

The Irritable Baby Colic and GORD

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1

Background

- Common in all babies
- Normal crying = 140 minutes per day at 6/52; 60 minutes at 16/52
- Most do not have a health problem
- Many are labelled as having colic or gastro-oesophageal reflux (GOR)



2

Causes of irritability in babies

- Environmental
 - Temperature changes, noise
- Sepsis & fever
 - URTI, UTI, gastroenteritis, meningitis
- Gastroenterological
 - Colic, GOR
- Neurological
 - Seizures, cerebral palsy, metabolic disease, raised intracranial pressure
- Any many more...

3

Infant colic

25-40% babies

Rule of 3s


- Crying 3 hours per day, > 3 days per week for at least 3 weeks
- Peak between 3/52 and 3/12

Often worse in early evening

Often stops abruptly

Cause unknown


4



Infant colic - theories

- Wind
- Exaggerated gastro-colic reflex
- Immature GI tract; incomplete digestion
- Immature gut flora
- Maternal smoking
- Maternal stress & anxiety

5



Infant colic – What helps?

- Adequate winding
- Holding & swaddling
- Massage
 - Place baby on tummy & rub back
 - Hold at 45° & rub abdomen
- Gentle movements
- White noise

6

Infant colic – red flag symptoms

- Refer if:
 - Poor feeding
 - Poor growth
 - Developmental delay
 - Vomiting
 - Diarrhoea
 - Blood in stool

7

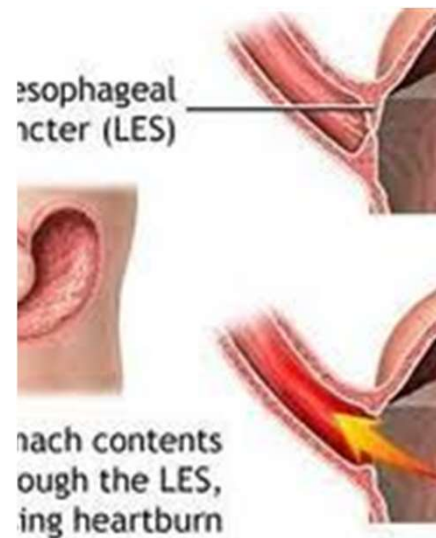
Gastro-oesophageal reflux

- Common in all children
 - Mainly asymptomatic & clinically insignificant
- Non-specific symptoms make diagnosis difficult
- Causes much anxiety for parents
- Little high grade evidence regarding investigation & management
- Many myths exist

8

Gastro-oesophageal reflux

- Inappropriate relaxation of lower oesophageal sphincter
- Food forced back into oesophagus



9

Who gets GORD?

- Can occur in any baby
- More common in:
 - Premature babies
 - Neurodevelopmental delay eg cerebral palsy
 - Abnormal posture eg kyphoscoliosis
 - Cystic fibrosis
 - Previous GI surgery
 - Children with positive family history

10



Why is GOR common in babies?

- Immature LES inappropriately relaxes and opens
 - Feed is high volume
 - Newborn intake = 150 mls/kg/day
 - Equivalent to 10.5 L for 70kg adult
 - Feed is liquid with low density
 - Majority of time is spent supine or in slumped sitting position
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11



What are the symptoms of GOR?

- Effortless vomiting
 - Heartburn/epigastric/retrosternal pain
 - Difficult to interpret in infants
 - Cough
 - Hoarse voice
 - Irritability
 - Symptoms often worse after feeding & when lying down
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12

Consequences of GORD?

- ⊙ Poor weight gain
- ⊙ Oesophagitis
 - > Inflammation & ulceration of oesophagus
 - > GI bleeding
 - > Poor oral intake
- ⊙ Aspiration of feed into airways
 - > Pneumonia
 - > Apnoea

13

How is the diagnosis made?

GOR & GORD are *clinical* diagnoses

Investigations are warranted if:

Unclear diagnosis

Unusual symptoms

No improvement with usual treatment

No improvement with age

14

The differential diagnosis?

Infant colic	Eosinophilic oesophagitis	Cows milk protein intolerance	Duodenal malrotation
Hiatus hernia	Peptic ulcer	Coeliac disease (if on solid foods)	Metabolic disease
	Intracranial pathology	Motility disorder	

15

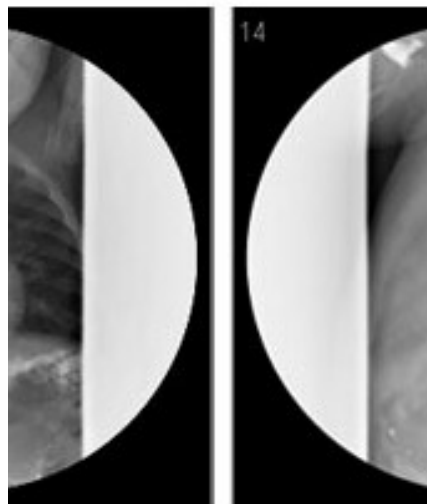
Investigations of GOR

- No perfect investigation
- Barium swallow
- Oesophageal pH monitoring
- Upper GI endoscopy
- *Response to treatment strategies*

16

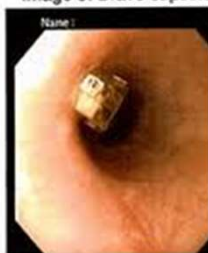
Barium swallow

- Involves radiation
- Reflux may not be seen during test
- Can be useful to define anatomy & exclude abnormality eg malrotation, hiatus hernia



17

Image 9: Bravo capsule



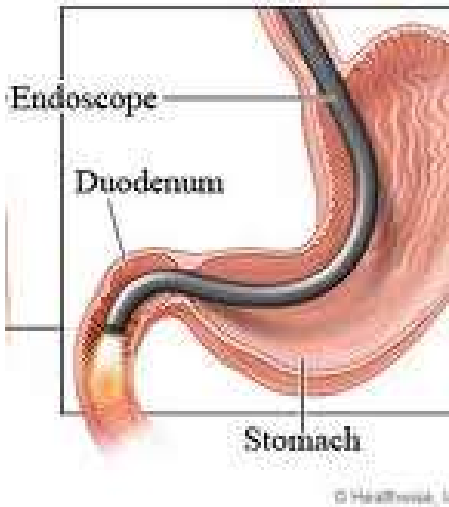
Comments:



Oesophageal pH study

- “Gold standard” to quantify reflux
- Position of tube crucial; difficult to retain in children
- Reflux index may vary day to day
- Likely to be superseded by manometry, impedance & wireless probe methods

18




The diagram illustrates the procedure of upper GI endoscopy. An endoscope is shown inserted into the mouth, passing through the esophagus into the stomach and then into the duodenum. Labels with leader lines identify the 'Endoscope', 'Duodenum', and 'Stomach'. A small copyright notice '© Healthmedia, Inc.' is visible at the bottom right of the diagram.

Upper GI endoscopy

- Requires GA in children
- Able to take biopsies
- Can also look for other diseases eg eosinophilic oesophagitis
- Can place pH probe at same time

19



What are the treatment options?

- Non drug therapies
- Antacids/thickeners
- H2-blockers
- Proton pump inhibitors
- Prokinetic agents
- Surgery

20




Non drug therapies

- Small frequent feeds
 - Avoid over feeding
 - Feed at 45 degrees
 - Avoid feeding close to bed time
 - Elevate head of cot/bed
 - Extra pillows are not helpful
 - Older children - consider sleeping on left side
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21

Antacid medications & thickeners

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- Neutralise gastric pH
 - Thicken feed in stomach
 - Denser feed less likely to reflux
 - Commonest = Gaviscon (alginate)
 - Acceptable taste
 - Difficult to administer if breast fed
 - Constipation reported commonly

22



Acid suppressive medications

- H2-blockers eg ranitidine
 - Readily available liquid preparations
 - Not as potent as PPIs
 - Proton pump inhibitors eg omeprazole
 - Potent; few side effects
 - Drug will not dissolve in water –
 - liquid made with sodium bicarbonate
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23



Prokinetic agents

- Act at LES to close sphincter
 - Also enhance gastric emptying
 - Erythromycin in low dose
 - Domperidone
 - Metoclopramide – risk of oculogyric crisis
 - Can use together with acid suppression
 - Can use erythromycin & domperidone together
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24

Nissen fundoplication

- Fundus wrapped around LES to strengthen
- Rarely needed in children without neurodevelopmental delay or abnormal GI tract
- Retching, bloating & dumping can occur afterwards

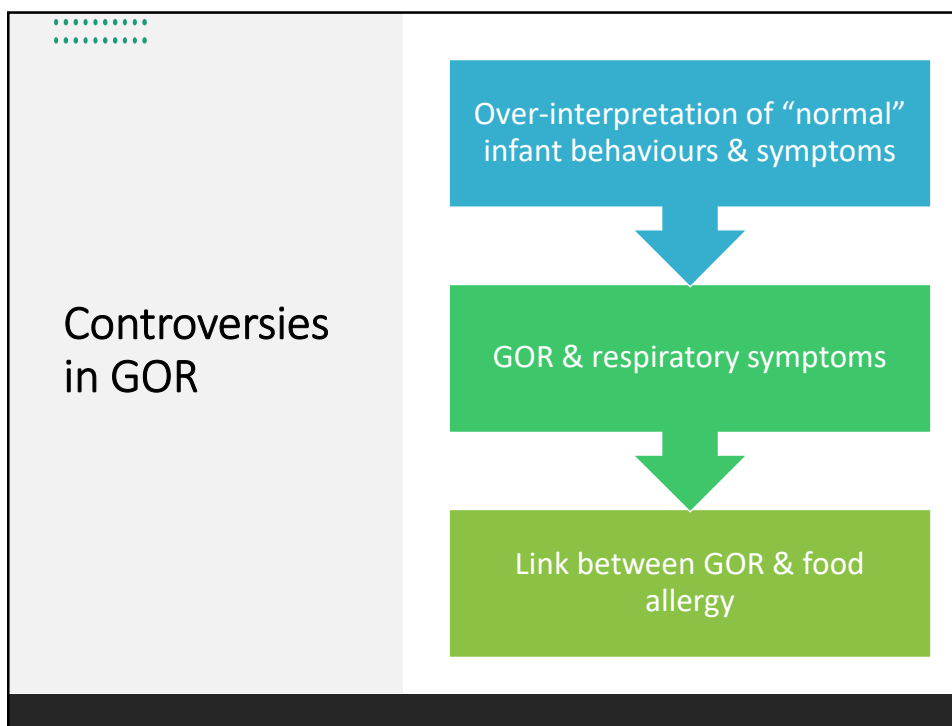


25

What is the natural history of GOR?

- Peak frequency age 1-4 months
- 60% better by 6 months; 90% by 12 months
 - Denser, smaller volume, solid feeds
 - More time spent upright
 - LES function matures
- Symptoms after 18 months more likely suggest chronic disease
- Symptoms may change with age
 - Vomiting predominance to epigastric pain

26



27

Over-interpretation of symptoms

A close-up photograph of a baby's face, showing the baby crying with its mouth open and eyes closed.

	60-70% infants vomit at least once/day in first 3 months	"Physiological" versus pathological reflux is difficult to determine
	Crying & irritability common in babies	Which (if any) of these babies have reflux?

The slide features a title 'Over-interpretation of symptoms' in green text. Below the title is a photograph of a crying baby. At the bottom, there are two light green rounded rectangular boxes. The first box contains a stomach icon, a statistic about infant vomiting, and a note about the difficulty of distinguishing between physiological and pathological reflux. The second box contains a lung icon, a statement about crying and irritability, and a question about reflux.

28

GOR & respiratory symptoms

- GOR causes reactive airways disease
- Aspirated feed leads to pneumonia
 - Premature infants
 - Cerebral palsy, neuromuscular diseases
- Chronic cough leads to GOR
 - Asthma
 - Bronchiectasis
 - Cystic fibrosis



29

GOR & allergy

Isolated GOR without other symptoms unlikely to be due to allergy

Avoid dietary exclusions in mother & infant

But, cows milk protein intolerance (CMPI) can mimic GOR

- Non IgE mediated

30



Cows milk protein intolerance

- Rarely isolated GOR
 - Usually other symptoms as well
 - Mucus & blood in stools
 - Eczema
 - Severe constipation
 - Breast milk contains small quantities of cows milk from maternal diet
 - Worth trialling maternal exclusion of cows milk & soy if GOR severe/intractable
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31

Cows milk protein intolerance



- CMPI in formula fed infants
 - Trial of extensively hydrolysed formula
 - Trial of amino acid formula if failed extensively hydrolysed formula

32



Eosinophilic oesophagitis

- Differential diagnosis of GOR
 - Eosinophilic infiltrate in oesophagus stimulated by allergens
 - Food allergens commoner in young children
 - Aeroallergens commoner in older children & adults
 - Characteristic endoscopic findings
 - Responds to dietary exclusion +/- topical steroids
 - Long-term consequences unknown
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33



Summary

- Irritability is common in babies
 - Colic & GOR are common causes but usually self-limiting
 - Poor feeding, poor weight gain or respiratory symptoms require referral
 - GOR is rarely caused by allergy
 - Treatment of GOR can be based on clinical history
 - Investigations of GOR reserved for those who do not respond to medical management
 - Fundoplication is rarely required for GOR
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34

Summary

Irritability in infants causes parental anxiety

Much reassurance is needed

Explanation of the pathophysiology & natural history is useful

Unnecessary dietary exclusions should be avoided

35

Thank you and Questions

36