

IMPORTANCE OF LANGHANA IN METABOLIC DISORDERS.

Before I enter in to the subject I shall make it clear that the article contains informations from Ashtangahrudayam ,biochemistry, a few science journals on the internet and the rest are my interpretations.If some of you can point out any mistakes in my interpretations they are most welcome.I made this effort to have clarity in the treatment area of metabolic disorders .I am looking forward for the new generation Ayurveda physicians to treat these disorders with confidence.

We see the reference of langhana in the chapter dwividhopakramaneeyam.Acharya says that rogis can be classified into langhaneeya and brumhaneeya.All obese (stthoola) and medium(madhyama) patients are langhaneeya and lean(krishna) patients are bruhmaneeya.But if agnibala and dehabala are satisfactory in a lean patient, a mrudulanghana is advisable in the initial aama condition.This is the first protocol to be followed.Langhana should be done only by taking care of agni and shodhana,even in a stthoola patient.

In all the metabolic syndroms stthoolatha is a common factor.Ashtangahrudayam Doshadivijnaneeyam says about the vrudhilakshanas of kapha, rasa, mamsa and meda: and kshaya lakshanas of pitha and vatha.In Dwividhopakramaneeyam athibruhmitha lakshanas are also mentioned.In Sarvaroganidana the many causes of kaphavrudhi are mentiond.The nidanas and lakshanas of kapha rasa mamsa medo vrudhi,vatha pitha kshaya and athibrumhitha lakshanas together give us a clear picture of metabolic disorders.

It is said in sarvaroga nidana that madhura amla lavana guru snigdha sheethala abhishyandi aharas along with sedentary habits like Aasyaasukha swapnasukha ajeerna divaswapna and athibruhmana karmas can cause kaphavrudhi.Ishall try to explain how these aharas and viharas contribute to stthoolatha.I do not have a clarity about word abhishyandi.So I do not take it for analysis.

Madhurarasa can be attributed mainly to sucrose which is glucose and fructose. Extra amount of glucose and fructose are converted into saturated fat and stored in muscle cell, hepatocytes and adipose tissue.Amla are acidic molecules.After removing the acidic functional groups, their carbohydrate back bones are stored as saturated fat .I think lavana has a different role. Glucose molecules can be transported into the enterocytes or muscle cells with the accompaniment of two sodium ions.So if more sodium is made available more glucose will enter the body. Proteins also need sodium ions for transportation.

Snigdhahara means fatty food.Long chain fatty acids and cholesterol are transported into the enterocyte after forming a micelle with bile acids.Once they enter the enterocytes they are repacked into a structure called chylomicrons and dumped into interstitial space.Since these are too big to enter the capillaries of portal veins they go to lymphatic system .At the thoracic region the lymphatic system is connected to the aorta. So the chylomicrons reach the blood circulation.If a large number of fat molecules come, more number of chylomicrons are formed . It makes the blood more dense and syrupy.But the short chain and medium chain fatty acids need not enter micelles or chylomicrons.They are absorbed by some amphoteric proteins.

Guru ahara are the ones rich in carbohydrate or SFA or both. Our some shookadhanyas like rice and wheat are rich in carbohydrates and SFA and are guru. Coconut oil, palm oil etc are guru oils. Fruits like banana, grapes, mango and jack fruit are also guru. Among milk buffallow and cow milk are examples of guru milk. All are madhuravipaka and sheethaveerya. All these are high calorie foods.

Sheethala ahara inhibit metabolism. Inside the body all atoms and molecules are always vibrating. When we apply heat the vibrations of the atom and the molecule as a whole will be more frequent and occupy more space for vibration. It weakens the bonding between atoms and the enzyme finds it easy to break the molecule. Since it covers more space for vibration, molecule gets more chance to be in contact with the enzyme. So possibility of being metabolized is high in a vibrated or heated condition. That is why heat is called a catalyst. When sheethala ahara reaches the stomach the body heat is conducted or convected to stomach. That causes a reduction in body heat and there will be inhibition in the rate of metabolism. So there will be a lowered enzymatic action. We call it pithakshaya or agnimandya.

Over eating of high calorie food (carbohydrates, SFA and proteins) causes accumulation of nutrient molecules in the blood, interstitial space and inside the cells. This is a problem for the body. The body has a predetermined speed to produce enzymes. But if more nutrient molecules are crowded at a particular site for getting metabolized, the body does not have enough number of enzyme or enough speed. The net result is enzyme deficiency. We call this condition also agnimandya or pithakshaya. At this stage a message will be sent to inhibit all the enzymatic actions at the back of the sequence. The metabolic rhythm in the front also gets disrupted.

The accumulation of nutrient molecules and low enzymatic activity together will be interpreted by the body as inflammation. It is said that inflammatory markers are high in obesity. When a person's obesity gets reduced, the number of inflammatory markers also gets reduced. We call this condition aamasanchaya. This aamasanchaya can happen inside the glands or organs also. Then the functions of the gland or organ get disrupted.

So from the description we understand that the body needs a faster metabolism (deepana, pachana), reduction in the supply of nutrient molecules (nidanaparivarjana) and an effective elimination of waste materials (shodhana). The whole strategy is together called langhana.

The pachana oushadhas are katurasa. Our trikatu and panchakola are deepana and pachana. They are theekshna ushna katurasa katu vipaka rooksha and laghu. I understand that some phytochemicals in those herbs activate heat receptors in the buccal cavity and in the gastrointestinal tract. The brain responds as if heat has come. So the metabolism gets speeded up, fat depletion takes place and waste materials (H₂O and CO₂) are released and eliminated from the body. CO₂ is eliminated through lungs and water through urine, sweat, feces and evaporation from the skin. This is how weight reduction takes place.

Bitter tastes also take part in digestion. They activate the liver to release more bile. We know that it is katu vipaka, sheethaveerya and langhana. These three tastes i.e. kashaya, katu and thiktha are katu vipaka kaphahara and are said to be alkaline. The pharmacological action of these phytochemicals should be brought into light.

For reducing the accumulation of the nutrient molecules nidana parivarjana is the solution. Since kapha is the predominant dosha kaphahara aharas and oushadhas should be selected. For those who have sedentary habits, vyayama is also nidana parivarjana. Vyayama performance needs energy. For generating energy carbohydrate or fat is broken down. So when some CO₂ and H₂O are eliminated there will be weight reduction.

Cholesterol is not utilized for energy generation. The cholesterol from food is utilized to synthesize other steroid structure molecules like vit D₃, estrogen like hormones, squalene etc. Some cholesterol goes and sits among the phospholipids of plasma membrane and gives them flexibility. Some small amount is stored in the adipose tissue. Some get converted into bile acids and some are present in bile as cholesterol and reach the intestine. From the intestine some cholesterol re-enters the system through micelle and the rest get eliminated through feces.

Our virehana oushadhas attract more bile to the intestine. So through an uthamamathra virechana followed by nitya shodhana, some bile acids and cholesterol are excreted. The loss should be topped up by synthesizing more bile acids from cholesterol. The loss of cholesterol in turn will be made up by converting fatty acids. So shodhana altogether enhances a depletion in fat deposit.

Generally in a metabolic disorder kapha may not be the only element increased. Adhyashana vishamashana and sankeerna bhojana like indiscipline in food habits can cause vrudhi of other doshas also. This can cause a visha or gara effect. Vyayama and shodhana are remedies for visha and gara. We have graahi, bhedi or sramsana, remedies also for visha and gara.

Hypothyroidism

When thyroid gland releases less number of T₃ and T₄ hormones it is hypothyroidism. Normally the test results come in two ways. 1) If T₃ and T₄ are less and TSH is high it is hypothyroidism. 2) If T₃ and T₄ are normal and TSH is high it is also hypothyroidism. 3) Sometimes among T₃ and T₄ only one is elevated. But that also is hypothyroidism. When there is less of thyroid hormones in blood pituitary gland sends more thyroid stimulating hormones to activate thyroid gland. So it speeds up hormone production and makes the level normal. This can later lead to dysfunction of the gland. Modern science says that hypothyroidism starts first and later it makes the person obese. But we say that sthoolatha starts first and it affects thyroid gland leading to hypo production of hormones.

T₃ and T₄ are produced in thyroid glands, released into the circulatory system and supplied to all cells of the body. T₄ is converted at a point into T₃, enters the nucleus and sits on a particular site on the DNA and makes a cut and takes out some portion of the protein strand. These protein pieces are replicated

.these are enzyme proteins inevitable in the citric acid cycle.The carbohydrates and the carbohydrate back bone of fatty acids and proteins should go through the citric acid cycle to release energy .So if some enzyme proteins are not available this cycle does not take place.And no energy will be released.That is the reason for tiredness (aalasya).Only if citric acid cycle takes place heat is released.Otherwise hypothermia (shaithyam) is felt. Our vyanganidana says that if internal or external heat is high skin will get dark colour or dark spots.This says that melanin release takes place with heat.So less heat means less melanin.That is the reason for vitiligo or shwaithya.This is a vathakshaya symptom).

If the gland is not able to produce enough hormones it may increase the number of gland cells. This causes goiter (galaganda).Less energy ,inflammation in the gland and goiter can cause difficulty in speech(bhaashe hitham alpam).This is also symptom of vathakshaya.Pleural effusion is swasakasa and ascitis is udara.

There are more stories of thyroid hormones affecting absorption of glucose ,conversion of fat etc.

Treatment of obesity related hypothyroidism

When it comes to the treatment side it has two aspects.Langhana of the whole body and langhana of the affected gland.Langhana should be enhanced by shamana and shodhana.Here kapha has to undergo shamana.We have many drugs with kaphahara properties like rooksha theekshna kashayakatuthiktha rasa ushna and laghu.These are said to be alkaline.

For langhana of the whole body we have Amruthotharam,Varanadi Varasanadi,Iohasavam ,Iodhrasavam, thriphala,panchanimbadi gulika etc.Any kaphapithahara drugs reduce weight.If the same drug takes care of shodhana also, it is best.Since obesity is an inflammatory condition we can take the help of sopahara drugs also like punarnavasavam,navayasam gulika etc .

For langhana of the gland we have kanchanaragulgulu Gomuthraharithaki, brihatkatphaladikashayam hamsapadyadikashaam Thikthaka and Mahathikthaka kashayams,gulguluthikthakam kashayam and arishtam(nimbamruthasavam or nimbasavam) etc.These are good for langhana of the whole body as well as the gland.Grandhihara medicines like khadirarishtam manibhadram etc also can be considered.But give more importance to the word Galaganda and Apachi while selecting medicines.Keep in mind that throat is a seat of kapha.I feel that kanchanara like herbs contain certain phytochemicals which can cross the cell membrane of thyroid gland. And these phytochemicals may be alkaline. I understand that all phytochemicals are not received by all cells in the body.It must have a matching receptor on the plasma membrane.Some receptors are common to all cells,some are common to a particular area (like abdominal ,pelvic,thoracic etc) , some are just randomly spread (like cannabinoid) and some are unique to specific organ.We can follow the phalashruthy to find out which organ receives which phytochemicals from which herb.For

example thila does karma on skin,eyes and kasha. Roheethaka does karma in liver,spleen,udara,mamsa etc

Shodhana is the elimination of waste through mala,moothra and sweda.When shodhana takes place blood can collect more waste from interstitial space and when interstitial space is cleared,more can come from the inside of the cells.This elimination system depends mainly on concentration gradient of molecules and atoms and membrane potential.

When coming to the aharapathya we should select laghu aharas or low calorie food.All madhura, amla and lavana aharas are to be reduced.Kashaya katu thiktha rasa are langhana and are advisable.Grains like millets (thrunadhanya),barley(yava),and oils like thilathaila sarshapathaila and nimbathaila contain more of unsaturated fatty acids especially PUFA.They are katu vipaka ushna and laghu.They are said to be alkaline and weight reducing.But too much of this type ushna foods cause increase in body heat and appetite. In that case some ghee can be made use of when seasoning the vegetables.Most of the vegetables that are grown on creepers are having kashayathikthakaturasa and are said to be alkaline.Use bran rich grains and pulses and vegetables with skin.Complete denial of rice or wheat may cause ketogenesis or vathika symptoms like muscle cramps.Ashtahngahrudaam soothrasthanam 14th chapter slokam 21 speaks about the aharas that are langhana.Generally arishtas are langhana.Exceptions are balarishta ,draksharishta,vidaryadyasava,aswagandharishta etc.In that chapter vilamgadichoornams like medicines are also mentioned.

Milk,meat,egg and fish are to be completely cut off.We do not need any cholesterol in a SFA rich person.In case of a need our body can make it from SFA.But buttermilk should be taken daily.It should be made from fat free milk,added to water and blended with gooseberry,curry leaves ,ginger and saindhava or black salt.In any case if the patient is with low bp ,avoid saindhava or black salt and add common salt.If it is drunk twice a day just before meals the patient will feel satiety and calmness in the bowel and take less food.

Food and beverages should be warm.Supper should be taken around 7 pm.After that only hot water is allowed till next day's breakfast.An after dinner stroll is beneficial.With in 3 hours the food will be normally assimilated into the body .After 3 hours the blood sugar comes down and it is made up by utilizing glycogen .Glycogen will then be topped up by depleting fat.So the person gets almost 8-9 hours of fat depletion.

Fruits like pomegranate,suppotta,citrus fruits and guava are better. Nagara and jeera can be used for thoya.

By sitting and talking to the patient we can help in making a diet plan suitable for his/her daily routine .If the patient has started taking supplements it should be reduced and then gradually stopped , when the weight comes down.Initially the TSH may shoot up. Once the gland is allowed to function on its own , TSH will gradually come down.Ayurveda medicines can be discontinued only when all the readings and body weight are normal.Rigidity in the diet plan also can be reduced .Later they can eat anything and everything in a controlled manner.Agni and shodhana should be taken care.Vyayama also should be performed.

I gave a detailed diet plan confidently because I am familiar with the practicality of it. When my 28 yr old son had metabolic disorders with reactive hypoglycemia I could not diagnose it. An endocrinologist identified it and prescribed glucobay 25 mg with lunch for a month. He gave the basic diet plan but completely avoiding rice and wheat. Those days I referred Ashtangahrudayam and internet to have an understanding about foods that are patthya for him.

Height in cms minus hundred should be the weight of the patient. It can be one or two kilos plus or minus.

Treatment for liver disfunction with obesity.

In the case of liver dysfunction Amruthotharam like medicines can be used. Vasaguluchyadi or guluchyadi with thriphala is a good combination. I give importance to pithaharathwa when readings like sgot sgpt are high. Otherwise in high lipid values, varanadi combined with thriphala like kaphahara drugs are suitable. Generally in a liver dysfunction kaphapithakamilahara line of treatment is to be adopted. Diet plan is generally as above. It is better to reduce katurasa if pitha is high. Dhanyaka, khadira, padmaka, bruhathyadi etc can be used as thoya.

We need not look for separate medicines for triglyceride, cholesterol, uric acid etc. It may imbalance our treatment. Once the liver fat and body fat are reduced all readings will be normal.

I believe that kuzhampu and our milk rich thailas like narayana and dhanwanthara can elevate the readings of lipids at least mildly. Since our skin is covered with fat, the warm oil we apply on the skin can slip through the scales of the skin layers down to the interstitial space. Blood can take the oil with the help of amphipathic proteins. So punarnavadi, panchamla like 'no salt no milk' sophaharathailas can be used. Lakshadithailas also do not contain milk. They contain masthu which is good for weight reduction. In gunakarmas masthu is similar to thakra.

Treatment for diabetes with obesity

In the problem of diabetes, other than the aamasanchaya in the gland, there is one more aspect. When the cell is rich in fat and glycogen it needs to block the entry of more glucose. So insulin receptors are shut down. But when the brain senses more glucose in the circulation it sends messages to the pancreas to produce and release more insulin. This over work for long time causes the disruption of rhythm of the gland function. Later the gland faces damage.

Here also we can follow the above said langhana diet. Medicines can be selected following the phalashruthy. Pramehahara drugs like kathakakhadiradi nishakathakadi ayaskrithi thriphala navayasam

gulika etc can be selected. Amruthotharam is also pramehahara since it contains guluchi and harithaki which are mehahara and rasayana. It can relieve malabandha also. Amruthameharichooranam can be given 3g -3g-3g with the early mentioned buttermilk or hot water. It also should be taken along with food. Mehari (Salacia Reticulata) contains a molecule similar in shape to glucose molecule. It is an inhibitor. It sits on the alpha glucosidase enzyme and blocks the chance of carbohydrate chain to get broken. So carbohydrate absorption will be less. The glucose reaches the colon. A healthy colon with enough microbiomes can break the chain. The glucose will be absorbed by the colonocytes. There it will be broken down into short chain fatty acids and energy will be utilized for the colon health. So if the patient is already taking some glucosidase inhibitor, it can be stopped. The other ingredients amrutha, dhathri and rathri are pramehashamana. As I mentioned earlier some kaphapithahara phytochemicals in these herbs may be received by the pancreatic plasma membrane to do the shamana karma.

If there is pithadhikya in prameha, varanadi and katurasa should be avoided. Always remember that kaphaprameha is sukhasadhya and all other pramehas are yapya or asadhya. Once the weight of the patient is reduced to normalcy or glucose level comes down gradually the allopathic medicines can be reduced and then stopped.

Treatment for PCOD with obesity

We should look upon the case of PCOD as Rakthagunma or anarthava. The above said diet is suitable for PCOD also.

In utharasthana yonirogachikitsa it is said that vatha should be taken care of in all yonirogas. Since it is the seat of vatha, symptoms like gunma, anaha and malabandha may accompany. So gandharvahasthadi, chiruvilwadi, kulathadi, sapthasaram etc kashayams can be given. Hinguvachadi and small vaiswanara like salty choornams can be given initially which can take care of vathika problems in pelvic area. But those are pushtikara and can add to weight. It enhances digestion absorption and assimilation of nutrients in the body. It is contraindicated in high bp also. So salty choornams should be discontinued once initial koshta problems are relieved. Kumaryasavam, rajapravarthini and palashaksharam can be suggested. Palashaksharam seems to be fast acting. Once the bleeding starts all medicines should be stopped till the bleeding stops. Normally the first raja: is heavy. If the raja: is foul smelling and with clots it should be allowed to flow. If sudharaktha flows it should be immediately stopped with sthambhana drugs like asoka ksheerakashaya, pushyanugachoorana pravalabhasma, lodhradi kashaya etc. Hot and spicy food, warm food and beverages, heat exposure, physical exercise etc should be avoided.

Once the bleeding stops all medicines except palashakshara should be continued. Palashakshara should be given 4-5 days prior to the next expected date. Medication should be continued till the patient gets

three consecutive periods. After that Sukumaram kashayam can be given for a few more months as a rasayana.

My concept about infertility treatment

Though I attended many anarthava krichrarthava and amitharthava cases and found result in all, I did not get into an infertility case due to lack of confidence. But after seeing success in arthava cases now I feel that infertility can be addressed with gunmahara treatment followed by rasayana and vajeekarana. Since no physician can guarantee result in infertility you can very well enter the field. If koshta and aama conditions are taken care of, our medicines will not do any harm to anybody's health. Instead it can take care of the all pelvic area disturbances, general health and energy level of the patient.

So my conclusion is that we can treat obesity related hypothyroidism with kaphahara, liver problems with a kaphapithahara and infertility with kaphavathahara medicines. Pancreatic problems can be solved by kaphapramehahara treatment.

When everything is said all obese patients are not eligible for shodhana chikitsa. Now I am treating three patients with obesity, fatty liver, liver dysfunction low energy and occasional diarrhea. This occasional diarrhea is the first problem to be attended. This is grahani. Sometimes guruvyadhi shows mild symptoms and alpa vyadhi shows high symptoms depending on the bala or balaheenatha of the patient (doshabhedeeyam sl 68). In this condition grahanihara medicines like kalashakadi kashayam, arishtams like kutajarishtam, madhookasavam, devadarvyarishtam, vilwadigulika or paattadi gulikas, rajanyadi choornam, samskrutham adhu etc are to be given. Fortunately all grahanihara medicines (except ghruthams) are langhana. Pathya should be followed as told in chapter for grahani. Black tea, citrus fruits, pulses and vegetables with no skin, cereals with no bran, arrowroot powder etc are graahi. No uncooked salads are good. Our kitchen masalas like jeera maricha, dhanaka, jaathi, lavanga, nagara, ajamaja, kakkola etc and vrikshamla (garcinia) are also graahi. A chutney is also mentioned in the chapter (sl 6, 7). This graahi line of treatment can reduce body fat and reactivate the glands of the gastrointestinal tract. If the grahani is deep rooted, medication may be needed for long time. If the digestion takes place normally the mala should float in water in digested solid or semisolid form.

Chikitsa is a great responsibility.

The Ayurveda physicians who gave me training, guidance and support never looked into any branch of chemistry. They always came to a conclusion and decided on treatments only on the basis of Ayurvedic principles. Their trust in Acharya's words gave them confidence, success and prosperity. The responsibility towards the patient, made them re-read the lessons in the texts to find out new planes of meanings. Successful physicians send message to the society that Ayurveda acharyas had wisdom.

We have our own treatment protocols. It is available in soothrasthana. All chikitsa strategies in the following chapters are based on these protocols. Amavastha, koshtavastha, deshakalavastha, medication rules like dosage and timings, rules regarding anyarogas etc are mentioned in chapters 11 to 14. Reading these lessons repeatedly and putting them in practice make a physician authoritative.

When a patient comes with test results, scan reports and a diagnosis, we can not treat only on that basis. We must do our way of darshana sparshana prashna pareekshas and find out the dosha predominance, amavastha, koshtavastha, dehabala etc to come to a conclusion. The test results and scan reports are path finders and greatly help us to find out the condition of affected internal organs. We must consider everything and find out the matching chapter or chapters in our text. Acharya has given us warning that aggravated doshas can create innumerable vikaras (Doshabhedeeyam sl 30)

Our first protocol is to find out whether the patient is langhaneeya or bruhmaneeya. Next is to find out the koshta conditions like manda, vishama or athyagni, shodhana, presence of anahagunma etc. Fix the koshta problem in the first place. Or select medicines that corrects the koshta and address the shakha problems simultaneously. For example gandharvahsthadi can take care of arsha, anarthava, kateegraha etc. Manibhadram cures malabandha, arsha, kushta, grandhi etc. We have langhana or bruhmana medicines for all koshta conditions. Without correcting the koshta we can not reach the shakhas. Through Ayurveda medicines many of the koshta problems can be solved easily and we feel that we are partly successful. The patient will come for follow up. About the shakhagatha rogas we can not give a time limit. It depends on many factors like the severity of the condition, deshakalavastha, patient's discipline in taking medicines and pathyahaaraviharas. Air, water pollution and adulterations in food affect the efficacy of our medicines negatively.

I support classical medicines because we have all the informations like the chapter, specific condition and dosha predominance. It carries a long phalashruthi which give us an insight into what all comorbidities it takes care of.

It is true that Ayurveda physicians are disturbed due to the many questions from the patients regarding the relevance of our principles and formulations. They expect answers not on ayurvedic concepts but on the basis on modern science. All those who ask questions may not understand even if it is explained on modern terms also. But we physicians should be ready with some part of answers.

My opinion is that we need not keep Ayurveda as an abstract science, to be kept in height and worshipped from down below. We can very well take it in our hands and have a closer look. It is a wonder land of molecules, atoms and energy. We know that our medicines heal and bring back the disrupted physiology to normalcy. If physiology can be explained, how it is helped by our medicines also should be explained.

The system in our country gave us more than basic education in physics and chemistry. The new generation physicians can refresh their memories of science lessons and apply it in the field of Ayurveda. The unlimited explanations and imageries in chemistry will relieve them from the dullness of stagnation. Believe that we are entitled to receive blessings from the new discoveries from the world of modern science. We can justify our Acharya's words by bringing explanations from bio and

phyto branches of chemistry. We may find statements contradictory to each other. But in those areas we should stand with our Acharya and wait for more discoveries to come.

We Aurveda physicians are the humble link between the great masters of east and west.

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