PRENATAL CARE: NAUSEA AND VOMITING OF PREGNANCY

Week 16

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Homework Assignment:
Download APGO WellMom App on Managing NVP

Podcast: CREOGS Over Coffee Episode 8: Nausea and Vomiting of Early Pregnancy (11.18.18)
LEARNING OBJECTIVES

• To be able to diagnosis NVP and HG

• To gain an understanding of the impact of NVP on both the fetus and mother

• To review recommendations for treatment of NVP

• To be comfortable managing NVP with both pharmacological and non-pharmacological treatment modalities
CASE VIGNETTE

• Ms. Siento Mal is a 25 y.o. G2 P1001 woman @ 7w2d EGA who presents to establish PNC.
  • She reports developing nausea over the past week. She states the nausea is present throughout the day and she usually vomits once at night.

• She has missed one day of work last week secondary to these symptoms.

• She would like to know if there is anything she can do to make her feel better but is nervous about taking medications during pregnancy.
What elements of the patient’s history of present illness are most important?

- **Timing:** ~ 6-7 weeks EGA
- **ROS:** Denies sick contacts, HA, fevers/chills, dysuria, flank pain, hematuria, cold/heat intolerance, new medications, weight loss
- **OBHx:** FT NSVD 2 years ago c/b HG
- **PMHx:** Denies
- **PSHx:** Denies
- **Meds:** None
- **All:** NKDA
- **SocHx:** Denies toxic habits
What elements of the patient’s physical exam are most important?

- **Vitals:** T37°C, BP 110/70, HR 82, RR 18
- **HEENT:** No thyromegaly, no goiter
- **Abdominal exam:** Nondistended, + BS, soft, nontender, no masses
- **Fetal assessment:** + single IUP c/w 7+ weeks, + FH
DEFINITION AND INCIDENCE

• NVP is very a common condition
  • Prevalence for *nausea*: 50-80%
  • Prevalence for *vomiting and retching*: 50%
  • Recurrence rates vary: 15-81%

• No single accepted definition for *Hyperemesis Gravidarum*
  • Clinical diagnosis of EXCLUSION
  • Most commonly cited criteria:
    • Persistent vomiting NOT related to other causes
    • Ketonuria
    • Weight loss (≥ 5% of prepregnancy weight)
    • ± electrolyte, thyroid and liver abnormalities
  • MOST COMMON indication for **admission to hospital** in early pregnancy
DIFFERENTIAL DIAGNOSIS

• Gastrointestinal
  • Gastroenteritis
  • Gastroparesis
  • Achalasia
  • Biliary tract disease
  • Hepatitis
  • Intestinal obstruction
  • Peptic ulcer disease
  • Helicobacter pylori
  • Pancreatitis
  • Appendicitis

• Genitourinary tract
  • Pyelonephritis
  • Uremia
  • Ovarian torsion

• Metabolic
  • Diabetic ketoacidosis
  • Porphyria
  • Addison’s disease
  • Thyroid dysfunction

• Neurologic Disorders
  • Pseudotumor cerebri
  • Vestibular lesions
  • Migraine headaches
  • Tumors of the CNS

• Miscellaneous
  • Drug toxicity/intolerance
  • Psychologic and psychiatric disorders
  • Infections

• Pregnancy-related
  • Acute fatty liver of pregnancy
  • Preeclampsia
PATHOPHYSIOLGY

• Unknown - various theories have been proposed:
  • Hormonal stimulus
    • bHCG
    • Estrogen
  • Evolutionary adaptation
  • Psychologic predisposition – not enough evidence to support

• Risk factors:
  • Increased placental mass – molar pregnancy, multiples
  • History of motion sickness, migraines, family history, personal h/o HG in prior pregnancy
  • Female fetus
MATERAL AND FETAL EFFECTS

**Maternal Effects**
- Wernicke encephalopathy
- Splenic avulsion
- Esophageal rupture
- Pneuothorax
- Acute tubular necrosis
- Increased hospital admissions
- Psychosocial morbidity
  - Depression
  - Anxiety
- Termination of pregnancy

**Fetal Effects**
- Mild – moderate NVP
- Little apparent effects on pregnancy outcome
- Lower rate of spontaneous abortions
- HG
- Low birth weight
- SGA infants
- Premature infants
EVALUATION

• Focused history
• Focused physical exam
• Serology
  • CMP
  • Bilirubin (<4 mg/dL)
  • Amylase (up to 5x greater than normal level)
  • ± TFTs
• Ultrasound
  • Multiple gestations
  • Molar gestation
COUNSELING

**Dietary modifications**
- Eating frequent, small amounts (q1-2h)
- Eating high-carb, low–fat foods
- Add protein to meals and snacks
- BRAT diet
- Drink small amounts of cold, clear, carbonated liquids (2L/day)
- Keep solids and liquids separate (wait 20-30 min to drink after eating)
- Avoid iron preparations

**Behavioral modifications**
- Rest as needed
- Change positions slowly
- Avoid offensive foods and smells
- Treat symptoms of GERD
- Not brushing teeth after eating
Early treatment of NVP is recommended to prevent progression to HG

**FIRST LINE THERAPY: NONPHARMACOLOGIC OPTIONS**
Convert prenatal vitamin to folic acid supplement only
Ginger capsules 250 mg four times daily
Consider P6 acupressure with wrist bands

**PHARMACOLOGIC OPTIONS**
- Vitamin B₆ (pyridoxine) 10–25 mg orally (either taken alone or in combination with Doxylamine 12.5 mg orally), 3 or 4 times per day. Adjust schedule and dose according to severity of patient’s symptoms.
  - OR
- Vitamin B₆ (pyridoxine) 10 mg/Doxylamine 10 mg combination product, two tablets orally at bedtime initially, up to four tablets per day (one tablet in the morning, one tablet in midafternoon, and two tablets at bedtime)
  - OR
- Vitamin B₆ (pyridoxine) 20 mg/Doxylamine 20 mg combination product, one tablet orally at bedtime initially, up to two tablets per day (one tablet in the morning and one tablet at bedtime)
MANAGEMENT

Add the following:
(presented here in alphabetical order)
- Dimenhydrinate, 25–50 mg every 4–6 hours, orally as needed (not to exceed 200 mg per day if patient also is taking doxylamine)
- Diphenhydramine, 25–50 mg orally every 4–6 hours
- Promethazine, 25 mg every 12 hours rectally
- Promethazine, 12.5–25 mg every 4–6 hours, orally or rectally

No dehydration

Persistent symptoms

Dehydration

Intravenous fluid replacement?

Persistent symptoms

Add any of the following:
(presented here in alphabetical order)
- Metoclopramide, 5–10 mg every 6–8 hours, orally or intramuscularly
- Ondansetron, 4 mg orally every 8 hours
- Promethazine, 12.5–25 mg every 4–6 hours, orally, rectally, or intramuscularly
- Trimethobenzamide, 200 mg every 6–8 hours, intramuscularly

Add the following:
(presented here in alphabetical order)
- Dimenhydrinate, 50 mg (in 50 mL saline, over 20 min) every 4–6 hours, intravenously
- Metoclopramide, 5–10 mg every 8 hours, intravenously
- Ondansetron, 8 mg, over 15 minutes, every 12 hours, intravenously
- Promethazine, 12.5–25 mg every 4–6 hours, intravenously

Add the following:
(presented here in alphabetical order)
- Chlorpromazine 25–50 mg intravenously or intramuscularly every 4–6 hours or 10–25 mg orally every 4–6 hours.
- Methylprednisolone 16 mg every 8 hours, orally or intravenously, for 3 days, taper over 2 weeks to lowest effective dose.
  If beneficial, limit total duration of use to 6 weeks.
MANAGEMENT – SAFETY

• **Vitamin B6 (pyridoxine) ± Doxylamine:** safe and effective  
  • SE: Sleepiness, tiredness, drowsiness

• **Dopamine antagonists:** safe and effective  
  • Metoclopramide (less SE vs phenothiazine meds)  
  • Phenothiazine medications  
  • SE: Dry mouth, dizziness, dystonia, sedation  
  • Parallel use of dopamine antagonists may result in increased risk of extrapyramidal effects or neuroleptic malignant syndrome

• **Antihistamines (Diphenhydramine):** safe and effective  
  • SE: Sedation, dry mouth, lightheadedness, constipation
• **Serotonin 5-HT3 inhibitors (Ondansetron)**
  - Limited evidence on safety or efficacy however Cat B medication
  - SE: HA, drowsiness, fatigue, constipation
  - Can prolong the QT interval
  - Possible a/w use in 1st trimester and cleft palate
    - Limited data – small sample size, potential recall-reporting bias
    - Absolute risk to fetus is low however use of ondanestron before 10 weeks should be individualized weighing risks and benefits

• **Steroids**
  - Use with caution
  - Three studies confirmed a/w oral clefts with use in 1st trimester
SOCIAL DETERMINANTS OF HEALTH

• Few studies have been conducted looking at the epidemiology of NVP
• Of the studies available, conflicting findings have been reported regarding the prevalence of NVP among different races and ethnicities
  • One study done in Canada showed race and ethnicity is associated with the reporting of NVP in the 1st trimester
    • Black and Asian women are less likely to report NVP than Caucasian women
    • It is unknown if this is due to a true physiological difference in prevalence vs different cultural acceptability
• There is evidence that low socioeconomic status is associated with NVP however the definition of low SES differs among studies

More research is needed looking at the association between social determinants of health and prevalence of NVP as well as disparities in management of NVP.
BBonNauseaVomitingofPregnancy

**Description:** Evaluation, counseling and initial management for NVP

After obtaining a focused history and physical exam and ruling out other etiologies, a diagnosis of nausea and vomiting of pregnancy was given to the patient. She was counseled on both dietary and behavioral modifications as first line management. Additionally, the decision was made to convert her prenatal vitamins to folic acid supplementation only and she was advised to start ginger capsules 250mg four times daily. In the event that non-pharmacologic options do not control her symptoms the patient was given a prescription for Vitamin B6/Doxylamine. She was educated on the R/B/A of this medication and on correct timing of administration. The patient was advised to contact the office if her symptoms persist despite the above mentioned measures and to present to L&D if she is unable to tolerate PO.
CODING AND BILLING

• Diagnostic Codes (ICD-10)
  • R11 Nausea and vomiting
  • O21 Excessive vomiting in pregnancy
    • O21.0 Mild hyperemesis gravidarum
    • O21.1 Hyperemesis gravidarum with metabolic disturbance
    • O21.2 Late vomiting of pregnancy
    • O21.8 Other vomiting complicating pregnancy
    • O21.9 Vomiting of pregnancy, unspecified
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<th>HISTORY</th>
<th>EXAM</th>
<th>MEDICAL DIAGNOSIS MAKING</th>
<th>CODE</th>
<th>APPLICABLE GUIDELINES</th>
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| Problem focused:  
- Chief complaint  
- HPI (1-3) | Problem focused:  
- 1 body system | Straight forward:  
- Diagnosis: minimal  
- Data: minimal  
- Risk: minimal | 99201 | - Personally provided  
- Primary care exception  
- Physicians at teaching hospitals |
| Expanded problem focused:  
- Chief complaint  
- HPI (1-3)  
- ROS (1-3) | Expanded problem focused:  
- Affected areas and others | Straight forward:  
- Diagnosis: minimal  
- Data: minimal  
- Risk: minimal | 99202 | - Personally provided  
- Primary care exception  
- Physicians at teaching hospitals |
| Comprehensive  
- Chief complaint  
- HPI (4)  
- ROS (2-9)  
- Past, family, social history (1) | Detailed:  
- 7 systems | Low:  
- Diagnosis: limited  
- Data: limited  
- Risk: low | 99203 | - Personally provided  
- Primary care exception  
- Physicians at teaching hospitals |
| Comprehensive  
- Chief complaint  
- HPI (4+)  
- ROS (10+)  
- Past, family, social history (3) | Comprehensive:  
- 8 or more systems | Moderate:  
- Diagnosis: multiple  
- Data: moderate  
- Risk: moderate | 99204 | - Personally provided  
- Physicians at teaching hospitals |
| Comprehensive  
- Chief complaint  
- HPI (4+)  
- ROS (10+)  
- Past, family, social history (3) | Comprehensive:  
- 8 or more systems | High:  
- Diagnosis: extended  
- Data: extended  
- Risk: high | 99205 | - Personally provided  
- Physicians at teaching hospitals |
## CODING AND BILLING – ESTABLISHED PATIENT

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EVIDENCE

• References

