

## Perioperative Management of Patient with Hydatidiform Mole and Hyperthyroidism: A Case Report

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### ABSTRACT

One of the secondary causes of hyperthyroidism is a molar pregnancy. We reported the case of a 36-year-old woman who was suspected of pregnancy two months ago accompanied by vaginal bleeding. She was diagnosed with suspected thyrotoxicosis without signs of thyroid crisis associated with hydatidiform mole. The diagnosis is made based on history, physical examination, laboratory examination, and radiological examination. Physical examination revealed a resting tremor. Laboratory tests showed elevated levels of beta-human chorionic gonadotropin ( $\beta$ -hCG) and free thyroxine (FT4), as well as low thyroid-stimulating hormone (TSH). She was given anti-thyroid medication starting from the time she was diagnosed with hyperthyroidism and suction curettage to evacuate the mole. Perioperative management of hyperthyroidism focuses on controlling sympathetic activity. Thyroid function improved after the evacuation and no signs of malignancy on anatomical pathology examination. The prognosis is dubious ad Bonam.

**Keywords:** Hyperthyroidism, hydatidiform mole, perioperative management

### INTRODUCTION

A molar pregnancy is one of the secondary causes of hyperthyroidism. High levels of human chorionic gonadotropin (hCG) hormone stimulate the thyroid gland by suppressing the release of pituitary thyroid-stimulating hormone (TSH). Production of hCG trophoblastic is not inhibited by an increase in thyroid hormone levels (1). Gestational hyperthyroidism develops as a result of the stimulation of the  $\beta$ -hCG placenta (2).

In about 5% of cases of hydatidiform mole, clinical hyperthyroidism is present, and severe thyrotoxicosis can occur (3). The most important aspect of hyperthyroidism perioperative management is the prevention of thyroid crisis. Surgical resection or curettage to hydatidiform mole, given a rapid resolution of symptoms (4).

We report the perioperative management of a patient with hydatidiform mole and hyperthyroidism.

### CASE DESCRIPTION

A 36 years old woman, came to the Dr. Soetomo hospital, was consulted by a Gynecological Obstetrician with suspicion of hyperthyroidism planned to evacuate the hydatidiform mole with general anesthesia, with vaginal bleeding in form of reddish-brown spots and lower abdominal pain for 3 weeks ago. She also complained of resting tremor in both hands, feel body weakness, and fever for 2 months. No palpitation, no increased frequency of defecation, and no excessive sweating. No tumor in the neck and no exophthalmos. The patient thought she was second pregnant 2 months ago after check using a pregnancy test.

Based on physical examination, good general condition, good awareness, and normal vital signs. On examination of the head and neck, no conjunctival anemic, no sclera jaundice, no cyanosis, no

shortness of breath, no tumors, and no enlarged lymph nodes in the neck. On chest examination, no retraction and no use of breathing muscles. Normal heart sounds and no additional heart sounds. Vesicular breath sounds in both lungs, no ronchi, and no wheezing. On abdominal examination, normal bowel sounds, soft palpable, and no organomegaly. On the extremities examination, tremors occur when the position of both hands is straight ahead and no edema. From Wayne's thyrotoxicosis index score obtained 3 points (not support hyperthyroidism). From Burch and Wartofsky's criteria, mola pregnancy as the thyroid crisis precipitation factor has 10 points, and no other additions that meet the criteria, so the total score of Burch and Wartofsky's criteria is 10 points (no thyroid crisis).

The laboratory results found the results of clinical blood tests within normal limits, blood sugar 71 mg/dL, BUN 7.0 mg/dL, serum creatinine 0.57 mg/dL, SGOT 64 U/L, SGPT 99 U/L, albumin 4.15 g/dL, Na 134 mmol/L, K 3.9 mmol/L, Cl 104 mmol/L. Complete blood tests within normal limits, Hb 11.6 g/dL, HCT 39.4 %, WBC 5670 / $\mu$ L, PLT 281000 / $\mu$ L, neutrophil 64.2%, lymphocytes 24.6%, PPT (c) 11.1 (12.0) seconds, aPTT (c) 25.8 (23.2) seconds. From the additional examination, normal chest X-ray and normal electrocardiogram with regular sinus rhythm. Gynecologic ultrasound shows a "snowstorm" appearance without an embryo in the uterus.

Based on the history, physical examination, laboratory, and radiology, the diagnosis are suspected thyrotoxicosis without signs of thyroid storm associated with mole hydatidiform.

This patient was planned for a thyroid function test, thyroid ultrasound, and administration of antithyroid therapy. From thyroid ultrasound, normal shapes and sizes of the right and left thyroid. From the test of thyroid function, decrease of TSH (0.009  $\mu$ IU/mL), increase of FT4 (2.74 ng/dL), increase of total (triiodothyronine) T3 (2.16 ng/dL), and increase of total  $\beta$  hCG (814,121 mIU/mL). The patient received propylthiouracil 100 mg every 12 hours, propranolol 10 mg every 12 hours, and was planned to curettage with general anesthesia.

Suction curettage was performed on the patient by general anesthesia with the technique of total intravenous anesthesia (TIVA). No cardiopulmonary complaints and no symptoms of thyroid storm after surgery. After 48 hours without complaint, the patient has a good condition, good appetite, and allowed to go home.

Four weeks after curettage, the patient was no complaints, good vital signs, normal thyroid function test, and normal  $\beta$ -hCG levels. The conclusion of anatomical pathology examination is a hydatidiform mole with no signs of malignancy.

## DISCUSSION

Hydatidiform mole is a placenta with abnormal proliferative trophoblast, which is abnormal pregnancy with an absence of embryos or the presence of fetuses that tend to die in early pregnancy (5). The most common clinical manifestation is vaginal bleeding of unknown cause. Ultrasonography shows an image of a "snowstorm" without a fetus. The hydatidiform mole secretes a large amount of  $\beta$ -hCG in proportion to the tumor mass, which does not correlate with gestational age (6).

Production of  $\beta$ -hCG in molar pregnancy can cause hyperthyroidism (7). The clinical manifestations of hyperthyroidism can be from asymptomatic to thyroid crisis. The adrenergic symptoms (palpitations, heat intolerance, diaphoresis, tremor, eyelid retraction, lid lag, hyper defecation) are the most common manifestations of hyperthyroidism. Hypermetabolism induces weight loss even though appetite increases. Neuromuscular symptoms include proximal muscle weakness. Psychiatric symptoms range from anxiety to psychosis. Patients with untreated

hyperthyroidism can experience atrial fibrillation or heart failure (2). The diagnosis of hyperthyroidism can be made using serum TSH levels, FT4, and/or FT3, which results in a decrease in serum TSH, with FT4 values and FT3 above normal values (overt hyperthyroidism), or in the normal range (sub clinic hyperthyroidism). Other investigations needed are thyroid ultrasound, chest X-ray, and histopathological examination to diagnose a molar pregnancy (8). Thyroid ultrasonography is the main imaging modality used in patients with pregnancy, lactation, and thyrotoxicosis induced by amiodarone (2).

In this case, a 36-year-old woman had vaginal bleeding, lower abdominal pain, feel body weakness, resting tremor, and fever, which was subsequently diagnosed with hydatidiform mole after 2 months of pregnancy. From the thyroid function test obtained decrease of TSH, increase of FT4, and normal thyroid ultrasound. No history of thyroid disease before. So, based on history, physical examination, and additional examination, the patient was diagnosed with thyrotoxicosis due to hydatidiform mole.

**Tabel 1.** Diagnosis Criteria of Thyroid Storm

<b>Thermoregulatory Dysfunction: Temperature, F</b>	<b>Score</b>	<b>Cardiovascular Dysfunction: Heart Rate, bpm</b>	<b>Score</b>
99-99.9	5	90-109	5
100-100.9	10	110-119	10
101-101.9	15	120-129	15
102-102.9	20	130-139	20
103-103.9	25	≥140	25
≥104	30		
<b>Central Nervous System Dysfunction</b>	<b>Score</b>	<b>Cardiovascular Dysfunction : Heart Failure</b>	<b>Score</b>
Absent	0	Absent	0
Mild (agitation)	10	Mild (pedal edema)	5
Moderate (delirium, psychosis, extreme lethargy)	20	Moderate (bibasilar rales)	10
Severe (seizure, coma)	30	Severe (pulmonary edema)	15
<b>Gastrointestinal and Hepatic Dysfunction</b>	<b>Score</b>	<b>Cardiovascular Dysfunction : Atrial Fibrillation</b>	<b>Score</b>
Absent	0	Absent	0
Moderate (diarrhea, nausea/vomiting, abdominal pain)	10	Present	10
Severe (unexplained jaundice)	20		
<b>Precipitant History</b>	<b>Score</b>		
Absent	0		
Present	10		

Source :Chiha et al., 2015

Severe hyperpyrexia help distinguish thyroid storm from thyrotoxicosis. Cardiac manifestations of hyperthyroidism include palpitations, tachycardia, exercise intolerance, activity dyspnea, widening pulse pressure, cardiac ischemia, and atrial fibrillation. Increased cardiac output with tachyarrhythmias can manifest with symptoms of heart failure and can develop into collapse and cardiovascular shock. Central nervous system (CNS) manifestations almost always occur and

range from agitation, delirium and a decrease of consciousness. Gastrointestinal symptoms including nausea, profuse vomiting, and severe diarrhea. Liver dysfunction and secondary hepatomegaly can develop becoming jaundice is a poor prognostic indicator. In 1993, the article by Burch and Wartofsky established a numerical score for each different thyroid crisis sign and symptom and set diagnostic criteria based on the calculated total score (Table 1) and the precipitation factors for thyroid storm (Tabel 2) (9).

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**Tabel 2.** Precipitation Factors for Thyroid Storm

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Thyroid surgery / surgical storm
Non-thyroidal surgery
Trauma
Vigorous manipulation of the thyroid gland
Thyroiditis
Parturition
Burn
Myocardial infarct
Pulmonary embolism
Cerebrovascular incidents
Medication such as anesthetics, salicylates, pseudoephedrine, and amiodarone
Interferon treatment
Radioactive iodine treatment
Exposure to iodinated contrast
Withdrawal of antithyroid treatment
Infections
Diabetic ketoacidosis
Hypoglycemia
Acute ingestion of high doses of thyroid hormone
Metastatic thyroid cancer
Struma ovarii
Molar pregnancy
H1N1 infection
Emotional stress
Intense exercise

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Source :Chiha et al., 2015

In this case, the patient has precipitation factors such as molar pregnancy with no other additions that meet the criteria. So it was concluded that thyrotoxicosis is caused by molar pregnancy without signs of thyroid storm.

Based on management guidelines of the American Thyroid Association and American Association of Clinical Endocrinologists, in molar pregnancy, treatment of hyperthyroidism includes treatment of the primary tumor and treatment aimed at preventing thyroid symptoms with anti-thyroid drugs (ATD) (7). ATD is used to return to the euthyroid state before definitive treatment with surgery. Besides,  $\beta$  blocker is used to eliminate the symptoms of thyrotoxicosis. The goal of treatments are to reduce the synthesis and secretion of thyroid hormones, reduce thyroid hormones in the circulation, control the peripheral effects of thyroid hormones, improve systemic manifestations, and treat precipitation factors (10).

The main management of hydatidiform mole is evacuated by suction curettage carried out under ultrasound guidance to avoid uterine perforation. In the case of hydatidiform mole with life-threatening bleeding, hysterectomy is recommended (11). If after an evacuation, initial symptoms are still present (such as vaginal bleeding), then surgery should be considered (5).

In this case, the patient receives propylthiouracil 100 mg every 12 hours, propranolol 10 mg every 12 hours and planned to suction curettage with general anesthesia.

Trophoblastic hyperthyroidism can develop into a severe perioperative complication such as thyroid storm, pulmonary artery embolization, hypovolemia, disseminated intravascular coagulation, secondary pulmonary edema due to severe anemia, and secondary pulmonary distress due to various problems that happened, which requires intensive care support. Perioperative management and optimization condition of hyperthyroidism before the evacuation of the molar can reduce perioperative morbidity. Perioperative management of hyperthyroidism focuses on controlling sympathetic activity so that cardiovascular side effects do not occur. In the preoperative evaluation, patients must be treated in the intensive care unit before surgery. Examination of blood counts, electrolytes, blood gases, thyroid function, liver function, kidney function,  $\beta$ -hCG levels, and chest photos must be evaluated. Patients can be prepared for the surgery with oral propylthiouracil (50-100 mg four times a day), propranolol (20 mg three times a day), intravenous glucocorticoids, and sodium iodide. Some may not need any treatment if hyperthyroidism is asymptomatic. If there is no time to make the euthyroid patient pharmacologically, intravenous iodine administration and  $\beta$ -blockers for the emergency treatment of hyperthyroidism may be suggested (12).

Sedation, total intravenous anesthesia (TIVA), general anesthesia, and spinal anesthesia are various anesthetic techniques of molar pregnancy evacuation.  $\beta$ -blockers for weakening sympathetic activity, emergency drugs such as lidocaine for ventricular arrhythmias, steroids, and hypotensive agents such as sodium nitroprusside must be ready. Anesthesiologists must avoid giving drugs that stimulate the sympathetic nervous system and must achieve adequate depth of anesthesia before surgical. The success of anesthesia management for the molar evacuation using total intravenous anesthesia (TIVA) with an infusion of propofol, remifentanyl, and esmolol to control sympathetic hyperactivity during surgery, has been reported (12).

The post-operative period needs intensive care management. Mechanical ventilation support and treatment of thyroid storm must be prepared (12). A postoperative serious complication that often occurs in hyperthyroidism are cardiopulmonary and thyrotoxicosis manifestations that lead to thyroid storm. The use of a combination of anti-thyroid drugs,  $\beta$ -blockers, and corticosteroids returns thyroid hormone concentrations to the normal range within 24 to 48 hours. Paracetamol, combined with internal and external cooling, can help relieve hyperpyrexia. In the absence of cardiac insufficiency,  $\beta$ -blockers to correct symptoms must begin before surgery (13).

In this case, preoperative preparations have been made included evaluating preoperative patients with stable conditions, normal blood tests, normal electrocardiography, normal chest X-ray, and a patient receiving anti-thyroid drugs and beta-blockers for optimizing the state of hyperthyroidism. In the intraoperative, suction curettage was performed by general anesthesia with the TIVA technique. Post-surgery, the patient is treated in the intensive care unit to anticipate complications.

The prognosis of hyperthyroidism in hydatidiform mole depends on the condition after the evacuation of the mole tissue. Generally, the conditions will quickly improve and  $\beta$ -hCG levels will decrease slowly until not detected, after the evacuation. About 15-20% of hydatidiform mole can undergo malignant transformation into gestational trophoblastic tumors and the prognosis will be worse (8).

In this case, 4 weeks after the hydatidiform mole evacuation, normal the thyroid hormone and  $\beta$ -hCG levels, and no signs of malignancy from anatomical pathology examination, so the prognosis was dubious ad Bonam.

## CONCLUSION

We reported a case of hyperthyroidism in 36 years-old moles pregnant woman with a second pregnancy. Patients admitted to the hospital with vaginal bleeding accompanied by lower abdominal pain, resting tremor, feel body weakness, and fever. Laboratory tests show an increase of beta hCG and FT4 and a decrease in TSH. Patients are given anti-thyroid treatment and molar evacuation with suction curettage. Perioperative management of hyperthyroidism focuses on controlling sympathetic activity so that cardiovascular side effects do not occur. Thyroid function has been improved after the evacuation and no signs of malignancy from anatomical pathology examination. The prognosis is dubious ad Bonam.

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**Ethical Clearance:** Not required for a case report.

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