The Irritable Baby
Colic and Gord

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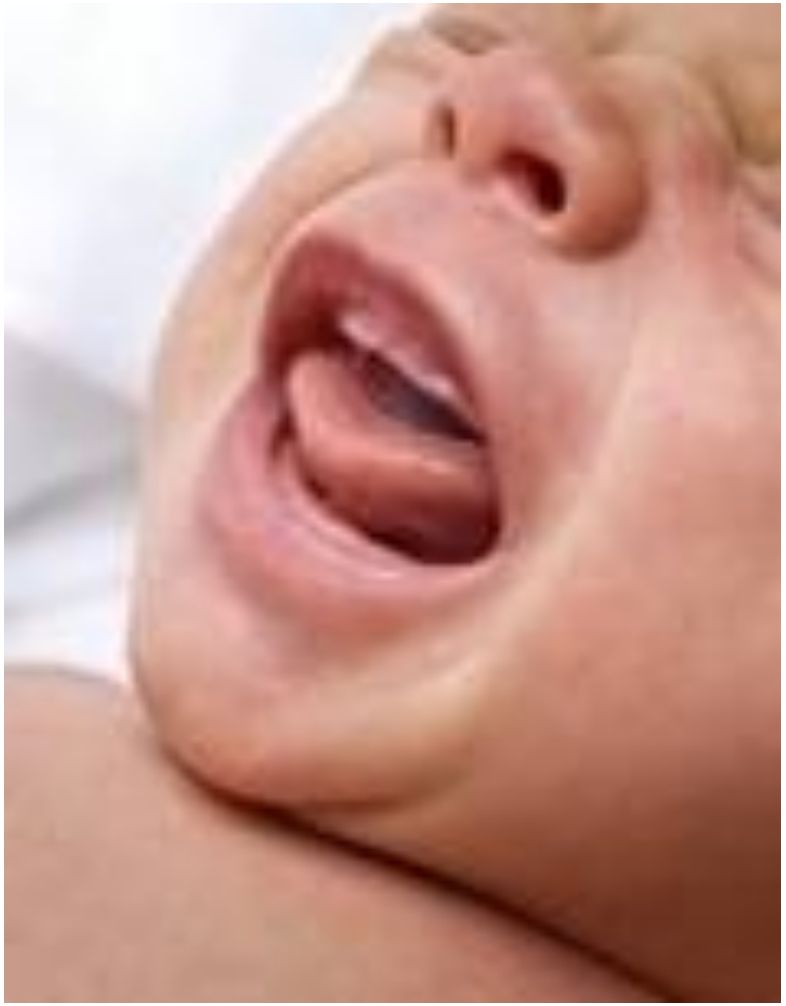
Background

- 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)



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...

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

Infant colic - theories

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

Infant colic – What helps?

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

Infant colic – red flag symptoms

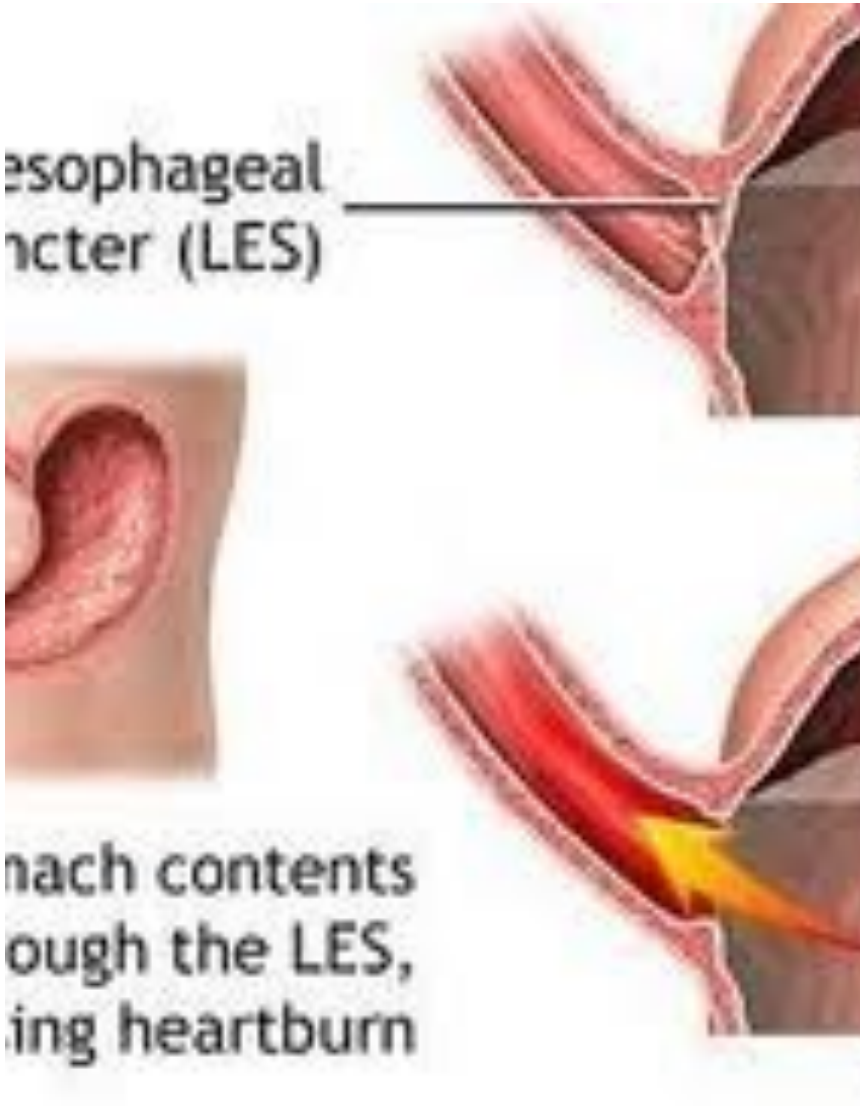
- Refer if:
  - Poor feeding
  - Poor growth
  - Developmental delay
  - Vomiting
  - Diarrhoea
  - Blood in stool

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

Gastro-oesophageal reflux

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



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

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

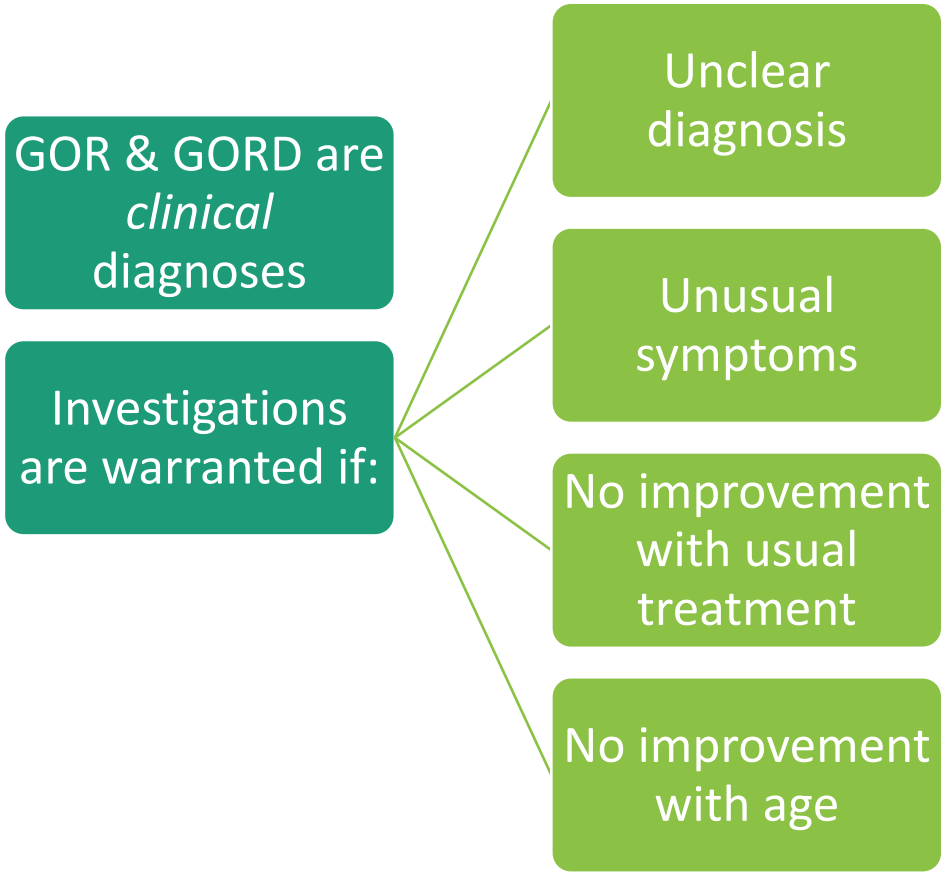
What are the symptoms of GOR?

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

Consequences of GORD?

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

How is the diagnosis made?



The differential diagnosis?

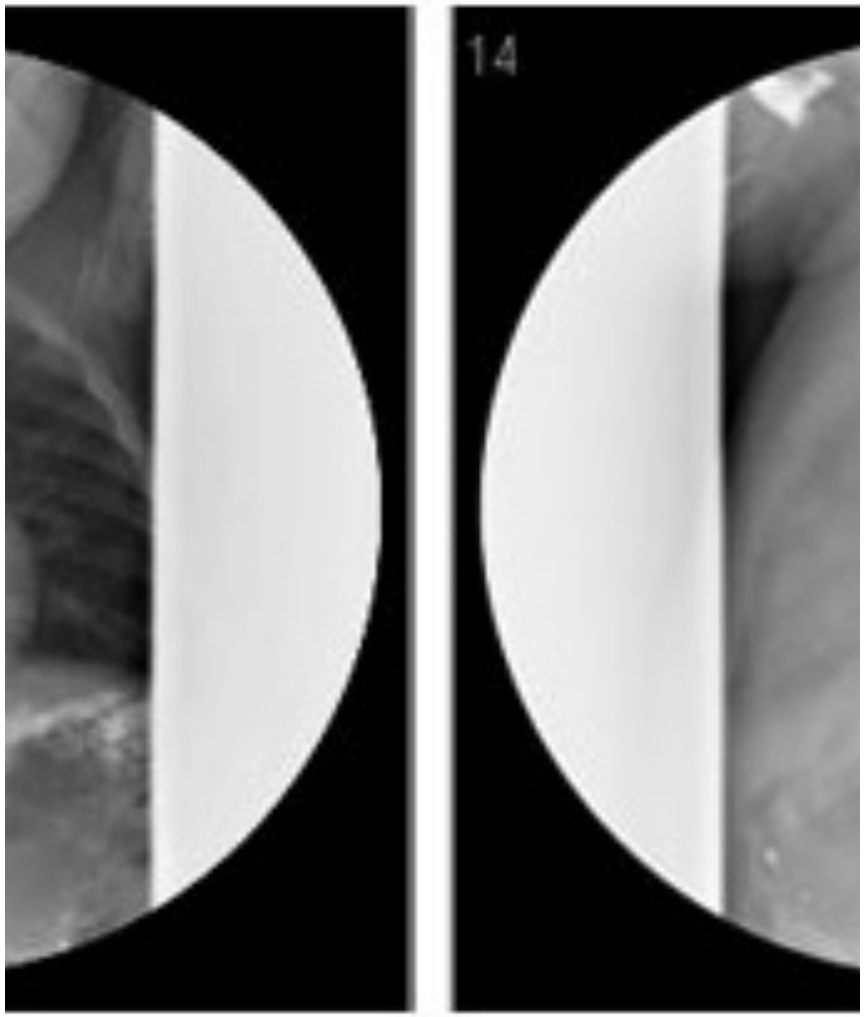
- Infant colic
- Eosinophilic oesophagitis
- Cows milk protein intolerance
- Duodenal malrotation
- Hiatus hernia
- Peptic ulcer
- Coeliac disease (if on solid foods)
- Metabolic disease
- Intracranial pathology
- Motility disorder

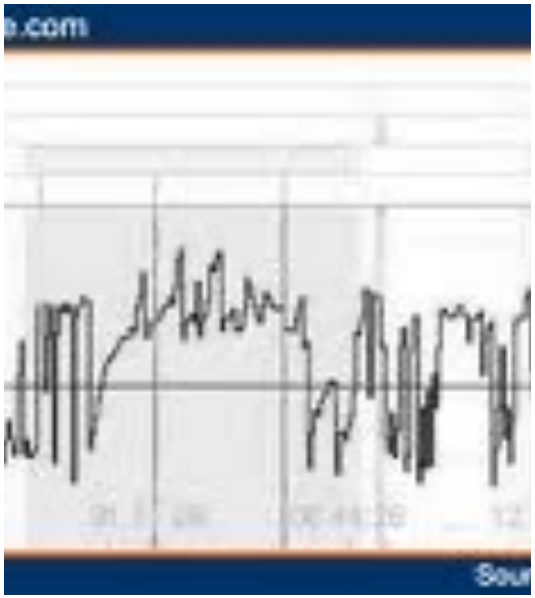
Investigations of GOR

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

Barium swallow

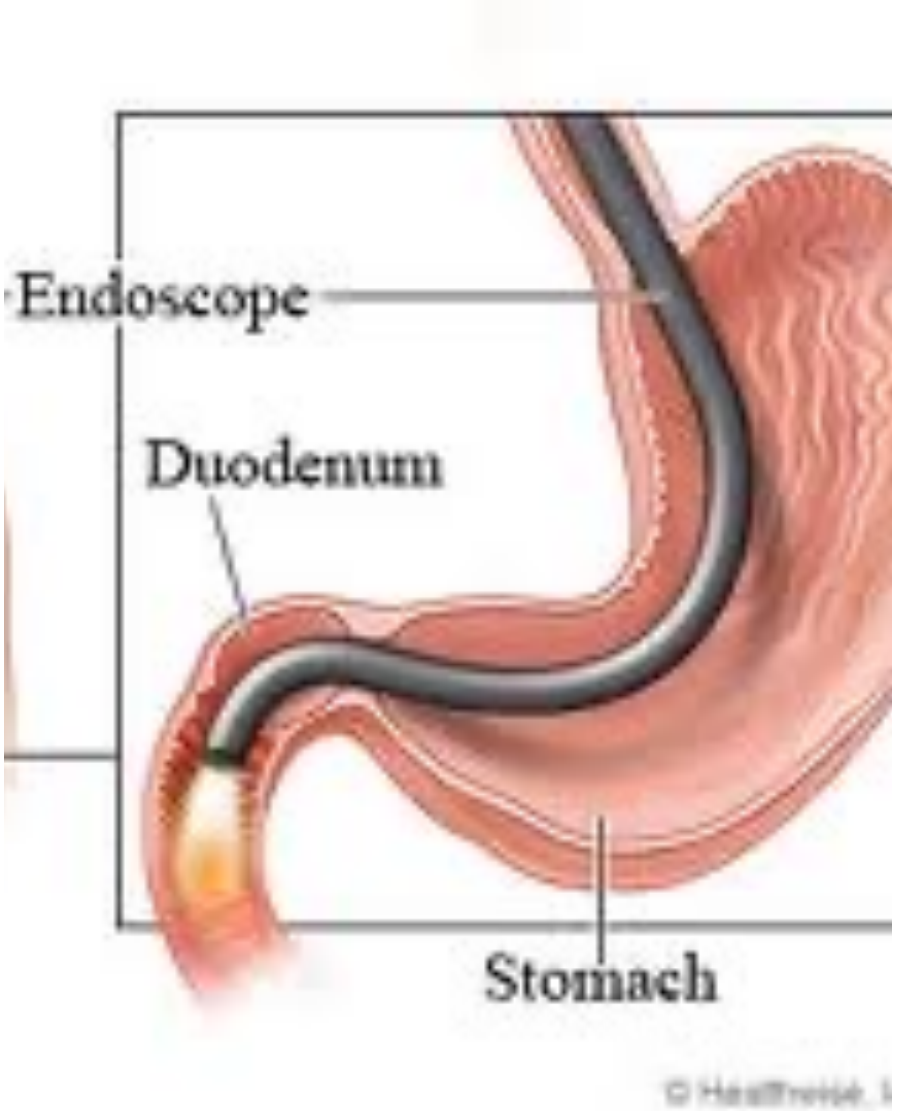
- Involves radiation
- Reflux may not be seen during test
- Can be useful to define anatomy & exclude abnormality eg malrotation, hiatus hernia





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 superceded by manometry, impedence & wireless probe methods



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

What are the treatment options?

- Non drug therapies

- Antacids/thickeners
- H2-blockers
- Proton pump inhibitors

- Prokinetic agents

- Surgery

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

Antacid medications & thickeners

- 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

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

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

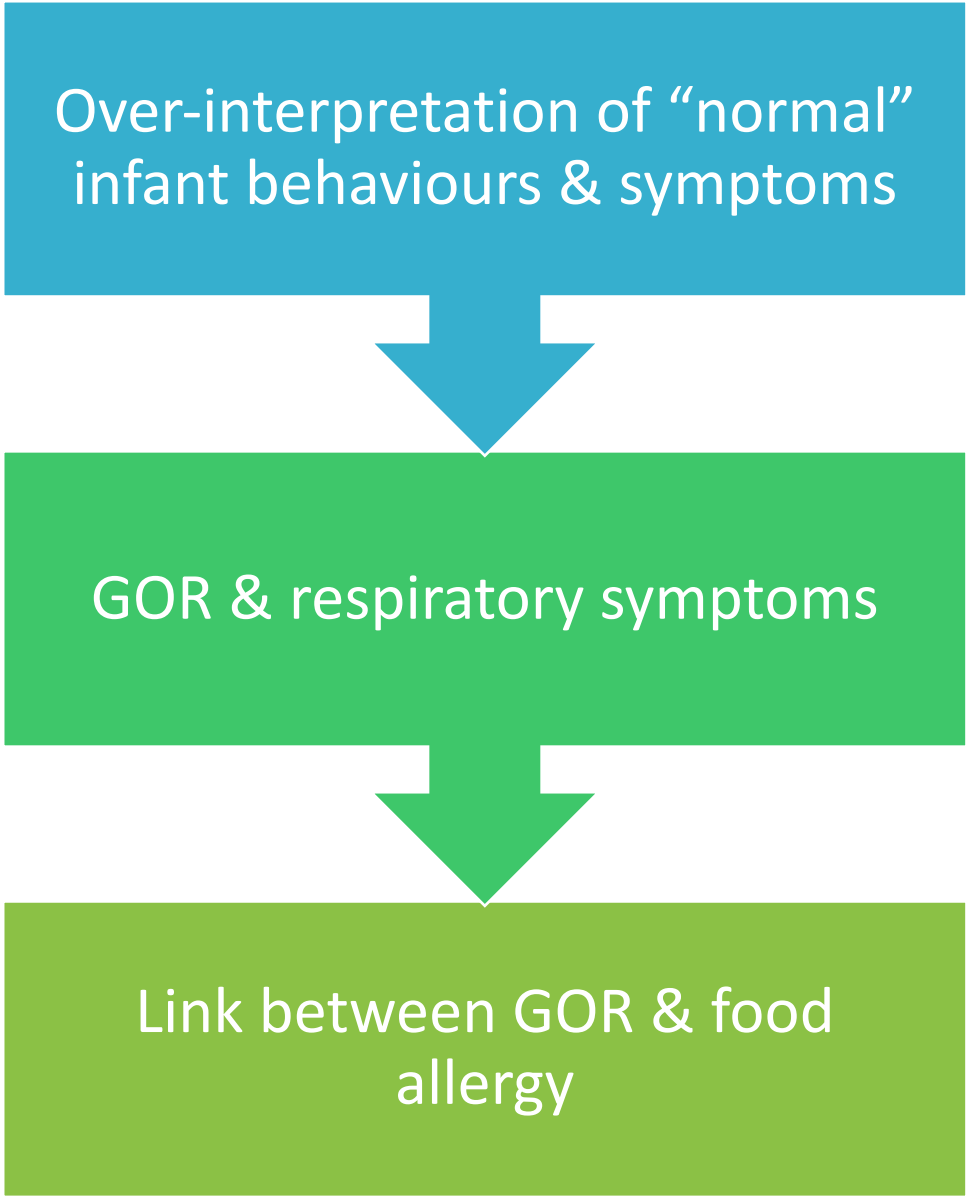
Nissen fundoplication

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

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

Controversies in GOR



Over-interpretation of symptoms

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?

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

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

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

Cows milk protein intolerance

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

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

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

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

Thank you and Questions