Hyperemesis Gravidarum: Nutritional Management

Description/Etiology

Hyperemesis gravidarum (HG) is characterized by severe and persistent nausea and vomiting occurring between the 5th and 22nd weeks of pregnancy; nausea and vomiting must begin before the 9th week for HG to be diagnosed. Normal “morning sickness” during pregnancy generally abates after 12 weeks. Bouts of HG-related nausea and vomiting can occur at any time of day and adversely affect the nutritional status of the pregnant woman. HG etiology is largely unknown, but may be related to an excess of human chorionic gonadotrophin (hCG) related to placental development, or a physiologic response to the hCG excess. Increased estrogen levels may also play a role. Correcting dehydration, electrolyte imbalance, and nutritional deficiency prior to symptom abatement may require treatment with supplemental I.V. hydration and electrolytes, and enteral or parenteral nutrition. Antiemetics are prescribed to control nausea and vomiting; after symptoms have abated for 48 hours, food is reintroduced to maintain a blood glucose level > 120 mg/dL, restore nitrogen balance, and provide sufficient protein, calories, vitamins, and minerals.

Long-term nutritional management is essential to prevent maternal and fetal complications in patients with uncontrolled vomiting after pharmacologic treatment with antiemetics. Total parenteral nutrition (TPN) and hyperalimentation (i.e., administration of greater than normal nutritional requirements to replace deficiencies) may become necessary in HG. TPN provides dextrose, amino acids, fatty acids, vitamins, minerals, and electrolytes. Concentrations of the TPN components are individualized according to each patient’s nutritional deficits. In severe HG, the goal is for the patient to ingest an additional 1.2–1.7 grams of protein per kilogram of body weight daily. TPN adjustment is necessary throughout the pregnancy, especially during the second and third trimesters, to ensure a weight gain of 0.5–1 pound per week.

Facts and Figures

Normal weight gain during pregnancy is 2–5 pounds in the first trimester and 0.5–1 pound per week in the second and third trimesters. HG can lead to excessive weight loss, but infants of affected mothers commonly are born with a normal weight.

Risk Factors

TPN is necessary if the GI tract is dysfunctional or the patient is unable to tolerate enteral feeding. The catheter for TPN elevates the risk of infection including endocarditis, thrombosis, occluded lines, pneumothorax, and dislodgement. Rapid weight gain following TPN can elevate the risk of preeclampsia, gestational diabetes, and hypertension.

Nutritional Assessment

› Patient Medical History
  • Ask about the following:
    – height and weight before pregnancy and during pregnancy but prior to HG; measure current height and weight, and calculate body mass index (BMI) for the 3 time periods (See Anthropometric Data below for information on BMI calculation)
    – manifestations of dehydration (e.g., loss of skin elasticity, dry mucous membranes)
Patient Dietary History
- Conduct a diet analysis by asking the patient to complete a diet history
  - Useful tools for evaluating the patient’s dietary strengths and weaknesses include a food frequency questionnaire and a 3-day diet recall (i.e., patient recall of all foods and beverages consumed in a 3-day period) that includes 1 weekend day
- Ask about personal habits, including alcohol, caffeine, and soda consumption; smoking; eating at night; and frequenting vending machines or fast food
- Ask about foods or odors that precipitate nausea and/or vomiting

Patient Anthropometric Data
- Calculate the patient’s BMI by dividing body weight (kilograms) by height (meters squared); or 703 multiplied by weight (pounds) and divided by height (inches squared)
  - Underweight: < 18.5; normal: 18.5–24.9; overweight: 25–29.9; obese: > 30
  - In patients over 65 years of age, evidence suggests that a slightly higher BMI (25–27) may help prevent bone deterioration and is associated with a lower risk of mortality
  - In some cases, body composition testing (e.g., dual-energy X-ray absorptiometry scan, skin calipers) may be necessary

Physical Findings of Particular Interest
- Heart rate may be elevated; blood pressure may be low or normal in early stages

Laboratory and Diagnostic Tests of Particular Interest to the Nutritionist
- Serum glucose and electrolytes may show imbalances
- UA may show ketonuria or proteinuria, indicating decreased glucose levels or starvation
- Serum levels of albumin, prealbumin, transferrin, and retinol-binding protein; BUN may indicate decreased protein intake

Treatment Goals
Treat HG With Nutrition Management and Maintain Optimum Pregnancy Status
- Review maternal and fetal vital signs, laboratory reports (especially for fluid/electrolyte imbalances and nutritional deficiency), and efficacy of antiemetics and supplemental enteral or parenteral nutrition; report nutritional status-related findings to the treating clinician as they are obtained
- Evaluate nutrition needs/patient food preferences, collaborate on a nutrition treatment regimen, and provide patient education about nutrition
  - Instruct the patient that oral ingestion should not resume until at least 48 hours after vomiting ceases, and should begin gradually with frequent, small meals of low-fat, high-carbohydrate, and high-protein foods that appeal to the patient
- Work with the care team to consider the expected duration of symptoms, severity of symptoms, and the patient’s home situation; if oral feeding is not possible for the duration of pregnancy, inpatient care or provision of in-home TPN may be necessary
  - Suggest referral to a social worker, if appropriate, for identification of local resources for in-home services (e.g., visiting nurse clinician for TPN administration and management), meal delivery, or nutrition education

Promote Emotional Well-Being and Educate
- Educate and encourage discussion about nutritional deficiency in HG, potential complications, and individualized prognosis; suggest referral to a mental health clinician, if appropriate, for counseling on coping with the stress of a difficult pregnancy

Food for Thought
- Some scientists believe that HG may be an evolutionary adaptation that protects the fetus from effects of the pregnant woman ingesting toxins
- There is a dearth of data on HG and its treatment; most data are anecdotal, come from case studies, or are based on extrapolations of dietary requirements from normal pregnancies
- Providing sufficient calories through parenteral nutrition may be difficult
- Enteral and parenteral nutrition is indicated in HG when a patient has failed to respond to conventional treatment methods (Austin, 2010)

Red Flags
- When nutritional management is initiated with TPN refeeding syndrome may occur, in which electrolytes and fluids rush into cells, causing edema, hypophosphatemia, hypokalemia, and hypomagnesemia; to avoid refeeding syndrome, ensure
that the fluid and electrolyte composition contains reduced carbohydrates and sodium and supplemented phosphate and potassium

- Ketonuria indicates inadequate glucose utilization
- Potential complications of HG include Wernicke’s encephalopathy (due to thiamine deficiency), splenic avulsion, esophageal rupture, pneumothorax, acute tubular necrosis, liver damage, retinal hemorrhage, and kidney damage

**What Do I Need to Tell the Patient/Patient’s Family?**

- Avoid foods or odors that trigger nausea and vomiting, and try eating several small meals a day rather than fewer large meals
- Instruct the patient to discuss using an acupressure wrist band or taking ginger to alleviate nausea with her treating clinician

**Note**

- Recent review of the literature has found no updated research evidence on this topic since previous publication on July 1, 2015.

**References**