GASTRO-OESOPHAGEAL REFLUX DISEASE

DR RONALDA DELACY
GORD - Involuntary, effortless passage of gastric contents into the oesophagus +/- ejected from the mouth resulting in troublesome symptoms or complications
* 1:300 – 1:1000 Infants have significant symptoms
* Frequent vomiters
  - < 3 months 50% have GOR
  - > 3 months 60% have GOR
* Good news
  - 9-12 months >90% resolved
Natural History of GER in Children Up to Age 2yrs: Infant Spilling

(=Spitting up/ Vomiting / Regurgitating/ ‘Possetting’)

41% of infants age 3 to 4 months spit up most of their feedings.

GER occurs in <5% of infants age 13 to 14 months.

**DIFFERENTIAL DIAGNOSIS**

- Gastro-oesophageal reflux disease
- Pyloric stenosis
- Hiatus hernia
- Oesophageal stricture
- Tracheo-oesophageal fistulae
- Sepsis, gastroenteritis
- Cow’s milk protein intolerance
ANTI REFLUX MECHANISMS

* Crural diaphragm
* Angle of His
* Mucosal choke
* Lower oesophageal sphincter
A — Lower oesophageal sphincter
B — Intra-abdominal oesophagus
C — Angle of His
D — Mucosal choke
WHY DO CHILDREN HAVE A HIGHER INCIDENCE OF GORD?
REASONS

- Increased frequency of feeds
- Shorter intra abdominal oesophagus
- Increased intra abdominal pressure
- Decreased gastric compliance
- Wider angle between oesophagus and stomach
- Supine position
- Liquid feeds
INFANTS

- Regurgitation- 50-70%
- Feeding refusal, choking
- Apnoea, recurrent chest symptoms
- Irritability
- Haematemesis
- Anaemia
- Failure to thrive
- Sandifer syndrome
PRESENTATION

PRESCHOOL

- Intermittent regurgitation
- Respiratory symptoms, persistent wheezing
- Decreased food intake
- Growth failure
OLDER CHILD/ADOLESCENTS

- Chronic heartburn
- Regurgitation
- Chest pain
- Nausea
- Epigastric pain
- Dysphagia
- Hoarseness
- Recurrent chest infections, wheeze
“RED FLAG” SIGNS AND SYMPTOMS

* Severe symptoms
* Apnoea
* Haematemesis
* Recurrent forceful vomiting
* Anaemia
* Dysphagia
* Weight loss / failure to thrive
INVESTIGATIONS FOR GORD

- Barium Swallow
- Nuclear Scintigraphy
- PH Study
- Impedance study
- Oesophagoscopy/ other invasive tests
BARIUM SWALLOW

To detect anatomical abnormality
* H type TOF

* Oesophagus stricture/ ring

* Stomach- Hiatus Hernia

* Duodenum  - Pyloric/ duodenal stenosis
  - Malrotation
NUCLEAR SCINTIGRAPHY (MILK SCAN)

- 99 Technetium labelled milk
- Identifies - Postprandial GOR
  - Aspiration into lungs
  - Gastric emptying
PH STUDY

* Determines acidification of oesophagus
  - duration over 24hrs
  - length of episodes
  - mimics lifestyle

* Identifies number of refluxes
  - duration of reflux
  - relation to intake

* Confirms if episodic respiratory symptoms (e.g. apnoea) caused by GORD

* Efficacy of acid suppression
* Measures movement of fluids/solids/air in oesophagus, using a catheter with sequentially placed electrodes which measure change in electrical impedance.

* Identifies - oesophageal clearance/acid exposure
  - oesophageal/gastric motility
  - episodes of gastro-oesophageal reflux and its upper extent
  - symptom association
* Oesophagoscopy/Laryngoscopy

Assess

- GORD damage to oesophagus
- Biopsy to confirm histo normal (up to 20% abn)
- Barretts
- Eosinophilic/viral oesophagitis
- Web
Guidelines for Diagnoses and Management

Pediatric Gastroesophageal Reflux Clinical Practice Guidelines: Joint Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN)

Co-Chairs: +Yvan Vandenplas and †Colin D. Rudolph
Committee Members: ‡Carlo Di Lorenzo, §Eric Hassall, ||Gregory Liptak,
¶Lynnette Mazur, #Judith Sondheimer, **Annamaria Staiano, ††Michael Thomson,
‡‡Gigi Veereman-Wauters, and §§Tobias G. Wenzl

Journal of Pediatric Gastroenterology and Nutrition. 2009: 498 - 547
FIGURE 1: Approach to the Infant with Uncomplicated Recurrent Regurgitation (Happy Spitter)
FIGURE 2: Approach to the Infant with Recurrent Regurgitation and Poor Weight Gain
**FIGURE 3: Approach to the Older Child or Adolescent with Heartburn**

1. Chronic Heartburn

2. History and physical examination

3. Education; Life-style change; PPI for 2-4 weeks

4. Improves

5. YES

   - Continue PPI For 8-12 weeks

6. NO

   - Discontinue PPI

7. Relapse

8. Consultation with Pediatric gastroenterologist

9. Observation
1. Persistent asthma

2. Heartburn or Regurgitation
   - YES → Treat with PPI
   - NO (or infant/child too young to report symptoms reliably)

3. *Difficult to control? or Nocturnal-onset asthma
   - NO → GER unlikely contributor to asthma
   - YES → Rule out other causes of wheezing. Do pH (± impedance monitoring)

4. pH (± impedance) normal?
   - YES → GER unlikely contributor to asthma
   - NO → Trial PPI

5. *Difficult-to-control asthma is asthma with chronic symptoms, episodic exacerbations, and continued requirement for short-acting beta-agonists despite inhaled corticosteroids.

**FIGURE 4:** Approach to the child with asthma that may be worsened by GERD
MEDICAL MANAGEMENT

* Approach depends on:
  - specific symptoms
  - severity
  - expected natural history
  - concomitant problems

* Goals of therapy:
  - to relieve symptoms
  - to prevent complications
  - to treat complications
MEDICAL MANAGEMENT

* Position
  - Decrease GOR episodes in prone but increase SIDS
  - Not recommended
  - Left lateral position
* Thickening of feeds (guar gum/cereals)
  - Decreases no and height of non acid reflux episodes
  - but does not decrease oesophageal exposure
  - increase work of sucking
* Hypoallergenic feeds trial
  - limited 2 week trial
  - determine cow or soy milk protein allergy
* Mode of delivery
  - small volume feeds or continuous gastric feeds
  - continuous jejunal feeds
**Pharmacological therapy:**

- **Surface agents**
  - sodium alginate, sucralfate

- **Motility agents**
  - domperidone, baclofen

- **Acid-suppressive agents**
  - $H_2$ RAs, PPIs
MEDICAL MANAGEMENT

- Antacids – not for prolonged use
- Alginate – efficacy in studies varies
- Sucralfate
  - Effective for oesophagitis
  - ??? For GORD

* NOT TO BE USED AS THE SOLE TREATMENT
PROKINETIC THERAPY

- Cisapride - prolonged QTc
- Domperidone - anxiety, tremors, dystonia
- Metoclopramide - anxiety, tremors, dystonia
- Bethanechol

- All have significant side effects

- NOT FOR ROUTINE USE
H2 RECEPTOR ANTAGONIST (H2RA)

- Rapid onset of action
- Tachyphylaxis (response) after 6 weeks
- Tolerance develops
- Not for chronic use – better for episodic relief
- Not as effective as PPIs for symptom relief or oesophagitis
- PPIs better for long term treatment of GORD
MAINSTAY OF THERAPY

- Better and faster healing rates of erosive oesophagitis than H2RAs
- Inhibit acid secretion by blocking H/K ATPase in the stomach
- Extraoesophageal symptoms less responsive than oesophageal
- PPIs are very effective and safe for the treatment of GORD.
- Children (1-10yrs) metabolize PPIs faster than adults

- No PPI approved in infants less than 1 year

- PPIs should be tapered, not stopped abruptly because of acid rebound.

- Protected from gastric acid by enteric coating

- Give once daily dose 30 minutes before breakfast.

- Effect does not decrease with chronic use

- Omeprazole, Lanzoprazole, Esomeprazole
ADVERSE EFFECTS OF HYPOCHLORIDIA

- Community acquired pneumonia
- Gastroenteritis in children
- Candidaemia
- *C. difficle* – associated disease
- NEC in preterms
- ? B12 deficiency in adults
- ? Hip fractures in adults
- ? Interstitial nephritis causing acute renal failure

- *Achloridia is not the goal of therapy*
* Start treatment with less potent acid suppression
  \[ \text{H}_2\text{RA} \rightarrow \text{PPI} \]

* Low dose $\rightarrow$ high dose of the same drug

* Start with other treatments $\rightarrow$ acid suppression
FACTORS IN FAVOUR OF STEP-THERAPY

- No need to use a potent drug if a less potent drug works
- Less expensive up front
- More potent suppression of acid has risks
- Quicker onset of acid inhibition with H2RAs than current PPIs
- PPIs do not inhibit nocturnal acid breakthrough
- No need to taper: less acid rebound hypersecretion than with PPIs
- Liquid formulations are easily dosed per kilogram, well accepted by infants/younger children
Compared with H2RAs, more potent and longer-lasting acid suppression

Highly efficacious in children and for the most severe GORD

Most effective drug should be used first; step-down can be cost effective

More useful than H2RAs as diagnostic test

Adverse effects of acid suppression also occur with H2RAs

Long-term use can avoid surgery

PPIs approved for 1- to 17-year-olds (omeprazole, lansoprazole, esomeprazole) are now available in disintegrating tablet or powder formulations
There is no one-size-fits-all treatment approach to paediatric patients.

- Empiric trials of PPI in children < 12 months old are seldom indicated.

- PPI use in children < 12 months should be done under specialist care.

- In infants < 12 months, H2RAs may be a better starting Rx.

- For patients 2–5 years or those with moderate symptoms, use of PPIs is the better approach.

- Empiric trials of PPI may be useful if symptoms are likely those of GORD if no “red flag” symptoms.

- Empiric trials should not be given for more than 6–12 weeks.
* PPIs should not be stopped abruptly because of acid rebound, which may cause symptoms. Taper dose.
* PPI should be given as a single dose 15–30 mins before breakfast.
* Stop all acid suppression for 2 weeks prior to endoscopy.
* There are risks to chronic acid suppression.
* Do not use twice-daily dosing PPI or high-dose PPI without an indication.
* Patients should not be given long-term PPI therapy without a diagnosis.
* Even in established GORD, trials of tapering PPI should be given.
INDICATIONS FOR SURGERY

- Failure of optimized medical therapy with an established diagnosis of GORD
- Complications of GORD such as aspiration, stricture or Barrett’s oesophagitis.
- Life-threatening complications of GORD e.g. Near SIDS
- Patients with neurologic impairment requiring feeding gastrostomy with GORD
- Patients post repair of oesophageal atresia with reflux and recurrence of anastomotic stricture.
NISSEN FUNDOPPLICATION
A partial wrap does not go all the way around the esophagus.
THANK YOU