SASKATCHEWAN REGISTERED NURSES' ASSOCIATION

RNs WITH ADDITIONAL AUTHORIZED PRACTICE
CLINICAL DECISION TOOL
DECEMBER 1, 2016

GASTROESOPHAGEAL REFLUX DISEASE (GERD) PEDIATRIC

DEFINITION

- Retrograde movement of gastric contents into the esophagus, which results in injury to the esophagus and extra-intestinal disease.
- In children, the peak age at onset is 1-4 months of age.

IMMEDIATE CONSULTATION REQUIRED IN THE FOLLOWING SITUATIONS

- Bilious vomiting
- Gastrointestinal tract bleeding
- Hematemesis
- Hematochezia
- Consistently forceful vomiting
- Fever
- Lethargy
- Hepatosplenomegaly
- Bulging fontanelle
- Macro/microcephaly
- Seizures
- Abdominal tenderness or distension
- Documented or suspected genetic/metabolic syndrome
- Associated chronic disease
- No response to 4 weeks of medical therapy

CAUSES

- Disturbance of the normal functioning of the esophagus and related structures results in a defective anti-reflux barrier.
- Gastric Dysfunction
  - Delay in gastric emptying causing increased pressure in stomach (e.g., large volume of feeding, particularly in infants)
  - High abdominal pressure due to obesity or tight clothes which exacerbates reflux
- Increased Relaxation of Lower Esophageal Sphincter (LES)
  - Transient relaxation of the LES is a major cause of reflux
- Esophageal Dysfunction

- Impaired clearance of esophageal reflux due to inflammation, position and/or mucosal damage

PREDISPOSING AND RISK FACTORS

- Preterm
- Supine position
- Certain foods and medications
- Children with neurologic injury are more likely to have Gastroesophageal Reflux Disease (GERD)
- Increased risk of GERD in clients with the following:
  - Esophageal atresia with repair
  - Hiatal hernia
  - Bronchopulmonary dysplasia
  - Asthma
  - Cystic fibrosis

HISTORY

- Infants and young children
  - Enquire about:
    - Frequent or recurrent vomiting
    - Frequent or persistent cough/wheezing
    - Refusing to eat or difficulty eating (choking or gagging with feeding)
    - Crying with feeding or after feeding
    - Heartburn, gas, or abdominal pain
    - Colic/irritability
    - Poor weight gain (failure to thrive)
    - Breathing problems
    - Recurrent pneumonia
    - Esophageal atresia with repair
    - Hiatal hernia
    - Bronchopulmonary dysplasia
    - Asthma
    - Cystic fibrosis (rare)
- Older children and adolescents who can articulate their symptoms

- As per SRNA CDT GERD Adult

PHYSICAL FINDINGS

- There are no recognized classic physical signs of gastroesophageal reflux in the pediatric population. Some findings may include the following:
  - Nonverbal infant:
    - Crying and irritability, failure to thrive, hiccups
    - Sandifer syndrome
  - Spastic torticollis and dystonic body movements found in infants and children and associated with GERD toddlers and older children:
    - Significant dental problems from excessive regurgitation, causing acid effects on tooth enamel
  - Adolescents:
    - As per SRNA CDT GERD Adult

DIFFERENTIAL DIAGNOSIS

- Infection as a cause of vomiting (e.g., gastroenteritis)
- Neurologic problem (e.g., hydrocephalus, brain tumor)
- Metabolic problem (e.g., phenylketonuria, galactocemia)
- Food intolerance (e.g., milk allergy, celiac disease)
- Anatomic malformations (e.g., pyloric stenosis, esophageal atresia, intussusception)

COMPLICATIONS

- Esophagitis
- Esophageal stricture
- Esophageal adenocarcinoma (extremely rare in children)
- Failure to thrive
- Recurrent aspiration pneumonia
- Apnea
- Near-miss sudden infant death syndrome (SIDS)
- Anemia

INVESTIGATIONS AND DIAGNOSTIC TESTS

- Hemoglobin level

  - If there is a concern about anemia
- Chest x-ray
  - Based on physical exam to rule out aspiration or recurrent pneumonia

MAKING THE DIAGNOSIS

- Diagnosis of GERD can usually be established on the basis of a careful history and physical examination.

MANAGEMENT AND INTERVENTIONS

Goals of Treatment

- Relieve symptoms
- Promote healing of the esophagus
- Prevent complications such as stricture, bleeding, failure to thrive
- Prevent recurrence

Appropriate Consultation

- Symptoms/presentations in the Immediate Consultation Required in the Following Situations section.
- Clients who have not responded to 4 weeks of treatment should be referred for further investigations.

Non-Pharmacological Interventions

- Infants
  - Elevating the head of the baby's crib
  - Holding the baby upright for 30 minutes after a feeding
  - Thickening bottle feedings with cereal
  - Shorter and more frequent feeds
  - Formula-fed infants with recurrent vomiting may benefit from a 2-4 week trial of an extensively hydrolyzed protein formula
    - Milk protein sensitivity is sometimes a cause of unexplained crying and vomiting in infants.
  - Supervised prone positioning when infant is awake decreases the amount of reflux

  - Supine positioning during sleep is recommended due to risk of sudden infant death syndrome
- For older children:
  - Elevating the head of the child's bed
  - Keeping the child upright for at least 2 hours after eating
  - Several small meals throughout the day
  - Limiting foods and beverages that seem to worsen the child's reflux
  - Weight loss if child overweight

In the infant with uncomplicated recurrent regurgitation, it is important to recognize physiologic gastroesophageal reflux that is effortless, painless, and not affecting growth. In this situation, clinicians should focus on minimal testing and conservative management. Overuse of medications in the so-called "happy spitter" should be avoided.

Pharmacological Interventions

- Medications for an infant and child < 12 years of age must be ordered by a physician/RN(NP).
- The medications presented here are for older children and adolescents (≥ 12 years of age).
- **Acid-Reducing Agents**
  - Antacids as needed to control symptoms
    - Aluminum hydroxide/magnesium hydroxide 0.5-1 mL/kg orally 3-6 times per day after meals and before bed [not to exceed maximum dose (aluminum) of 3600 mg per day]

    Or
  - Histamine H_2-receptor antagonists
    - RaNITIdine (Zantac) 5-10 mg/kg/day orally in divided doses bid x 1 month (maximum dose of 300 mg per day)
  - Proton pump inhibitors
    - Consideration may be given to these medications if no response after 4 weeks of treatment with antacids or histamine H_2-receptor antagonists
    - Necessitates referral as must be ordered by a physician/RN(NP)

Client and Caregiver Education

- Counsel client/caregiver about appropriate use of medications (dose, frequency, compliance, etc.).
- Discuss diagnosis with parents/caregiver and explain the difference between physiologic conditions and pathologic disease that cause reflux.
- **Positioning**
  - Place child in upright or prone (if supervised) position
  - Do not prop bottle when feeding child
  - Avoid supine or semi-seated position
  - Elevation of head of bed onto 6 inch (15 cm) blocks may be useful
- **Feeding**
  - Thicken infant foods [add 1 tbsp (15 mL) dry rice cereal for each ounce of formula]
  - Encourage fasting for a few hours before child goes to sleep
  - Avoid large meals (e.g., promote smaller, but more frequent feedings)
  - Diet for weight loss may be considered in an older child, if he or she is overweight or obese
  - Avoid foods that decrease lower esophageal sphincter pressure or increase gastric acidity (e.g., carbonated drinks, fatty foods, citrus fruits, tomatoes)
  - Avoid tight-fitting clothes
  - Avoid exposure to tobacco smoke

Monitoring and Follow-Up

- Reassess weekly or biweekly while the child is symptomatic.
  - Watch carefully for signs of complications (e.g., failure to thrive, recurrent pneumonia, asthma, erosive esophagitis or anemia).
  - Monitor growth and development.

Referral

- Symptoms/presentations in the Immediate Consultation Required in the Following Situations section.
- Refer any infant with suspected GERD to a physician/RN(NP) in the following situations:
  - Simple measures fail to relieve the problem.

- There are symptoms of complications (e.g., failure to thrive, recurrent pneumonia).

DOCUMENTATION

- As per employer policy

REFERENCES

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