चतुर्वीजं चन्दनं रक्तचन्दनम् ।  
मुसली वाजीगन्धा च बीजं गोक्षुरसंभवम् ।  
सर्वाण्येतानि तुल्यानि द्राक्षा सर्वसमा मता ।  
सिता द्राक्षा समा चैवेत्येतानि मधुना सह ॥  
सम्मद्य मोदकान् कृत्वा माषकग्रमितान् भिषक् ।  
एकैकमेषां पयसा प्रातः प्रातः प्रयोजयेत् ॥  
बालानां सर्वरोगघ्नं पुष्टिकृत् बलवर्धनम् ॥  
परं वट्टिनकरं मेध्यमायुष्यं ग्रहदोषहत् ॥  
भगवत्यै समुदितं शिवायै लोकमङ्गलम् ।  
एतन्मोदकमीशेन युगे भगवता कृते ॥

B.R. Bala. 71/105-111

गृह

मुर

फल

आर्द्रक स्वरसं

आर्द्रकस्वरसो क्षौद्रयुक्तो वृषणवातनुत्।  
श्वासकासारुचिर्हन्ति प्रतिश्यायं व्यपोहति॥

Sh.Sa Ma. 1

शुण्ठी पुटपाकम्

चूर्ण किञ्चित् घृताभ्यक्तं शुण्ठया एरण्डजैर्दलैः।  
वेष्टितं पुटपाकेन विपचेन्मन्दवहिना॥।  
तत उद्भूत्य तच्यूर्णं ग्राह्यं प्रातः सितान्वितम्।  
तेन यान्ति शमं पीडा आमातीसारसंभवाः॥।

Sh.Sa Ma. 1

हरीतकयादि कल्कम्

हरीतकीवचाकुष्ठकल्कं माक्षिकसंयुतम्।  
पीत्वा कुमारः स्तन्येन मुच्यते तालुकण्टकात्॥।

Y.R.B. Chi. 100

सप्तच्छदाद्युद्धर्तनम्

सप्तच्छदार्कच्छदनक्तमालमूलैस्तुरंगारिजटासमेतैः।  
उत्साहिताङ्गः पशुमूत्रपिष्ठैर्हींदेरमुण्डीसलिलाभिषिक्तः॥।  
दिने दिने याति शिशुः प्रवृद्धिं पतिः क्षपाणामिव शुक्लपक्षे।  
इति राजमार्ताण्डात्। इति काश्याचिकित्सा।

Y.R. Bala 85-86)

गृहथूमादिलेपः

गृहधूमनिशाकुष्ठ राजिकेन्द्रयवैः शिशोः।  
लेपस्तक्रेण हन्त्याशु सिध्मपामाविर्चिकाः॥।

(Y.R. Bala 95)

मुस्तकादिलेपः

मुस्तकूष्माण्डबीजानि भद्रदारुकलिङ्गकान्।  
पिष्ठवा तोयेन संलिप्तेल्लेपोऽयं शोथहच्छिशोः॥।

Y.R. Bala 87)

फलत्रिकादिलेपः

फलत्रिकं लोध्रपुनर्नवे सश्वङ्गवेरं बृहतीद्वयं च।  
आलेपनं श्लेष्महरं सुखोष्णं कुकूणकेकार्यमुदाहरन्ति॥।

(Y.B.Bala 102)

## यवक्षारादिप्रतिसारणम्

तालुपाके यवक्षारमधुभ्या प्रतिसारणम्।

(Y.R.Bala 101)

## वचादि गणम्

वचाजलद देवाद्वनागरातिविधाभया।  
हरिद्राद्रयष्ट्याद्रकलशीकुटजोदृभवाः॥  
वचाहरिद्रादिगणावामातिसारनाशनौ।  
मेदः कफाद्रयपवनस्तन्यदोषनिबर्हणौ॥

## बालरोगान्तकरसः

शाणः सूतस्य शुद्धस्य गन्धकस्य च तत्समम्।  
सुवर्णमाक्षिकस्यापि चार्द्धभागं विनिक्षिपेत्॥  
ततः कञ्जलिकां कृत्वा लौहपात्रे दृढे नवे।  
केशराजस्य भृडगस्य निर्गुण्ड्याः पत्रसम्भवः॥  
स्वरसः काकमाद्याशच ग्रीष्मसुन्दरकस्य च।  
सुर्यावर्तकशालिज्वभेकपर्णीरसस्तथा॥  
श्वेतापराजितायाशच मूलं दद्याद्विघक्षणः।  
देयं रसार्थभागेन चूर्णं मरिचसंभवम्॥  
शुभे शिलामये पात्रे लौहदण्डेन मर्दयेत्।  
शुष्कमातपसंयोगात् वटिकां कारयेद्विभक्त्॥  
प्रमाणं सर्षपस्यैव बालानां विनियोजयेत्।  
हन्ति त्रिदोषजज्वैव ज्वरमामं सुदारुणम्॥  
कासं पञ्चविधज्यापि सर्वरोगं निहन्ति च।  
शिशूनां रोगनाशाय निर्मितोऽयं महारसः॥

B.R. 71/112-118)

## कुमारकल्याणो रसः

सिन्दूरं मौकिकं हैमव्योमायो हेममाक्षिकम्।  
कन्यारसेन सम्पर्यं कुर्यान्मुदगभिता वटी॥  
वटिकां वटिकार्द्धं वा वयोऽवस्थां विविच्य च।  
क्षीरेण सितया सार्द्धं बालेषु विनियोजयेत्॥  
कुमाराणां ज्वरं श्वासं वमनं पारिगर्भिकम्।  
ग्रहदोषांज्व निखिलान् स्तन्यस्याग्रहणं तथा॥  
कामलामतिसारज्वं कृशतां वहिनैकृतम्।  
रसः कुमारकल्याणो नाशयेत्रात्रसंशयः॥

B.R. 71/119-122

दन्तोदभेदगदान्तकरसः

पिप्पलीपिप्पलीमूलचव्यचित्रकनागरैः।  
 अजमोदायवानीभ्यां निशया मधुकेन च ॥  
 दारुदार्ढ्विड्गैलानागकेशरनीरदैः।  
 शटीशृङ्गीविड्व्योम्ना शड्खायोहेममाक्षिकैः ॥  
 विधाय पयसा पिष्टैर्वटिका वल्लसम्मिताः।  
 दन्तघर्षऽभ्यवहृतौ योजयेच्च प्रयोगवित् ॥  
 प्रयोगादस्य दन्तानां त्वरयोद्गमतो गदाः।  
 ज्वराक्षेपातिसाराद्या निष्वर्त्तन्ते न संशयः ॥

B.R. 71/123-126

## INDEX

Aantrika jwara	289
Aayupareeksha	72
Abhigaataja stanyadushti	107
Acne vulgaris	381
Acute renal failure	401
Acute stroke syndromes	388
Ahipootana	255
AIDS	293
Ajeerna	313
Akshepaka	372
An overview on pediatric skin disorders	379
Anaphylaxis	397
Andhaputana	416
Annapraasana	142
Anthropometry	122
Anuria	357
Apachi	351
Apasmaara	374
Atisaaram	315
Attention deficit Hyperactivity Disorders	392
Autism	391
Baalapakshaaghata	387
Baalarasaayana	159
Baalaroga pareeksha vidhi	172
Baby bath	56
Balapareeksha	156
Balavridhhikarabhaavas	155
Basics of paediatric therapeutics	171
Breath holding spells	395
Care of Post term baby	67
Charddi	319
Charmadala	245
Chicken pox	276
Child psychiatry	369
Childhood schizophrenia	372

Childhood tuberculosis	297
Cleft lip	211
Cleft palate	211
Congenital hypertrophic pyloric stenosis	216
Congenital myopathies in children	226
Congenital syphilis	219
Congenital talipes equinovarus	217
Cows milk allergy	244
Dantarakshavidhi	153
Dantasampat	145
Dantodbdhajanyaroga	146
Dehydration	317
Dengue fever	295
Dhanurvaata	281
Differential diagnosis of thyroid mass	349
Diphtheria	277
Doshadushtastanya	101
Downs syndrome	224
Duchenne erb's paralysis	200
Duchenne muscular dystrophy	227
Enumeration of birth injuries	199
Epilepsy	375
Examination of a diseased child	182
Examination of the newborn	74
Failure to thrive	268
Febrile convulsions	403
Fever without focus	333
Flow diagram of Neonatal resuscitation	47
Foreign bodies in the respiratory tract	404
Galaganda	347
Gandamaala	349
Garbhopadravam	124
Grahadushtastanyam	106
Gudabhramsa	326
Gudakuttam	330
Gudapaaka	328
Helminthic infestations in childhood	288
Hridayajanya vikaara	203
Hyaline membrane disease	306
Hydrocephalus	209
Immunity	156
Imperforate anus	212
Inflammatory and infectious eye diseases of neonates	254
Jaatakarma	136
Jaatamaatra paricharya	44
Jadatwam	365

Jalaseershakam	207
Jeevaanujanya yakrit sotha	298
Jwaram	332
Kaasa	304
Karnasraava	386
Karnavedhana	139
Khurkurakaasa	279
Kreedaabhumi	125
Kreedanakaani	125
Krimi	282
Krimidantam	151
Krimijahrodroga	340
Ksheeraalasakam	247
Kukunaka	250
Kumaaradhaara	129
Kumaarasosham	265
Kushtam	376
Laryngitis	310
Lehanam	61
Madhyakarnasotha	384
Mahaapadma	83
Maiaavarodha	321
Malaria	294
Masoorkika	277
Mastishkaaghaata	235
Mastishkaavarana sotha	290
Mastulungakshayam	238
Measles	274
Meconium aspiration syndrome	241
Mental retardation	370
Microcephaly	239
Mookatwam	367
Mritbhakshanajanaya paandu	334
Mukhamanditika	416
Mukhapaaka	323
Mumps	273
Mutrakrichra	362
Naabheenaala rogas	51
Naala chedana vidhi (Nadee kalpana vidhi)	49
Naamakarana	136
Naigameshagraham	412
Navaajta netrabhishyanda	234
Navajaata kaamala	231
Navajaatasisuparicharya	57
Near drowning	399
Neonatal intensive care unit (NICU)	80
Neonatal septicaemia	242

Nephrotic syndrome	360
Nirudhaprakasam	383
Nishkraamana	137
Normal requirements of nutrients for newborn, infant and children	130
Oshtabheda	210
Paandu	336
Paarigarbhikam	270
Pancha ksheera dushti	107
Pangutwam	366
Paridagdhachavi	378
Parikartika	329
Periods of growth and development	120
Phakka	257
Phalapraasanam	141
Pharyngitis	307
Phimosis	384
Phiranga	218
Physiology of initiation and maintenance of respiration	46
Pitrugraham	414
Pleehodara	344
Poisoning	398
Poliomyelitis	300
Pootikarnam	385
Posology according to different achaaryas	186
Praasam	57
Prameha	229
Preterm baby	64
Prevention of infection in the nursery	69
Protein energy malnutrition	262
Putanagraham	415
Raajayakshma	296
Rakshoghna karma	68
Raktapitta	338
Rectal prolapse	326
Revatigraham	417
Rohini	278
Romaanthika	276
Rubella	280
Saamaanya chikitsa siddhanta	168
Sadyojaata paricharya	55
Sakunigraham	414
Sannirudha guda	213
Satvotpattikrama	118
Sayyamutram	389
Sitaputana	415

**COLLECTION OF VARIOUS**

**HINDUISM SCRIPURES**

**HINDU COMICS**

**HINDU MEDI**

**MAGAZINES**

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**BY KARVING**

Skandagraham	409
Spina bifida	214
Stanasampat	91
Stanya abhaave pathya vyavastha	95
Stanyaapanayanam (weaning)	108
Stanyadosham	97
Stanyam	86
Stanyapaanam	88
Stanyapareekshana	90
Stanyapiyusham (colostrum)	93
Stanyasampat	92
Status asthmaticus	402
Status epilepticus	399
Sthaulya	354
Sushkarevati	417
Swaasa	302
Swagraham	413
Taalukaritaka	311
Taarunyapitaka	380
Tetralogy of fallot	206
Thalassemia	228
The concept of breastmilk banking	114
Tonsillitis	309
Tracheo esophageal fistula	215
Turner syndrome	225
Ucharaktachaapa	345
Udarasoola	327
Ulbakam	239
Unmaadam	371
Upaseershakam	196
Upavesana	138
Vaamanatwam	364
Vedanaadhyayam	173
Ventricular septal defect	206
Visaakkhagraham	411
Vitamin deficiency disorders	271
Vrikkasotha	359
Vyaadhikshamatva	155
Yakritodara	340