GASTROESOPHAGEAL REFLUX

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GASTROESOPHAGEAL REFLUX

- Return of gastric content into the esophagus.
- Common in infancy and childhood.
- The majority (> 90%) will resolve spontaneously within the 1st year of life due to maturation of lower esophageal sphincter , 4% develop stricture.

PATHOLOGIC ANATOMY

- Reflux may, or may not, be associated with hiatus hernia, sliding (ascent of cardia into the mediastinum) or rolling paraesophageal (fundus prolapsed into the mediastinum while gastroesophageal junction remains in the abdomen, usually no reflux).

NORMAL MECHANISM PREVENTING REFLUX: -

Anatomic:

- Length and pressure of lower esophageal sphincter.
- The length of intra-abdominal segment of esophagus.
- The gastroesophageal angle (angle of His) > acute.
- The lower esophageal mucosal rosette.
- The phrenoesophageal membrane.
- The diaphragmatic hiatal pinchcock effect.

Physiologic:

- Coordinated effective peristaltic clearance of the distal esophagus.
- Normal gastric emptying (delayed in 40% of cases).

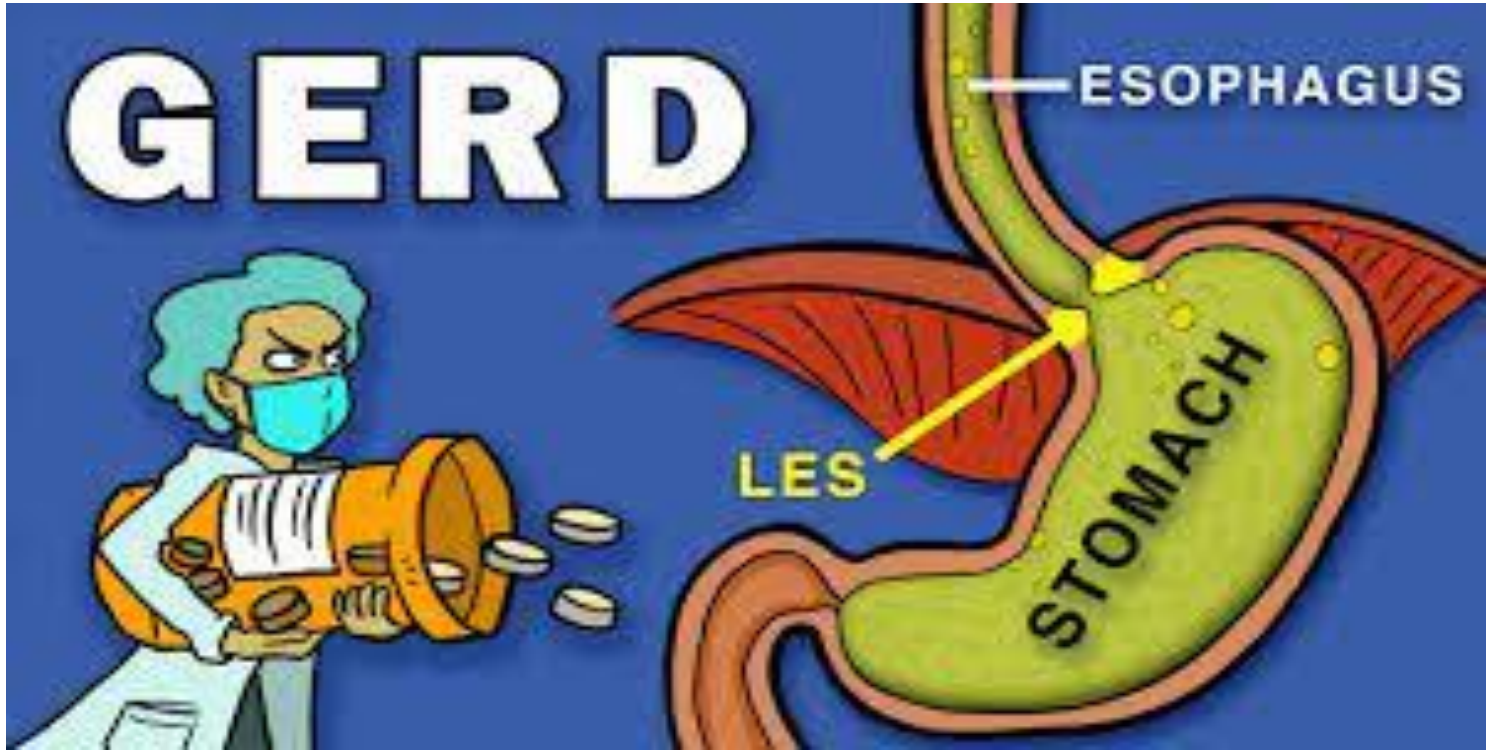
PATHOPHYSIOLOGY OF REFLUX: -

- Chemical inflammation with erythema of the mucosa.
- The mucosa becomes friable and bleeds easily on touch.
- Frank ulceration
- Stricture formation > irreversible.

CLINICAL PRESENTATION

- Early infancy > regurgitant vomiting (chalasia), sometime coffee ground, failure to thrive.
- Older childhood > vomiting, heartburn, dysphagia, occasionally iron-deficiency anemia.
- Aspiration syndrome > asthma, pneumonitis, cyanosis, apnoic episodes, and near-SIDS.
- Others > Sandifer`s syndrome (torsion spasms of the neck), torticollis, protein-losing enteropathy, irritability, and hyperactivity.
- Feature of stricture, ulcer, and adenocarcinoma.

- Mental retardation > 10-15% develops frequent vomiting; of them 75% have GER with high rate of failure of medical treatment.
- Anatomic anomaly > esophageal atresia, diaphragmatic hernia, abdominal wall defects, and malrotation.



INVESTIGATIONS

- For the infant, with frequent regurgitation but who is thriving and is otherwise well, none is needed.

1. BARIUM ESOPHAGOGRAM(UGI series): -

- Anatomy > stricture, ulcerative esophagitis, or displacement.
- Hiatus hernia.
- Peristaltic activity and clearance.
- Gastric outlet obstruction.
- Degree of reflux:

a. Grade I > distal esophagus.
b. Grade II > proximal/thoracic esophagus.
c. Grade III > cervical esophagus.
d. Grade IV > continuous reflux.
e. Grade V > aspiration into the tracheobroncheal tree.

2. ESOPHAGEAL pH MONITORING: -

- Most accurate.
- pH of less than 4 is significant.
- Number of such episodes and their duration are important.
- Number of episodes more than 5 min.
- Total duration of reflux.
- Continuous, discontinuous, and mixed.
- *Indications:*

1. Respiratory symptoms e.g. apnea, near-miss SDIS.
2. Irritable, crying, and anorectic.
3. Reactive airway disease (asthma) or unexplained or recurrent pneumonia.
4. Unresponsive to medical measures and the role of GER in their symptoms is uncertain.
5. Recurrent symptoms after fundoplication.

3. ENDOSCOPY AND BIOPSY: -

- Suspicion of esophagitis is the prime indication, dysphagia.
- Ulcer, stricture, and Barrett`s esophagus
- Degree of esophagitis.
- Pathological grading:

a. Grade I > erythema of mucosa.
b. Grade II > friability of mucosa.
c. Grade III > ulcerative esophagitis.
d. Grade IV > stricture.

4. ESOPHAGEAL MANOMETRY: -

- High pressure zone is normally present in the lower esophagus.

5. SCINTISCANNING: -

- Technetium TC sulfur colloid scans may be useful in determining pulmonary aspiration.

MEDICAL TREATMENT

1. Small frequent thickened feeds.
2. 45° head elevated, prone position.
3. Antacids-alkalis with or without alginic acid (gaviscon).
4. Histamine receptor antagonist.
5. Proton-pump inhibitor e.g. omeprazol (0.7-3.5 mg/kg/day).
6. Prokinetics e.g. Metoclperamide and bethanecol, domperidone, cisapride.
7. GABA(B) e.g. baclofen inhibits transient LES relaxation.

INDICATIONS FOR ANTIREFLUX SURGERY

1. Failure of conservative treatment.
2. Established esophageal stricture.
3. Considered early in presence of anatomic anomaly, or presence of neurologic impairment.
4. May be necessary in aspiration symptom e.g. apnoic episodes, repeated respiratory infections, failure to thrive.

OPERATIONS

1.NISSEN FUNDOPLICATION: -

- Complete wrap.
- High incidence of complications.
- Gastrostomy is almost always needed.

2.THAL FUNDOPLICATION: -

- Partial 180 anterior fundal wrap.
- No division of short gastric vessels.
- Technically simpler.
- Less intestinal obstruction, failure and gas-bloat syndrome.

3.BOIX-OCHOA FUNDOPLICATION: -

- Differ in that the remaining fundus is fixed to the underside of the left hemidiaphragm to ensure the angle of His.

4.TOUPET PROCEDURE: -

- Partial 270 posterior wrap.
- Lesser gas-bloat syndrome.

5.LAPAROSCOPIC.

COMPLICATIONS

1. Death < 0.1%.
2. Reoperation.
3. Intestinal obstruction.
4. Gas-bloat syndrome.

NB.

- 3 lines to limit the degree of GER and minimize injury:

1. Antireflux barrier including LES, diaphragmatic pinchcock, and angle of His.
2. Esophageal clearance by gravity and peristalsis.
3. Esophageal mucosal resistance.

- Pinchcock effect > the diaphragmatic sling pulls the esophagus to the right and downward, narrowing its lumen during deep inspiration.
- Boix-ochoa in normal children while Nissen in neurologically impaired.
- TEF 50%, and 100% in isolated atresia.
- Barrett`s esophagus 4-14% of GERD, progressive even after antireflux surgery, endoscopic laser ablation or prophylactic esophagectomy or mucosectomy for severe dysplasias.

Thank you very much