


Gastroesophageal Reflux in the Preterm Neonate

Samer Yousfi, Neonatal Fellow



GER in the Preterm Neonate

- ❑ Gastroesophageal reflux (GER) is a normal physiologic event occurring across the age spectrum.
- ❑ A large number of symptoms and signs have been purported to be caused by GER despite a lack of data showing a clear association between a specific symptom and GER.
- ❑ In preterm infants, empiric therapy often is administered using agents of unproven efficacy and safety to treat symptoms that likely are unrelated to GER.



GER in the Preterm Neonate

Physiology of GER in Preterm Infants

- Episodes of GER may occur during LES relaxation, which may be triggered by a variety of mechanisms.
 - Transient LES relaxations (TLESR) that occur in the absence of swallowing, swallow-related LES relaxation.
 - Prolonged inhibition of LES tone.
-



GER in the Preterm Neonate

Physiology of GER in Preterm Infants

- TLESR is by far the most common mechanism of LES relaxation, triggering GER in all age groups from 26 weeks' gestation preterm infants through adults.
 - TLESRs occur via a vagovagal reflex initiated by stretch-sensitive receptors located in the smooth muscle of the stomach wall.



GER in the Preterm Neonate

GERD in the Preterm Infant

- Most of the mechanisms that protect the esophagus against damage from GER appear to be present in the healthy preterm infant.



GER in the Preterm Neonate

GERD in the Preterm Infant

- Theoretically, GERD could result from failure of these mechanisms manifested by:
 1. Chronic loss of integrity of LES function.
 2. Paucity of swallow-dependent and swallow-independent esophageal peristaltic reflexes.
 3. Failure of upper esophageal sphincter function as a barrier.
 4. Failure of activation of pharyngeal swallow sequence.
 5. Failure of airway protection responses leading to aspiration.
 6. Exaggeration of airway protection responses leading to apnea.
-



GER in the Preterm Neonate

Apnea and GER in Preterm Infants

- studies have failed to show a temporal or causal relationship of acid or nonacid GER events and apnea in preterm infants.
- Pharmacologic treatment of GER with prokinetic agents failed to decrease the incidence of apnea in preterm infants.



GER in the Preterm Neonate

CLD and GER in Preterm Infants

- No study in preterm infants has demonstrated prevention or improvement of CLD with any treatment regimen for GER.
 - However, because treatment often is instituted because of a suspicion of GER, it is possible that GER may be a contributing factor in some infants.



GER in the Preterm Neonate

Evaluation for GERD in Preterm

- In an otherwise healthy infant who continues to feed well, gains weight, and has no respiratory illness, regurgitation should be considered as a normal variant that resolves with maturation without any complications.



GER in the Preterm Neonate

Evaluation for GERD in Preterm

- Infants who experience recurrent vomiting or regurgitation associated with apparent irritability, difficulty feeding, pulmonary disease, or hematemesis may have GERD contributing to these symptoms.
 - However, the association of GERD with any symptom presentation in preterm infants is poorly substantiated, and all symptoms of GER may result from other disorders, making it obligatory to consider other diagnostic possibilities.

GER in the Preterm Neonate

Investigations in the Evaluation of GER in Preterm Infants

PH probe study

– Advantages:

- Sensitive for acid reflux only.
- Reproducible (18- to 24-hr study).
- Comparative data available May predict risk of esophagitis but confirmatory data not available in preterm infants.
- Bedside test

– Disadvantages:

- Minor discomfort of probe.
- Nearly 60% to 90% of GER episodes in infants are nonacid (milk or gas).
- A negative test does not exclude GER as a cause of recurrent aspiration

GER in the Preterm Neonate

Investigations in the Evaluation of GER in Preterm Infants

Esophageal impedance monitoring

- Advantages:
 - Detects both acid and nonacid reflux events.
 - Response time is more rapid than pH probe.
- Disadvantages:
 - Analysis is cumbersome.
 - Normal values not well-established in infants.
 - No predictive value for treatment responses.

GER in the Preterm Neonate

Investigations in the Evaluation of GER in Preterm Infants

Upper gastrointestinal fluoroscopy

- Advantages:
 - Defines structural anatomy
 - Readily available
- Disadvantages:
 - Very short duration of study.
 - GER present in healthy infants.
 - No predictive value for treatment responses.
 - Difficult in ill preterm infants because it requires transport to radiology suite.

GER in the Preterm Neonate

Investigations in the Evaluation of GER in Preterm Infants

Esophageal manometry study

- Advantages:
 - Defines pathophysiologic mechanism of GER.
 - Evaluation of esophageal clearance and peristalsis.
 - Evaluation of sphincter dynamics.
 - Can be performed at bedside.
- Disadvantages:
 - Limited availability.
 - Skilled personnel required.
 - No predictive value for treatment responses.

GER in the Preterm Neonate

Investigations in the Evaluation of GER in Preterm Infants

Endoscopy

- Advantages:
 - Documents esophagitis.
 - Permits biopsy.
 - May identify other causes of esophagitis (eg, eosinophilic or infectious esophagitis).
- Disadvantages:
 - Anesthesia needed.
 - Specialized procedure.

GER in the Preterm Neonate

Investigations in the Evaluation of GER in Preterm Infants

Empiric therapy

- Advantages:
 - Inexpensive.
 - Relatively low risk with conservative therapy.
- Disadvantages:
 - Potential “placebo” (chance) response.
 - Risks and therapeutic doses of medications unknown in preterm infants.



GER in the Preterm Neonate

Treatment of GERD in Preterm Infants

□ Nonpharmacologic Therapy:

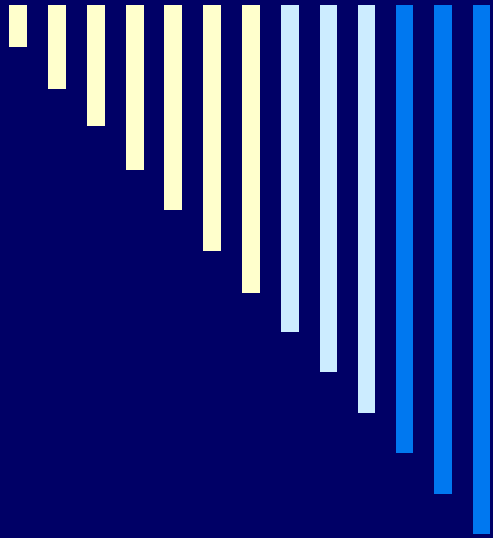
- RECOGNIZING AND MINIMIZING AGGRAVATING FACTORS.
 - POSITIONING.
 - FORMULA OR DIETARY ALTERATIONS.
 - METHOD OF FEEDING.
-



GER in the Preterm Neonate

Treatment of GERD in Preterm Infants

- Pharmacologic Therapy:
 - PROKINETICS.
 - ACID-REDUCING AGENTS.
 - PPIS.
 - DRUGS NEUTRALIZING GASTRIC ACID.
 - Surgical Therapy
-



Thank You
