1. Hydatidiform Mole

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Introduction:

The etymology is derived from hydatisia (Greek "a drop of water"), referring to the watery contents of the cysts, and mole (from Latin mola = millstone/false conception).[1,2] The term, however, comes from the similar appearance of the cyst to a hydatid cyst in an Echinococcosis. [1, 3]

Molar pregnancy is composed of two separate entities, partial (PHM) and complete (CHM), which are distinct in terms of epidemiology, genetics, histopathology, clinical presentation and risk of persistent gestational trophoblastic tumor (GTT). [4]
A hydatidiform mole, or molar pregnancy, results from overproduction of the tissue that is supposed to develop into the placenta. The placenta normally feeds a fetus during pregnancy. In this condition, the tissues develop into an abnormal growth, called a mass. [5]

A partial molar pregnancy means there is an abnormal placenta and some fetal development.

In a complete molar pregnancy, there is an abnormal placenta but no fetus. Both forms are due to problems during fertilization. [5]

Cytogenetically, all chromosomal material in CHM is derived from the male. Hence, no fetal parts are identified. In PHM, dispermy results in a triploid conceptus, in which an abnormal fetus is present and ultimately dies. [4]

**INCIDENCE:**

The estimated number is 1 of every 1,000 to 2,000 pregnancies. [6]

**Risk Factor:**

The exact cause of fertilization problems are unknown. However, potential risk factors may include defects in the egg, abnormalities within the uterus, or nutritional deficiencies. Women under 20 or over 40 years of age have a higher risk. Other risk factors include diets low in protein, animal fat, folic acid, and carotene. [1, 5, 7]
Clinical Findings:

- Abnormal growth of the womb (uterus)
  - Excessive growth in about half of cases
  - Smaller-than-expected growth in about a third of cases

The endometrial cavity expands because of both retained blood and chorionic tissue. Excessive uterine size is usually associated with markedly elevated levels of human chorionic gonadotropin (hCG) from trophoblastic overgrowth.

- Vaginal bleeding in pregnancy during the first 3 months of pregnancy.

The most common presenting symptom in patients with CHM is vaginal bleeding (97%). Approximately half the patients with CHM show signs of exuberant trophoblastic growth, with uterine enlargement and high levels of human chorionic gonadotropin (hCG). In contrast, patients with PHM usually present as though they have an incomplete or missed abortion, with bleeding, small uterine and low HCG levels. [4]

Because bleeding may be prolonged, considerable and occult, 54% of patients may be anemic at presentation (hemoglobin <10 g/100 ml). [5]
- **Nausea and vomiting** that may be severe enough to require a hospital stay.

Hyperemesis requiring antiemetic therapy developed in 26% and 20% of patients with molar pregnancy may be treated at hospital [5, 8, 9] and some patients may require hospitalization for correction of marked electrolyte disturbances.

Hyperemesis also appears to be associated with high hCG levels and excessive uterine size. Depue et al. have proposed that hyperemesis results from elevated serum estrogen levels. [5, 10]

- **Secondary hyperthyroidism** can often complicate gestational trophoblastic disease, a malignant uterine cancer. [11]

- Symptoms of hyperthyroidism:
  - Heat intolerance
  - Loose stools
  - Rapid heart rate
  - Restlessness, nervousness
  - Skin warmer and more moist than usual
  - Trembling hands
  - Unexplained weight loss

Clinically evident hyperthyroidism was detected in 7% of patients with complete mole. However, laboratory evidence for hyperthyroidism was more common. Galton et al. measured thyroid
function tests in 11 patients with molar pregnancy before and after evacuation. [12] Pre-evacuation, all patients had elevated values for thyroidal 131 I uptake and serum free thyroxine; the thyroid function tests rapidly returned to normal after evacuation even before the hCG level became undetectable. [11]

Hyperthyroidism occurs almost exclusively in patients with very high hCG levels. Some authors have suggested that hCG is the thyroid stimulator in patients with molar pregnancy. [13] Kenimer et al. reported that highly purified hCG appeared to have intrinsic thyroid-stimulating activity. [14]

Positive correlations have been reported in some studies between serum hCG levels and serum totalthyroxine (T4) or triiodothyronine (T3) concentrations. However, Nagataki et al. found no correlation between serum hCG and free T4 in 10 patients with molar pregnancy. [15] Similarly Amir et al. measured thyroid function tests in 47 patients with complete mole and observed no significant correlation between serum HCG levels and free T4 or T3 index values. [16]

The identity of the thyrotropic factor in molar pregnancy is therefore still controversial.

Patients with untreated or poorly controlled hyperthyroidism may develop thyroid storm at the time of anesthesia induction and evacuation. Thyroid storm is characterized by hyperthermia, delirium, coma, atrial fibrillation and cardiovascular collapse. While blood samples should be drawn for laboratory confirmation, the diagnosis
of thyroid storm must be made clinically so that treatment can be promptly instituted. The administration of β-adrenergic blocking agents prevents or rapidly reverses many of the cardiovascular and metabolic complications of thyroid storm. A pulmonary artery catheter may also be helpful to monitor cardiovascular status and guide fluid replacement. [11]

- Symptoms similar to pre-eclampsia that occur in the 1st trimester or early 2nd trimester. This is almost always a sign of a hydatidiform mole, because pre-eclampsia is extremely rare this early in a normal pregnancy. High blood pressure, swelling in feet, ankles, legs can be detected.

In one study, Pre-eclampsia including hypertension, edema and/or proteinuria was observed in 27% of our patients with complete mole. Curry et al. reported pre-eclampsia in 12% of patients with molar disease in the Duke series. [11, 17] Eclamptic convulsions occur rarely.

- Pulmonary compromise generally only develops in patients with high hCG levels, excessive uterine size and very large theca lutein cysts. Twiggs et al. reported that 12 (27%) of 44 patients with a molar pregnancy of at least 16 weeks size developed pulmonary complications. [18]

Patients may present with tachycardia, tachypnea and anxiety or confusion in the recovery room after molar evacuation. Arterial blood gases may show evidence of hypoxia and respiratory alkalosis.
Auscultation of the chest usually reveals diffuse rales. Chest roentgenogram may show bilateral pulmonary infiltrates.

The signs and symptoms of respiratory distress usually resolve within 72 h with appropriate cardiovascular and respiratory support.

However, it is important to recognize that some patients may require temporary mechanical ventilation to provide adequate oxygenation.

While to the pulmonary vasculature, factors may contribute to respiratory distress include: embolization of molar tissue, cardiovascular complications of toxemia, thyroid storm and massive fluid replacement.

Lung problems may occur after a D and C if the woman's uterus is bigger than 16 weeks gestational size.

- Theca lutein cysts result from hyper-stimulation of the ovaries by high circulating blood levels of hCG and are detected almost exclusively in patients with very high serum hCG values. [19, 20]

Infrequently these patients may develop other signs of ovarian hyperstimulation such as ascites or pleural effusions. When this occurs, fluid and electrolyte disturbances may require management.

Diagnosis:

History: The most common symptom of hydatidiform mole is vaginal bleeding. Sometimes tissue containing grapelike vesicles passes
through the vagina during the first 3 months of pregnancy. Women also may report abdominal or pelvic pressure or pain, excessive nausea and vomiting (hyperemesis gravidarum), fatigue, shortness of breath, coughing, or abdominal swelling that resembles an exaggerated pregnancy. Rarely, women report a rapid heartbeat or a feeling of tremulousness or warmth.

**Physical exam:** The most common sign of a hydatidiform mole on physical exam is a uterus that is unusually large (50% of cases), or too small (33% of cases) for gestational dates (Vorvick). There generally are no fetal heart tones or fetal movement. Toxemia of pregnancy (pre-eclampsia-like symptoms and signs) may develop during the first 24 weeks of pregnancy; blood pressure may be elevated.

**Tests:** Blood tests may be performed to measure complete blood count (CBC), clotting function, thyroid function, serum inhibin levels, liver and kidney function, and the level of human chorionic gonadotropin (hCG), which is normally produced early in pregnancy. An ultrasound scan of the pelvis may be performed to ensure that the growth is a molar pregnancy and not a fetus. If a molar pregnancy is diagnosed, x-rays, magnetic resonance imaging (MRI), or computed tomography (CT) of the chest, pelvis, brain, or abdomen may be done to see if the mole has spread outside the uterus. [6]

The diagnosis of CHM is usually confirmed by sonography when a vesicular pattern is noted. The ultrasound pattern in PHM is less
consistent and depends on careful measurement of the gestational sac. [4]

On ultrasound, the mole resembles a bunch of grapes ("cluster of grapes" or "honeycombed uterus" or "snow-storm" [21]). There is increased trophoblast proliferation and enlarging of the chorionic villi. [22, 23]

Treatment:

All molar pregnancies should be evacuated promptly following a definitive diagnosis. If the patient no longer wishes to preserve her fertility, a hysterectomy will reduce the risk of developing nonmetastatic GTT. Following evacuation, careful hCG monitoring is mandatory since it is the most reliable and sensitive method for the early detection of GTT. [4]

SOME CASE REPORTS ABOUT H.MOLE:

CASE 1


Anesthetic management of a patient with hyperthyroidism due to hydatidiform mole.

**Source:**

Department of Anesthesiology and Intensive Care Medicine, Yufu, Oita, Japan.

**Abstract:**

We report here the perioperative management of hyperthyroidism due to hydatidiform mole. A 53-year-old woman underwent emergency surgery due to suspicion of hydatidiform mole. Tachycardiac atrial fibrillation was detected by electrocardiography at the preoperative examination. No abnormalities were found in blood count, coagulation, biochemical tests, chest radiographs, or respiratory function. General anesthesia with nitrous oxide, oxygen, and sevoflurane, combined with fentanyl and 1% mepivacaine, was administered intermittently from an epidural catheter. Intraoperative events included hypotension and tachycardia, although in general, tachycardia was prevented with antiarrhythmic agents and transfusion with a plasma expander and crystalloid fluid. Hyperthyroidism was highly suspected from the patient's clinical course and was confirmed by high levels of preoperative serum free triiodothyronine (T3) and thyroxine (T4). The patient became euthyroid within a few days after mole evacuation and did not require an antiarrhythmic agent after her return to the inpatient ward.

**CASE 2**

Hyperthyroidism in molar pregnancy: rapid preoperative preparation by plasmapheresis and complete improvement after evacuation.

Azezli A, Bayraktaroglu T, Topuz S, Kalayoglu-Besisik S.

Source:

Division of Hematology and Division of Endocrinology, Department of Internal Medicine, Istanbul University, Capa, 34 390 Istanbul, Turkey.

Abstract:

Human chorionic gonadotropin bears structural homology to pituitary thyrotropin. The extremely elevated levels of human chorionic gonadotropin in patients with molar pregnancy or other trophoblastic diseases can lead to hyperthyroidism. We describe a patient with molar pregnancy who had secondary hyperthyroidism prepared rapidly by plasmapheresis for surgery. The clinical picture improved dramatically after the first plasmapheresis. Three subsequent plasmapheresis provided a 75.1% decrease in serum free T3 concentrations and 63.9% free T4 concentrations and recovery after evacuation. This is the first use of plasmapheresis in rapid preparation of a patient who had secondary hyperthyroidism due to molar pregnancy.

CASE 3

Severe hyperthyroidism requiring therapeutic plasmapheresis in a patient with hydatidiform mole.

Erbil Y, Tihan D, Azezli A, Salmaslioğlu A, Ozlük Y, Büyük?ren A, Ozarmağan S.

Source:

Department of General Surgery, Medical Faculty, Istanbul University, Istanbul, Turkey. yerbil2003@yahoo.com

Abstract:

A 38-year-old woman had a 4-week history of vaginal bleeding, heat intolerance and palpitations. Levels of beta-human chorionic gonadotropin and thyroid hormones were abnormally high. After ultrasound diagnosis of a molar pregnancy, evacuation of the mole was planned with preoperative treatment involving the use of antithyroid drugs and plasmapheresis. Plasmapheresis was used to prepare for surgery in our patient who needed more rapid hormonal control. In conclusion, early diagnosis of molar pregnancy results in decreased incidence of significant complications related to hyperthyroidism.

CASE 4

Central hemodynamic monitoring in a woman with acute respiratory insufficiency after evacuation of a complete molar pregnancy. A case report.

Rosen T, Sutin K, Carreno CA, Hibbett E, Funai EF.

Source:

Division of Maternal Fetal Medicine, Department of Obstetrics and Gynecology, and Department of Anesthesia, New York University Medical Center, New York, New York, USA. eff1@nyu.edu

Abstract

BACKGROUND:

The incidence of hydatiform moles in the United States is approximately 1 in 1,200 pregnancies. Acute respiratory insufficiency is a known complication of molar pregnancies, occurring in 8-11%. While there have been numerous case reports and retrospective studies describing respiratory complications following evacuation of hydatiform moles, only a limited number of reports provide data from central hemodynamic monitoring in patients with this complication.

CASE:

A 16-year-old, Hispanic woman, gravida 1, para 0, presented to the emergency room at 13 weeks' gestational age by menstrual dating with complaints of vaginal bleeding for two days. The serum quantitative beta-hCG level was 1 x 10(6) mIU/mL, and a bedside
sonogram was consistent with hydatiform mole. After informed consent was obtained, the patient underwent dilation and suction curettage. Approximately five minutes after evacuation of the uterus was begun, the patient developed pulmonary edema in the setting of oliguria. A pulmonary artery catheter was inserted to determine the etiology of the edema. The initial pulmonary capillary wedge pressure was > 18 mm Hg, consistent with hydrostatic pulmonary edema. Volume overload in association with a reduced colloid osmotic pressure to wedge pressure gradient was primarily responsible for the pulmonary edema in this patient.

CONCLUSION:

The majority of case reports of pulmonary complications after evacuation of a hydatidiform mole were either presumed or documented to be due to trophoblastic pulmonary embolism. Thyrotoxicosis, fluid overload with dilutional anemia, preeclampsia, sepsis, hypoalbuminemia or a combination of these factors may be more common than trophoblastic embolization.

Management of anesthesia in hydatiform moles:

There is potential presence of anemia, electrolyte disturbances, hyperthyroidism, preeclampsia, renal, liver and lung involvement.

Thus in patients who are known case of hydatiform moles, CBC, Coagulation tests, Thyroid Function Tests, Renal Function Tests,
Liver Function Tests, Serum Electrolyte measurement, CXR and ECG will be needed in preoperative period.

In intraoperative period, monitoring of respiratory and cardiovascular system will be needed by BP, ECG monitoring, pulse oximetry and capnography for early detection of any complications and for prompt and rapid management of them.

In postoperative period, it will be better to transport the patient to ICU for detection and management of any post operative complications such as the development of thyroid storm as soon as possible.
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