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REVIEW OF MANAGEMENT APPROACHES TO PREGNANCY INDUCED HEARTBURN

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Review of Management Approaches to Pregnancy Induced Heart Burns in the USA.

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ABSTRACT
Heartburn or Gastroesophageal reflux disease (GERD) is a common digestive disorder during pregnancy occurring in about 30%-50% of pregnant women.[1] It occurs when the lower esophageal sphincter fails to close tightly, causing food and stomach acids to flow black (reflux) into the esophagus. In pregnancy, GERD occurs mainly due to the effect of progesterone, which reduces the reliability of the esophageal sphincter. Acidic food causes the inflammation of the esophageal lining and hence gives rise to burning chest pain, sour taste, and cough. Diagnosis can be clinical or by upper endoscopy. Gastroenterologists and obstetricians work together to optimize treatment. For most patients, lifestyle modifications and healthy diet plans are helpful but may be insufficient in providing a definitive cure. Therefore, some patients may require a more intense management approach or even surgery to reduce the symptoms. Antacids and sucralfate are considered first-line drug therapy.[2] If symptoms persist despite using the first-line therapies, Histamine-2 blockers (famotidine, cimetidine) may be used. In complicated cases where pregnant women have intractable symptoms, proton pump inhibitors (omeprazole, lansoprazole) are reserved.[3] Sometimes, promotility agents are also used. In most patients with no prior history of heartburn, the reflux resolves after delivery. All the drugs indicated for GERD management in pregnancy are included in the FDA pregnancy B category.[2] Most of them are excreted in breast milk; only H-2 receptor antagonists may be safe to use during lactation.

INTRODUCTION
GERD, or heartburn as it is commonly called, is a disease of the digestive tract. In normal digestion, the lower esophageal sphincter (LES) opens to allow food into the stomach; after food passes through, it closes to stop food and acidic stomach fluid from flowing back into the esophagus. Gastroesophageal reflux happens when the LES is weak or relaxes abnormally, allowing the stomach's contents to flow up into the esophagus. The stomach content, including semi-digested food and some acids, flow back into the food pipe and irritates the esophageal lining.

Common Signs & Symptoms in pregnancy include
- Burning sensations in the neck or upper chest
- Nausea or vomiting
- Dry cough
- Throat irritation or hoarseness
- Burping
- Sour taste
- Dysphagia (Difficulty with swallowing)
- Laryngitis (Painful Larynx)
- Sleep problems
- Asthma[4]

Risk factors
GERD is prevalent worldwide in pregnant women and infants, children, and adults (Male and female). More than 60 million American adults experience heartburn once a month. More than 15 million adults have heartburn every day, including many pregnant women.[5] Recent studies have shown an increased prevalence in GERD diagnosis among infants and children. In children, symptoms present as recurrent vomiting, coughing, and other breathing problems.[6]

Prevalence
The occurrence and frequency of GERD symptoms in pregnant women increase with an increase in gestational months. It could occur about 25% of the time in the 1st trimester and may increase to 35% in the 2nd trimester. In the 3rd trimester, it could be as frequent as 50% occurrence.

Causes of GERD in pregnancy
Stomach acid refluxes due to the abnormal loosening of the LES in the esophagus, which causes heartburn. If this condition occurs in a pregnant woman, it is usually caused by changes in progesterone hormone levels.

Progesterone slows down the digestive system and causes the esophageal sphincter to loosen more often than usual. In addition, fetal growth enlarges the uterus. This causes the stomach to be pushed into a higher position, forcing acid retrogradely spill into the esophagus, especially after consuming bulky meals or lying down shortly after meals. The gastric juice from the stomach is acidic, so when it flows up the esophagus, it causes irritation, burning, and pain in the chest area.

Another explanation for GERD in pregnancy is hiatal hernia. This condition occurs when the stomach bulges into the chest through an opening in the diaphragm called hiatus, causing a hiatal hernia. It can occur in pregnant women because of the rise in pressure in the abdomen due to fetal positioning, obesity, coughing, lifting something heavy, or straining during defecation.

Several causes of GERD in pregnant women are

- Overweight or Obesity
- Delayed emptying of the stomach (Gastroparesis)
- Diseases of connective tissue such as rheumatoid arthritis
- Smoking
- Eating too soon before bed
- Large meals
- Lying immediately after meals

Complications of GERD

1- Esophageal related

When the acid flows back up, it enters the esophagus, a tube connecting the mouth to the stomach. There the acidic food causes the following complications.

- **Esophagitis**

Stomach acid irritates the lining of the esophagus, causing inflammation. This inflammation is called esophagitis, which can present as pain during swallowing.

- **Esophageal ulcer**

GERD is the top cause of ulcers or sores in the lining of the esophagus. Symptoms include painful swallowing, nausea, and chest pain.

- **Esophageal stricture**

The damage caused by stomach acid can scar the lining of the esophagus. When this scar tissue builds up, it causes narrowing of the esophagus, called strictures. These narrow spots can cause difficulties in swallowing solid and liquid foods, leading to weight loss and dehydration.

2- Tooth decay

The refluxed acid can cause erosion of the enamel, which is the outer layer of the teeth. This can result in demineralization, weakening, and, subsequently, hypersensitivity of the affected teeth.

3- Esophageal cancer

Acid reflux can damage the esophageal tissue and increase the risk of developing esophageal cancer. There are two main types of esophageal cancer:

- Adenocarcinoma (this is the only GERD related esophageal CA)
- Squamous cell carcinoma - risk factors for this are alcohol and smoking, not GERD

Barrett's esophagus

Chronic Stomach acid on the esophagus can cause precancerous changes in esophageal cells resulting in Barrett's esophagus. About 5% to 10% of the people with GERD may develop Barrett's esophagus, out of which only 1% will get esophageal cancer. This condition may be treated by surgically removing the abnormal cells.[7]

Diagnosis

In contrast to the non-pregnant patient, the initial diagnosis of GERD in pregnancy can reliably be made based on symptoms alone. Barium radiographs are not necessary and should be avoided because of radiation exposure to the fetus. Esophageal manometry and pH studies are rarely necessary during pregnancy but can be performed safely. According to Gyawali et al., 2018, upper gastrointestinal (GI) endoscopy is the procedure of evaluating intractable reflux symptoms or complications. This procedure can be safely performed without harming the mother or fetus by carefully monitoring blood pressure and oxygen and judicious use of conscious sedation and fetal monitoring.[8]

Management

Preventions

Preventions for GERD include lifestyle modification and a healthy diet plan.

i. Dietary changes

The first step in reducing GERD is often to limit foods that trigger the reflux. These "trigger foods" differ from person to person but often include chocolate, coffee, fried foods, peppermint, spicy foods, carbonated beverages, alcohol, etc.

ii. Lifestyle modifications

In addition to avoiding dietary triggers, several lifestyle modifications can alleviate GERD symptoms, such as;

- Smoking cessation. Smoking can increase the production of stomach acid
- Sitting- up after meal consumption
- Wearing loose-fitting clothes to ease pressure on the stomach
- Head elevation while sleeping
- Weight loss, especially in the mid section[9]

Treatment

The heartburn of pregnancy typically resolves shortly after delivery; some women may still experience symptoms postpartum and may require continuous treatment. All systemic anti-reflux medications are excreted in breast milk and could harm the infant. Therapeutic options must be explained and discussed with women who need treatment. The following class of drugs is prescribed to GERD patients during pregnancy.

i. Antacids

Antacids neutralize stomach acids. These antacids include Maalox, Gaviscon, Mylanta, Gelusil, Rolaids, and Tums. They may provide quick relief. But antacids alone may not heal an inflamed esophagus. Overuse of some antacids can cause side effects such as diarrhea and constipation.

ii. Sucralfate

A sucrose sulfate-aluminum complex binds to the ulcer, creating a physical barrier that protects the gastrointestinal tract from stomach acid and prevents mucus degradation.

iii. Histamine-2 receptor antagonists

The H-2 receptor antagonists or blockers are the most commonly used and safest medications for pregnant women if the heartburn is not responding to lifestyle modification and non-absorbable medication. All four drugs (cimetidine, ranitidine, famotidine, and nizatidine) are FDA-approved category B drugs for pregnancy.

iv. Proton pump inhibitors (PPI)

Proton-pump inhibitors are the most effective drug therapy for symptom control and healing of oesophagitis. The PPIs (Proton Pump Inhibitors) have been equally used in pregnancy as the H2RAs (Histamine-2 receptor antagonists), and their efficacy proven in pregnancy, however, the data about total safety are limited. Omeprazole may be used but it is categorized in Class C of the FDA (U.S Food and Drug Administration). The other PPIs are classified as class B drugs. However, unlike the non-pregnant heartburn patient, PPIs should only be used during pregnancy in women with well-defined complicated GERD, not responding to lifestyle changes, antacids, and H-2 blockers.[2]

Drug safety

Drug safety during lactation has been assessed in animal studies and human case reports. Aluminum and magnesium hydroxide antacids are not concentrated in breast milk and are safe during lactation. Neither Gaviscon nor sucralfate have been studied during lactation but are presumed safe because of limited maternal absorption.

Safety for Antacids & Sucralfate

Drug	Safety	Comments
Antacids	Yes	Not concentrated in breast milk
Sucralfate	Yes	Minimal, if any, excretion in breast milk

Safety for Histamine-2 Receptor antagonists

Drug	Safety	Comments
Cimetidine	Yes	Compatible with breastfeeding
Famotidine	Yes	Lowest concentration in breast milk
Ranitidine	Yes	Excreted in the breast in a concentration similar to cimetidine
Nizatidine	No	Growth depression

Safety for proton pump inhibitors (PPI)

Drug	Safety	Comments
Omeprazole	No	Embryotic and fetotoxic in animals. Acceptable for use for aspiration prophylaxis in labor
Lansoprazole	Yes	No fetal teratogenicity or harm. They have limited human pregnancy data. They are often used for aspiration prophylaxis during pregnancy.
Rabeprazole	Yes	No fetal teratogenicity or harm. Limited human pregnancy date.[10]

The American College of Gastroenterology gives various strengths of evidence for the management of GERD. If the patient's history is typical for uncomplicated GERD, an initial trial of empirical therapy (including lifestyle modification) is appropriate. Endoscopy at presentation should be considered in patients with symptoms suggesting complicated disease, those at risk for Barrett's esophagus, or when the patient and physician feel early endoscopy to be appropriate.

1. Level of Evidence: IV LIFESTYLE MODIFICATION

Symptoms that are highly specific for GERD include heartburn (pyrosis), regurgitation, or both, which often occur after meals (especially large or fatty meals). (11).

2. Level of Evidence: III. ENDOSCOPY

Endoscopy allows direct visualization of the esophageal mucosa. This is the only reliable method for the diagnosis of Barrett's esophagus. (11).

3. Level of Evidence: II. ESOPHAGEAL MOTILITY PROBLEMS

Defects in esophagogastric motility (LES incompetence, poor esophageal clearance, and delayed gastric emptying) are central to the pathogenesis of GERD. (11).

4. Level of Evidence: I. ACID SUPPRESSION

Acid suppression is the basis of treatment for GERD and can be accomplished most quickly and effectively with PPIs. In 33 randomized trials that included more than 3,000 patients with erosive esophagitis, more patients experienced symptom relief and healing of esophagitis with PPI therapy (approximately 80 percent) than with H2RA therapy (50 to 60 percent). Even when higher and more frequent doses of H2RAs are used, the improvement rates do not match those of PPIs. Long-term PPI therapy is extremely beneficial in patients with chronic or complicated GERD, and safety concerns are minor (e.g., possible vitamin B12 deficiency) (11)

CONCLUSION

GERD or esophageal reflux in pregnancy is a common disorder in pregnancy; though distressful to the pregnant woman, it can be safely and effectively managed. Lifestyle modification and antacids in pregnancy have been reported to be a safe management approach in pregnancy.

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