

CASE REPORT

Acute pulmonary edema after evacuation of molar pregnancy

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ABSTRACT

Cardiopulmonary dysfunction has been observed after the removal of benign hydatidiform mole which can lead to substantial morbidity and mortality. We report a 20 year old woman who came to casualty with a gush of per vaginal bleeding; associated findings were hypotension, anemia and tachypnoea. Evacuation of the mole was done under general anesthesia as an emergency procedure. Immediately after evacuation she developed acute massive pulmonary edema that progressed to adult respiratory distress syndrome. In spite of extensive peri-operative management in the form of vasopressors and ventilatory support, mortality occurred after 12 hours post operatively.

Key Words:- Cardiopulmonary distress; Hydatidiform mole; Adult respiratory distress syndrome; Molar pregnancy

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INTRODUCTION

Molar pregnancy occurs in one in 1945 pregnancies worldwide¹ and more commonly in Asian countries.² The incidence in India is one in 400 pregnancies.³ Of the molar pregnancies 80% are uncomplicated and follow an unremarkable course. However, 20% are associated with severe perioperative complications that may lead to morbidity and mortality in otherwise healthy women. Anemia, hyperthyroidism and acute cardiopulmonary distress are significant complications of complete molar pregnancy.^{4,5} Acute cardiopulmonary distress and adult respiratory distress syndrome (ARDS) have been reported after evacuation of mole in 27% of cases⁵ and some fatalities have been described.^{6,7}

We present a case of 20 year old primigravida who developed acute pulmonary edema after evacuation of mole and in spite of ventilatory support and aggressive perioperative management, succumbed to her disease. The critical nature of complications associated with a molar pregnancy, the medical and anesthetic interventions required for the treatment are also discussed.

CASE REPORT

A 20 year old, 40 kg primigravida at 16 weeks of gestation came to medical casualty of our hospital with a complaint of vaginal bleeding. Sonography revealed complete molar pregnancy, so she was shifted to emergency operation theater for suction evacuation of mole. She expelled big

clots in the casualty. Her past history was unremarkable. She was irritable, afebrile and pale with a feeble radial pulse of 150 per minute and blood pressure of 80/50 mmHg. SpO₂ was not recordable. ECG on the monitor was normal. She had tachypnoea, with a respiratory rate of 28 per minute and had mild pedal edema. Chest auscultation revealed normal heart sounds and no added sounds in the lung fields. She belonged to a rural background, with poor socioeconomic status and had no antenatal visits. The only investigation available to us was a hemoglobin of 5 gm/dl and ultrasonography report. She was not fasting and had tea and biscuits two hours before. High risk consent was obtained from the patient and the attendants for emergency evacuation of the mole under anesthesia. Two IV canulae of 18 G were passed in the operation theatre and samples for blood grouping and cross matching were sent to the laboratory. Two units of whole blood, 1000 ml of Ringer's lactate and 500 ml of hydroxyethyl starch 6% were infused. As pre-induction, the patient was administered glycopyrrolate 0.2 mg, fentanyl 100 mcg, metoclopramide 10 mg, ondansetron 4 mg, midazolam 1 mg, hydrocortisone 100 mg and dexamethasone 8 mg. Vasopressor support with dopamine 10 mcg/kg/min and noradrenaline 5 mcg/kg/min was started to be titrated to her hemodynamic status. After preoxygenation, rapid sequence induction was done with 60 mg ketamine and 50 mg succinylcholine, followed by intubation and ventilation started with 100% oxygen. Infusion of 15 units of oxytocin was started during the evacuation procedure. Evacuation was completed in 15 minutes. Intraoperative blood loss was limited to 500 ml. Pulse rate remained high (170/min), systolic blood pressure was still low at 80 mmHg and SpO₂ was still not recordable except intermittent readings of 85-90%. Meanwhile, spontaneous respiratory efforts returned; patient regained consciousness, started limb movements. Endotracheal suctioning was done, which initially showed clear secretions, that were soon followed by extensive pink froth secretions started coming out of the tracheal tube and extensive crepts were auscultated over both the lung fields. The condition was diagnosed as noncardiogenic pulmonary edema. Patient was placed in propped up position, catheterized and inj. furosemide 20 mg was administered. Vecuronium 4mg was administered to induce muscle relaxation and intermittent positive pressure

ventilation was started. Patient was shifted to ICU and electively ventilated with Medivent® ventilator in CMV mode; tidal volume being set at 400 ml, respiratory rate of 15 per minute, a PEEP of 5 mmHg and FiO₂ of 1.0. Bedside chest X-Ray revealed bilateral fluffy opacities with normal cardiac silhouette. Results of investigations in the ICU revealed a hemoglobin concentration of 4.0 gm/dl; blood counts, coagulation profile, renal and liver function tests were in the normal range. Packed RBC transfusion was started in the ICU through a central venous catheter. Arterial blood gas analysis showed a low PaO₂ of 40 mm Hg, PaCO₂ of 44 mm Hg, SaO₂ 70%, HCO₃ value of 21 mEq, BE of -2 and a pH of 7.36. She was unable to maintain SpO₂ even at a FiO₂ of 1.0 and ventilatory support on CMV mode. Vasopressor support was continued but the blood pressure continued to fall and the patient's condition worsened. In spite of extensive resuscitative efforts tried by a multispecialty team of doctors, the patient died after 12 hours of evacuation of the mole.

DISCUSSION

Molar pregnancies develop as a result of abnormal fertilization and are categorized as complete or partial. In a complete molar pregnancy the placenta becomes edematous secondary to grossly enlarged hydropic degeneration of the chorionic villi and the fetus fails to develop. Cord and amniotic membranes are absent. Patients of molar pregnancy have high serum levels of Human Chorionic Gonadotropin (HCG) and a larger than expected uterus size for the gestational age.⁸ The obstetric management requires therapeutic termination of the pregnancy involving complete evacuation of the uterine contents. The critical nature of the associated complications requires advanced perioperative anesthetic management.⁴

A large number of the complications are associated with molar pregnancy, which include acute cardiopulmonary distress, hyperthyroidism with thyroid storm, severe anemia, hemorrhage, trophoblastic embolisation, DIC and pregnancy induced hypertension etc.^{4,5} Acute anemia and hemorrhage leading to hypovolemic shock and acute pulmonary edema were seen in the present case and proved to be lethal.

Acute cardiopulmonary distress has been observed after evacuation of molar pregnancy in 27% of the cases and more so in patients with uterine size of 16 weeks or greater. Symptoms usually develop within 4-12 hours after evacuation of the uterus and are marked with cough, tachycardia, tachypnoea, hypoxemia, diffuse rales and bilateral pulmonary infiltrates on a chest radiograph.^{5,9} Variable amounts of trophoblastic cells enter the venous circulation and this embolisation is responsible for the cardiopulmonary crisis in more than 50% of cases.⁷ Symptoms may vary in severity, with some requiring mechanical ventilation, vasopressor support and in the most severe cases, massive trophoblastic embolism may lead to death^{4,7,6} as seen in this case.

Hyperthyroidism in these patients is thought to occur as a manifestation of excessive levels of circulating HCG or from a thyrotropin like substance released from the mole. The resultant thyroid storm may lead to high output cardiac failure^{2,6,10}. HCG and thyroid hormones were not estimated in our case. Elevated levels of these might have been contributory in the development of pulmonary edema. Anemia in these patients is secondary to chronic occult bleeding from multiple hemorrhagic areas throughout the placenta and massive blood loss during surgery,¹¹ as was seen in our case. Transfusion related acute lung injury, although rare, is another possible cause of cardiopulmonary distress, which manifests within 6 hours of transfusion and is marked by noncardiogenic edema, but this possibility is ruled out in the present case as ARDS developed in this patient prior to institution of blood transfusion. During surgery only 1000 ml of Ringer's lactate and 500 ml of hydroxyethyl starch was given. This excludes the contributory role of fluid overload in the development of pulmonary edema.

It may be stressed that the communication between the anesthesiologist and the obstetrician should begin soon after the diagnosis of molar pregnancy has been established to provide adequate time for a comprehensive preoperative workup and baseline laboratory tests including coagulation studies, electrolytes, CBC with platelets, thyroid function tests and baseline chest radiograph. ABG analysis is recommended to demonstrate signs and symptoms of

pulmonary edema preoperatively. Because of the potential blood loss, adequate intravenous access and immediate availability of blood products should be established before induction. A review of literature about the anesthetic techniques for evacuation of hydatidiform mole suggests general anesthesia with endotracheal intubation as the technique of choice because of the potential for development of acute intraoperative hemorrhage and possible need of ventilatory support if acute cardiopulmonary distress develops.⁴ Use of an oxytocin infusion before or during uterine evacuation is suggested as a mechanism for avoiding trophoblastic embolism and to control hemorrhage.⁴ On the contrary some authors counter this and are of the view that if used before evacuation, it may increase the risk of acute pulmonary insufficiency.³ We could not carry out baseline investigations except hemoglobin and USG since the patient was bleeding and was in respiratory distress which necessitated her being taken up for emergency surgery. Since the patient came to the hospital from a remote village with continued vaginal bleeding, it may have led to trophoblastic embolisation resulting in tachypnoea and hypoxemia.

CONCLUSION

We conclude that evacuation of molar pregnancy can be associated with acute cardiopulmonary distress in the form of shock and pulmonary edema (ARDS) that may be fatal, in spite of aggressive blood replacement, vasopressor use and ventilatory support. Thus a detailed preanesthesia workup, preoperative optimization, careful anesthetic management and liberal arrangement of blood transfusion products are necessary for any case of molar pregnancy to maximize the outcome.

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Tools :

2-PaT Plot : Graphical Representation of Trials

This software allows the researchers to draw a graphical schema of the trials. For more information please follow the link; : <http://www.ccbm.net/index.aspx?o=4200>

Tutorial :

The US non-profit, Research Advocacy Network has published a simple tutorial primer on understanding the design of clinical trials which many might find useful:

The tutorial is entitled 'Understanding Clinical Trial Design; and is available at the following web address: