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2nd Edition

Obstetrics Protocols



L Krishna

Foreword
Kamini A Rao

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CHAPTER

4

Hyperemesis Gravidarum

Hyperemesis is defined as persistent vomiting in the first trimester pregnancy not due to other causes with the inability to maintain adequate hydration, fluid and electrolyte balance and nutritional status (large ketonuria) and some discrete measure of severity which is 5% loss of pre-pregnancy weight or requirement for hospitalization and intravenous hydration.

Nausea and vomiting present in the first trimester in about 80% and 50% of pregnant women, respectively. They may persist beyond 20 weeks in 13% of cases. Hyperemesis gravidarum occurs in 0.1–1% of pregnancies.

RISK FACTORS/ASSOCIATED FACTORS

- Family history
- Female gender of the fetus
- H/o migraine
- Multiple gestations
- Down syndrome
- Molar gestation
- Hyperthyroidism
- UTI
- Viral hepatitis
- Other liver disorders
- Bowel obstruction
- Raised intracranial pressure
- Gastroenteritis

SYMPTOMS

- Onset is always in the first trimester (usually weeks 6–8)
- Nausea and vomiting
- Ptyalism (excessive salivation)
- Increased olfactory and gustatory aversion
- Changes in taste sensitivity
- Weight loss (up to 20%) +/- muscle wasting.

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FEATURES OF DEHYDRATION AND KETOACIDOSIS

- Dry, coated tongue
- Sunken eyes
- Acetone smell in breath
- Tachycardia
- Hypotension
- Rise in temperature
- Decreased urine output

It is a diagnosis of exclusion. Vomiting refractory to treatment and new symptoms appearing after the 12th week should not be attributed to hyperemesis gravidarum. Urinary tract infection, peptic ulceration, pancreatitis, hyperthyroidism, hypercalcemia or Addison's disease (rare) should be excluded.

INVESTIGATIONS

- Hb, PCV—raised hematocrit.
- Urine—ketone bodies to be sent every 8 hrly and increased specific gravity of urine.
- LFT—If patient appears icteric. It is abnormal in ≤50% of cases. Moderate rise in transaminases (>50 mmol/l but <200 mmol/l) and in bilirubin (but not frank jaundice).
- Serum electrolytes–If patient appears dehydrated, signs of ketoacidosis are present.
- Serum amylase and lipase–If intractable vomiting with severe pain in abdomen
- Free T_3 T_4, TSH–If intractable vomiting. Shows a picture of biochemical hyperthyroidism in 75% of cases, with a raised free thyroxine and/or suppressed thyroid-stimulating hormone. These patients are clinically euthyroid without thyroid antibodies. Abnormal TFTs do not require treatment and resolve as hyperemesis improves.
- Calcium is tested to exclude hypercalcemia.
- USG–To confirm pregnancy and rule out hydatidiform mole, multiple pregnancy.
- Arterial blood gases are rarely carried out and test for metabolic hypochloremic alkalosis.

TREATMENT

Nausea or vomiting interfering with daily routine activity

- Ginger root (250 mg q.d.s) reduces the incidence of nausea and vomiting.
- The results of acupuncture or accupressure are equivocal.
- Doxylamine 12.5 mg start with 1 HS, if not controlled, then 2 HS + oral vitamin B6 10–30 mg tid/qid oral.

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Outpatient Advice For Emesis Gravidarum

- Morning 30–45 min before waking up from bed, eat a toast or biscuits and free hand exercises
- Small frequent meals of whatever is appealing
- Avoid spicy meals
- Vitamin supplements

Hospitalization

Indications

- Vomiting not controlled with drugs
- Evidence of dehydration and ketonuria

MANAGEMENT

Investigations

- Urea and electrolytes, full blood count, liver function tests, thyroid function tests, calcium.
- Mid-stream urine.
- Ultrasound scan pelvis

Intravenous Fluids

1 L 0.9% normal saline with 20 mmol potassium chloride over 2 h
1 L 0.9% normal saline with 20 mmol potassium chloride over 4 h.

Followed by—
1 L 0.9% normal saline every 8 h with potassium replacement dependent on serum level.

Thiamine

Orally, if tolerated (thiamine hydrochloride 25–50 mg; t.d.s.); otherwise 100 mg in 100 ml 0.95 saline (IV) over 30–60 min weekly or pabrinex.

Much higher doses needed to treat Wernicke's encephalopathy.

Iron

Stop iron (PO) and provide psychiatric and emotional support.

Symptom Control

Anti-emetics are safe in the first trimester.

Possible regimens include:

- **Antihistamines** (cyclizine 50 mg PO/IM/IV; TDS) or promethazine (25 mg PO Nocte).
- **Phenothiazines** (prochlorperazine 5 mg PO TDS; 12.5 mg IM/IV TDS) or chlorpromazine (10–25 mg PO; 25 mg IM TDS)

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- **Dopamine antagonists** (metoclopramide 10 mg PO/IM/IV TDS) or domperidone (10 mg PO QDS; 30–60 mg PR TDS)
- **5HT3-selective serotonin antagonist** (ondansetron 8 mg PO BD)

H_2-receptor blockers may be used for dyspeptic symptoms.

A Cochrane review of seven underpowered randomized controlled trials comparing antiemetics versus placebo could not demonstrate any significant effect of antiemetic agents.

Refractory Cases

Prednisolone (P.O.; 40–50 mg daily in divided doses) or **hydrocortisone** (IV; 100 mg b.d.) may provide rapid resolution of symptoms. Following response to treatment, tapering of the dose should be gradually instigated until the gestation of anticipated resolution.

Thromboprophylaxis

Anti-embolic stockings
Low molecular weight heparin, e.g: Enoxaparin 40 mg OD (<90 kg) or 60 mg OD (>90 kg). Life-threatening cases –

- Patient is kept nil per oral.
- Do not use Dextrose saline due to the risk of Wernicke's encephalopathy, also low in sodium (30 mmol/l Na).
- Do not use double strength saline even in cases of severe hyponatremia as this will result in too rapid a correction of serum sodium with risk of pontine myelinolysis.
- Ketone bodies to be repeated 8 hrly.
- Strict input/output charting
- If vomiting not controlled with Inj metaclopramide, switch over to Inj ondansetron, if still not controlled, Inj promethazine, not controlled Inj methylprednisolone.
- If 24 hrs of no vomiting, ketone bodies negative, start dry toast and biscuits, if tolerated soft diet to be started.
- If patient appears dehydrated, send serum electrolytes.
- If potassium 3–3.5 mEq/ml, RL to be started and syp Potchlor 15 ml tid.
- If 2.5 mEq/ml—3.0 mEq/ml-IV supplementation 40 mEq of KCl in 500 ml NS.
- If <2.5 mEq/ml—80 mEq of KCL in 500 ml NS.
- **Life-threatening cases** may require total parenteral nutrition, enteral feeding or, as last resort, termination of the pregnancy.

DISCHARGE CRITERIA

- If the woman has tolerated at least two meals without vomiting
- Follow-up as outpatient within two days.
- Consider eliminating precipitating factors and offer reassurance of self-limiting condition and no specific fetal risk factors.

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COMPLICATIONS

1. **Wernicke's Encephalopathy**
   - Delay in or inappropriate treatment may result in serious morbidity and mortality. Deficiency of vitamin B1 (thiamine) and Wernicke's encephalopathy.
   - Characterized by diplopia, abnormal ocular movements, ataxia and confusion.
   - Wernicke's encephalopathy is potentially precipitated by intravenous fluids containing dextrose and is more common in women with hyperemesis gravidarum and abnormal liver function tests.
   - Wernicke's encephalopathy may be confirmed by low red cell transketolase (thiamine-dependent enzyme). MRI may reveal symmetrical lesions around the aqueduct and fourth ventricle, which resolve after treatment with thiamine.
   - If it progresses to retrograde amnesia, impaired ability to learn and confabulation (Korsakoff psychosis); the recovery rate is only about 50%.
2. **Other vitamin deficiencies**—Deficiency of vitamin B12 and B6 may cause anemia and peripheral neuropathy.
3. **Hyponatremia**
   - Plasma sodium <120 mmol/l causes lethargy, seizures and respiratory arrest.
   - Severe hyponatremia (and particularly its rapid reversal) may precipitate central pontine myelinolysis. This is associated with symmetrical destruction of myelin at the center of the basal pons and causes pyramidal tract signs, spastic quadraparesis, pseudobulbar palsy and impaired consciousness.
4. **Thrombosis**–Dehydration and bed rest are risk factors for thromboembolism.
5. **Other**–Prolonged vomiting can cause Mallory-Weiss esophageal tears and hematemesis. Infection and pneumothorax complicate total parenteral nutrition.

Fetal Complications

- No increased risk of congenital malformations.
- Severe HG (abnormal biochemistry and/or Wernicke's) can result in intrauterine growth restriction (IUGR) or even intrauterine death (IUD), but overall there are lower risks of miscarriage, stillbirth and pre-term delivery.
- Wernicke's encephalopathy is associated with a 40% incidence of fetal death.

Termination of pregnancy if complications develop as—

- Emaciation
- Apathetic, drowsy, confused and euphoric
- Squint, diplopia, nystagmus, retinal hemorrhages
- Peripheral neuritis
- Wernickes encephalopathy
- Coma

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Obstetrics Protocols

Obstetrics Protocols is edited by a team of clinicians dealing in obstetrics and gynecology at PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India. The book maintains the leading-edge clinical insights to keep pace with the most recent developments in this dynamic field.

The book has been thoroughly updated with the most cutting-edge information and an easy-to-understand text makes it an ideal companion to anyone planning to learn, practice or teach obstetrics.

The book is specifically designed as a practical quick-reference guide. It examines the full range of challenges in normal labor, evidence-based discussions of medical disorders, surgical illnesses and infectious diseases.

It provides clear and practical advice to the practicing obstetricians on the problems, which they are likely to encounter; and is an essential reading for trainees in obstetrics—with the increasing complexity in the field, they can be able to offer their patients the best possible treatment.



L Krishna is currently a Professor and the Medical Superintendent in PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India. He has been a well-known teacher for the last 36 years. He is actively involved in enhancing and improving the knowledge of both undergraduate and postgraduate students. In his opinion, a good teacher always remains a student. He is an empathetic clinician and good vaginal surgeon. His area of interest is high-risk pregnancy. He is a recipient of a number of awards, including prestigious BC Roy award. He has been awarded the 'Distinguished Alumni' award from Jawaharlal Nehru Medical College for being the First Alumnus to become the principal of a medical college (Kempegowda Institute of Medical Sciences, Bengaluru, Karnataka, India). He has been awarded FICOG for his credible contribution to the field of obstetrics and gynecology. He is an Ex-President of Bangalore Society of Obstetrics and Gynecology; and also an Ex-Vice Chairperson of Federation of Obstetric and Gynecological Societies of India conference held at Bengaluru, and of Asia and Oceania Federation of Obstetrics and Gynecology. He conceptualized the postgraduate CME program. He has organized many workshops and conferences. He has many publications to his credit.

He strongly believes in practicing evidence-based medicine and that has been the reason for bringing out this book.

Shelving
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