

Nausea and vomiting of pregnancy

Nausea and vomiting are common symptoms in early pregnancy, affecting over half of pregnant (80% women). This is an unpleasant physiological condition of pregnancy that may presents with varying degree of severity and for different length of time throughout pregnancy.

The sever form called hyper emesis gravidarum which occurs in minority (0.3%-2%) and it's the cause for much morbidity and repeated hospital admission and can be dangerous if inappropriately treated.

Etiology:

Different theories proposed different causes for nausea and vomiting of pregnancy, yet exact cause of this condition are still unclear. The following are possible causes:

- 1- **Hormones:** there is a clear relationship with products of placenta such as human chorionic gonadorophin and estradiol. This is explained by the fact that occurrence of NVP does not require the presence of the fetus as hyperemesis gravidarum occurs commonly with advanced molar pregnancy.
 - a- hCG: there is a strong temporal association between hCG concentration and the time course of NVP, this is in one hand and on the other hand the hCG causes elevation in the level of vasopressin, as vasopressin may cause nausea and gastric irritation.
 - b- Estardiol: this is explained by the fact that nausea and vomiting in women taking the combined oral contraceptive pill increase in direct correlation with the estradiol level. In addition a history of nausea and vomiting while taking estrogen is a risk factor for development of NVP.

- 2- Genetic: the evidence in support of a genetic predisposition to NVP include the frequent occurrence of NVP in monozygotic twins; the fact that the sibling of a mother affected with NVP are more likely to be affected than sibling of unaffected mother; and the variation of frequency of NVP in different ethnic groups.
- 3- Psychological causes: one of the most enduring theories is that the NVP and in particular hyperemesis gravidarum is more likely to occurs in women with certain personality type.
- 4- Embryo protection theory: the fact that women with NVP are less likely to have spontaneous abortions is taken as evidence that vomiting and food aversions are protective for the fetus.
- 5- Cytokines theory: recently several groups have investigated the role of cytokines in hyperemesis gravidarum. This is supported by the fact that the TNF-alpha is increased in NVP (TNF-alpha is involved in regulation of hCG). Also there is change in the level of IL-4 and TH cell.

Natural history and clinical presentation:

Although NVP may begin as early as time of implantation, but the mean gestational age at onset is frequently at 6 weeks from last menstrual period. Virtually all women who develop NVP will have some symptoms by 9 weeks of gestation. Of pregnant women 7% have symptoms before the time of the first missed period and 90% have no symptoms by 16 weeks. For subset of women with heperemesis gravidarum, there is a tendency for early onset of symptoms and much greater duration overall.

About one third of women suffer from symptom early at morning, while majority experience the symptoms throughout the days.

In addition to nausea and vomiting associated complaints include excess salivation (plyalism), an increased olfactory and gustatory aversion and change in taste sensitivity.

Diagnosis and differential diagnosis:

The diagnosis of NVP is depends on clinical judgment, based on its typical presentation and after exclusion of other causes that may explain the symptoms.

The differential diagnosis of the patient with suspected NVP includes the following conditions:

A- Pregnancy related conditions:

- 1- Multiple pregnancies.
- 2- Molar pregnancy.
- 3- Pregnancy induced hypertension and pre-eclampsia.
- 4- Acute fatty liver of pregnancy.
- 5- Red degeneration of fibroid.
- 6- Ovarian cyst accident like rupture.
- 7- Placental disorder like abruption.

B- Non-pregnancy related causes:

- 1- Gastrointestinal causes like gastroenteritis, appendicitis, pancreatitis, intestinal obstruction and hepatitis.
- 2- Genitor-urinary causes like pyelonephritis, renal stone and uremia.
- 3- Metabolic disorder like diabetic ketoacidosis and porphyria.
- 4- Neurological disorder like migraine headache and tumors of central nervous system.
- 5- Miscellaneous causes like drug toxicity.

Proper history and physical examination may help to distinguish the above from the NVP. History of pre-existing conditions associated with nausea and vomiting (e.g. diabetes, migraine, or porphyria) will further help to reach the diagnosis. Associated symptoms may points toward other causes for examples presence of jaundice from start may points toward liver diseases.

Presentation varies from mild symptoms of increased sense of smell and food aversion to extreme fatigue with fainting or dizziness, decreased urination.

On examination there may be dehydration, dry furry tongue, loss of skin elasticity with pale waxy dry skin, and low blood pressure.

Complications:

Maternal risks:

- 1- Dehydration and disturbance of electrolytes like hypokalemia.
- 2- Malnutrition and protein deficiency.
- 3- Mallory-wiess syndrome which presents with hematemesis this is due to repeated vigorous vomiting.
- 4- Liver dysfunction.
- 5- Esophageal rupture.
- 6- Acute tubular necrosis.
- 7- Splenic avulsion.
- 8- Central nervous system complication like Wernicke's encephalopathy, pontine myelolysis, and peripheral neuropathy.
- 9- Psychological complication: the women with hyperemesis gravidarum felt to be isolated because of subjected nature of problem and because it's not taken seriously by the care provider she might think to terminate pregnancy and never become pregnant.

Wernick's encephalopathy:

One of the most serious complications of HG, this is due to a deficiency of thiamine (vitamin B1). This condition is precipitated by infusion of carbohydrate prior to the thiamine replacement as the small amount of

thiamine remaining may be consumed in the acute metabolism of a carbohydrate load.

Features include: confusion, apathy, gait ataxia, blindness, permanent neurological dysfunction and death.

Fetal risks:

- 1- In short term severe hyperemesis gravidarum that associated with 5% weight loss may lead to small for gestational age and higher incidence of fetal death.
- 2- The long term effects of hyperemesis gravidarum for the offspring are almost entirely unstudied. Although some conflicting data show an increased incidence of adulthood cardiac and pulmonary disease and schizophrenia.

Laboratory abnormality:

Women with hyperemesis gravidarum may present with a variety of biochemical abnormalities:

- 1- There may be evidence of dehydration like increased urinary ketones. Increased urine specific gravity or increased BUN.
- 2- Abnormal thyroid function test like increase in T3 and T4 and decrease TSH this hyperthyroidism is transient and does not require specific treatment. Virtually all patients with syndromes will have normal TSH by 20 weeks.
- 3- Abnormal parathyroid hormone level.
- 4- Abnormal electrolyte levels like decrease in sodium, potassium and chloride.
- 5- Abnormal liver function test like elevated SGPT, SGOT, lipase and amylase these are also transient and not indicative of pancreatic or liver disease per se.
- 6- Hematological abnormality like increase hematocrit indicating concentrated blood volume.

Managements:

Treatment usually started when the condition affects the quality of life of the pregnant lady and the aim of this treatment is to avoid worsening of the symptoms and progression to severe hyperemesis gravidarum

Dietary modification:

There is little data on the role of dietary modification to help women with hyperemesis gravidarum, the most common recommendation is to eat small portions of whatever seems palatable whenever symptoms allow. Patient should be advised to take more protein because it's found that there is less nausea with protein than with carbohydrate and fat and that liquid meal are better tolerated than solid.

Eating dry diet like potato chips or crackers and drinking small amount of cold carbonated liquid may be helpful like soda.

Patient should take plenty of rest and she should go to bed when needed and to change position and not to rise up from bed rapidly.

Advice to re-design the home environment and change in the location or separation from the home or family member may lead to some improvement in symptoms. Women should be advised about oral and dental hygiene.

Avoid:

- Avoid sensory stimuli that provoke symptoms.
- Avoid offensive food and smell.
- Avoid routine iron supplementation.
- Avoid brushing teeth immediately after meal.

Supportive measures:

- Relaxation, medical hypnosis, and behavioral therapy have been reported to improve the symptoms.
- Some diet like green tea, ginger and herbal supplementation may be helpful.
- Acupressure: pressing inner aspect of the wrist could be tried.

- Psychological and social support and reassurance.

Pharmacological therapy:

- 1- For women who continue to have problematic NVP vitamin B6 10-30 mg is recommended.
- 2- If symptoms persist antihistamine can be added like cyclizine, mizolastine.
- 3- Dopamine antagonist like metoclopramide and chlorpromazine.
- 4- Other anti-emetic like 5-HT receptor antagonist and antacid may be used.

Sever NVP (hyperemesis gravidarum)

In which the patient does not respond adequately to therapy, the following is recommended:

- 1- Hospitalization.
- 2- Rest and reassurance about fetal well being by ultrasound examination.
- 3- Avoid oral intake and give intravenous fluid and electrolyte support until vomiting is stopped.
- 4- Intravenous antiemetic like metoclopramide.
- 5- Vitamin supplementation specially vitamin B1 (thiamine).
- 6- Recently short course of corticosteroid like oral prednisolone seems to be useful. Study shows that this can be given for short duration of about 6 weeks and it's safe in first trimester.
- 7- Parenteral or enteral nutrition is indicated if the patient is unable to maintain her weight by oral intake.
- 8- Rarely therapeutic termination is indicated in very severe resistance cases or in complication like encephalopathy.