**INTRODUCTION:**

 The wait to bring a new life surfacing out of our body is that all of us must aspire to experience at least once in our life time. This period is called pregnancy. A women body has a great deal to do during pregnancy. Sometimes the changes takes place will cause irritation and discomfort and on occasions they may seem quite alarming. One such common complaint that pregnant women are plagued with is morning sickness, which is particularly observed during the first trimester of pregnancy. The cause is unknown. Most researchers believe it’s a combination of many physical changes taking place in the body such as the higher levels of hormones during early pregnancy.

 Pernicious vomiting, medically known as **Hyperemesis gravidarum,** is excessive vomiting in early pregnancy. It is a severe form of morning sickness, with unrelenting, excessive pregnancy-related nausea and/or vomiting that prevents adequate intake of food and fluids.

**MEANING:**

 Hyperemesis gravidarum is the Latin word for excessive vomiting in pregnancy. Hyper means **over**, emesis means **vomiting** and gravidarum means **pregnant state.**

**DEFINITION:**

1. Pernicious vomiting or hyperemesis gravidarum is a severe type of vomiting of pregnancy which has got deleterious effect on the health of mother and/or incapacitates her in day-to-day activities.

**–D. C. Dutta**

1. Hyperemesis gravidarum is defined as a severe form of nausea and vomiting in pregnancy.

**–Hyperemesis Education and Research Foundation (HER)**

1. Excessive nausea and vomiting that start between 4 and 16 weeks gestation and requiring intervention is known as Hyperemesis gravidarum.

–**Ammula Radha Ramana Sree**

1. Hyperemesis gravidarum is defined as excessive nausea and vomiting in pregnancy starting before the 22nd week of gestation, which might lead to nutritional deficiencies and weight loss.

–**B M Journals**

**INCIDENCE:**

 There has been marked fall in the incidence during the last 30 years. It is now a rarity in hospital practice (less than 1 in 1000 pregnancies).

**ETIOLOGY:**

 The etiology is obscure but the following are the known high-risk factors:

1. It is mostly related to the **first trimester.**
2. It is more common in **first pregnancy**, with a tendency to recur regain in subsequent pregnancies (15%).
3. Younger age.
4. Low body mass.
5. History of motion sickness or migraine.
6. It has got a familial history– mother and sisters also suffer from the same manifestation.
7. It is more prevalent in **hydatidiform mole** and **multiple pregnancies.**
8. It is more common in unplanned pregnancies but much less amongst illegitimate ones.
9. Increased level of hCG in blood.

**THEORIES BEHIND PERNICIOUS VOMITING:**

1. **Hormonal:**
2. High hCG:

In non-pregnant state normal hCG level is <5mIU/ml and in pregnancy it is >25mIU/ml. Level of this pregnancy hormone rise quickly during the early stages of pregnancy and may trigger the part of the brain that controls nausea and vomiting.

1. High estrogen:

This hormone also affects the part of the brain that controls nausea and vomiting.

1. High progesterone:

High levels of progesterone relax the uterine muscles to prevent early child birth. However, it may also relax the stomach and intestines, resulting in excess stomach acids and gastroesophageal reflux disease or acid reflux which can lead to hyperemesis gravidarum.

1. Other hormones involved:
* Thyroxine
* Prolactin
* Leptin
* Adrenocortical hormones
1. **Psychogenic:**

It probably aggravatesthe nausea once it begins. But neurogenic element sometimes plays a role, as evidenced by its subsidence after shifting the patient from the home surroundings.

1. **Dietetic deficiency:**

Low carbohydrate reserve, deficiency of vitamin B6 and B1 and proteins.

1. **Liver theory:**

Liver cannot adapt to the high level of hormones in pregnancy.

1. **Allergic or immunological basis.**
2. **Decreased gastric motility.**
3. **H. Pylori infection.**

**PATHOLOGY:**

1. **Liver:** Liver enzymes are elevated. There is centrilobular fatty infiltration without necrosis.
2. **Kidneys:** Occasionally shows fatty degeneration.
3. **Brain:** Small hemorrhagic spots in hypothalamus (may be due to vitamin B1 deficiency).
4. **Blood:** Mild leucocytosis and haemo-concentration due to dehydration.
5. **Metabolic:**

Due to less intake of food

Depletion of oxygen

Increases metabolism of fat

Excreted through breath/urine

Excessive breakdown of proteins in the body

Excessive accumulation of Nitrogen

1. **Biochemical changes:**
2. Dehydration
3. Decreased Na+, K+, Cl-
4. Raised blood urea, creatinine, uric acid, ketone bodies
5. Hypoglycaemia
6. Hypovitaminosis
7. Hyperbilirubinemia (rare)

**SIGN AND SYMPTOMS:**

**Symptoms:**

1. The condition usually starts as emesis then is proceed to hyperemesis.
2. Continuous vomiting day and night.
3. Thirst and constipation.
4. In severe cases the vomitus is bile or blood stained.

**Signs:**

1. Loss of 5% or more of pre-pregnancy body weight.
2. Dehydration results in:
3. Sunken eyes and dry tongue
4. The pulse is quick and rapid
5. The blood pressure is low
6. The temperature is slightly raised
7. Decreased vitamin K causes coagulation disorders.
8. Elevated liver enzyme, jaundice.

**COMPLICATIONS:**

**Maternal:**

1. Weight loss
2. Dehydration
3. Electrolyte imbalance
4. Short term hepatic dysfunction
5. Risk for preterm labor
6. Maternal death
7. Depression is common secondary complication of pernicious vomiting
8. Retinal hemorrhage
9. Convulsions
10. Coma
11. Stress ulcer in the stomach
12. Esophageal tears (Mallory-Weiss syndrome)
13. Jaundice due to liver damage
14. Renal failure
15. Vitamin K deficiency
16. Beriberi

**Fetal:**

1. IUGR
2. Fetal anomalies
3. Fetal death may occur
4. Low birth weight

**INVESTIGATIONS:**

1. Complete blood count:
* Hemoconcentration leads to rise in Hb, RBC count and hematocrit.
* Slight increase in WBC count.
1. Electrolytes: Na+, K+, Cl- decreased due to loss in vomitus.
2. Random blood glucose: Hypoglycemia
3. Urinalysis:
* Quantity (to see for oliguria)
* Dark color (due to concentration)
* High specific gravity with acid reaction
* Presence of acetone, occasional presence of protein and bile pigments
* Diminished or even absence of chloride
1. Liver function tests: Albumin, Prothrombin time, ALT, AST, ALP, Bilirubin levels.
2. Renal function test: Urea and Creatinine levels
3. Ophthalmoscopic examination:
* Retinal hemorrhage
* Detachment of retina
1. ECG: Abnormal serum potassium level can cause arrhythmias
2. USG:
* Confirms pregnancy
* Excludes molar or twin pregnancy
* Excludes other gynaecological, surgical and medical causes for the hyperemesis

**DIFFERENTIAL DIAGNOSIS:**

1. UTI
2. Uremia
3. Thyrotoxicosis
4. Diabetic ketoacidosis
5. Addison disease
6. Pancreatitis
7. Bowel obstruction
8. Hepatitis
9. Drug induced vomiting
10. CNS disease

**PREVENTIVE MEASURES:**

There is no known prevention of pernicious vomiting. The following habits can be used as relieving measures:

1. **Rest:** Tiredness can make nausea worse which can lead to pernicious vomiting. Getting plenty of rest is vital to reduce the chance of getting pernicious vomiting.
2. **Liquids:** Fluid intake should be regular and in small amounts, rather than less often and in large quantities. This may help reduce the chance of getting pernicious vomiting. Sucking ice cubes made from water or fruit juice or lollipops can help.
3. **Food:** Consuming more meals per day, with smaller portions may help especially high carbohydrate meals. Dry foods such as crackers or toast are usually better tolerated than sweet or spicy foods. Cold meals are often better tolerated than hot ones because they have less odor.
4. **Empty stomach:** Pregnant women with morning sickness should try to avoid having an empty stomach.
5. **Early morning:** Eating plain biscuits within 20minutes after getting up helps.
6. **Triggers:** Avoiding personal triggering factors helps reduce the chance of getting pernicious vomiting.

**MANAGEMENT:**

 The principles in the management are:

1. Maintenance of hydration
2. To control vomiting
3. To correct the fluids and electrolytes imbalance
4. To correct metabolic disturbances (acidosis or alkalosis)
5. To prevent the serious complications of severe vomiting
6. Care of pregnancy

**Hospitalization:**

Whenever a patient is diagnosed as a case of pernicious vomiting, she should be admitted in the hospital, with the same diet and drugs used at home.

When general measures like dietary advice, rest and anti-emetics fail to control the vomiting, when there is clinical evidence of dehydration like sunken eyes, tachycardia, dry furred tongue, loss of skin turgor and oliguria or when there is presence of ketone bodies in the urine then–

* fluids should be corrected by IV line
* patient should be sent for relevant investigations
* intake output chart should be maintained
* urine output (catheterize the patient) should be maintained
* vitals should be monitored
* urine should be tested periodically for ketone bodies

**Fluids:**

1. Oral feeding should be withheld for at least 24hrs. after the cessation of vomiting.
2. During this period, fluid should be given through IV drip method.
3. The amount of fluid to be infused in 24hrs. should be calculated as: total amount of fluid approx. 3 litres, of which half is 5% dextrose and half is Ringer’s solution.
4. Extra amount of 5% dextrose equal to the amount of vomitus and urine in 24hrs. should be added.

These measures help to correct dehydration, electrolyte imbalance and keto-acidosis.

**Drugs:**

1. Antiemetic drugs such as:
* **Phenergan** 25mg or **Stemetil** 5mg may be administered twice or thrice daily intramuscularly.
* **Doxylamine** is an effective antihistamine for nausea and vomiting of pregnancy.
* Vitamin B6 (**Pyridoxine** 25mg) and **Doxylamine** (25mg) are also safe and effective combination.
* **Metaclopramide** stimulates gastric and intestinal motility without stimulating the secretions. It is found useful.
1. **Hydrocortisone** 100mg IV in the drip is given in a case with hypotension or in intractable vomiting. Oral method **Prednisolone** is also used in severe cases.
2. **Nutritional supplementation** with vitamin B1 (100mg daily), vitamin B6,vitamin C and vitamin B12 are given. Rarely, patients may need parenteral nutritional therapy.

**Nursing care:**

1. Sympathetic but firm handling of patient.
2. Daily monitoring of the patient.
3. Daily monitoring of **hyperemesis progress chart.**
4. Look for signs of improvement in the patient:
* Subsidence of vomiting
* Feeling hungry
* Better look
* Disappearance of acetone from breath and urine
* Normal pulse and blood pressure
* Normal urine output

**Diet:**

Before IV fluids are omitted, food is given orally. At first, dry carbohydrate foods like biscuit bread and toast are given. A small and frequent dry meal without fat is recommended. Ginger is found helpful. Gradually full diet is restored.

**RESEARCH STUDY:**

**A Comparative Study on the Efficacy of Prednisolone and Promethazine in the Treatment of Hyperemesis Gravidarum. The study was conducted by F Mardanian and F Kargar in Beheshti Hospital, Isfahan, Iran in 2012.**

**Abstract:**

**Background:** Severe nausea and vomiting during pregnancy is one of the most frequent and difficult to treat obstetric problems. Different drugs and techniques have been suggested for its treatment with variable success rates. This study was designed to compare the efficacy of prednisolone with promethazine for treatment of hyperemesis gravidarum.

**Methods:** Fifty six pregnant women (7-20weeks of gestational age) with hyperemesis gravidarum were randomly divided into two groups to receive either prednisolone or promethazine orally. Severity of nausea and vomiting, severity of malaise, body weight and serum electrolytes were measured and compared before and after treatment.

**Results:** The severity of nausea and vomiting decreased significantly in both groups, but the decrease was significantly higher in the prednisolone group. Conclusion: The result of this study shows that oral prednisolone is a better choice for the treatment of hyperemesis gravidarum.

**CONCLUSION:**

 Pernicious vomiting is a common problem for an obstetrician. Though nausea and vomiting are quite common in pregnancy, pernicious vomiting is found in less than 1 in 1000 pregnancies. Most patients require hospitalization and antiemetic and even short term steroid therapy. Serious complications are rare but medical therapy is mandatory. Though it is rare but patient diagnosed with pernicious vomiting should be treated carefully as it can lead to maternal death also.

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