Cesarean delivery in a parturient with an anterior mediastinal mass

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To the Editor,

Patients with a mediastinal mass are at risk of respiratory impairment, especially when general anesthesia is induced. Circulatory collapse may also occur because of a decrease in venous return.^{1,2} These effects might be accentuated when the physiologic changes of pregnancy are present. We report the case of a parturient with a mediastinal mass who presented for Cesarean delivery. The patient has provided written consent for publication of this report.

A 24-yr-old G2P1 female at 39 weeks gestation presented for a repeat elective Cesarean delivery. At initial evaluation, she was dyspneic with pulsus paradoxus and a loud murmur. A transthoracic echocardiogram showed elevated right ventricular (RV) and pulmonary artery (PA) pressures, a left ventricular ejection fraction > 65%, and a

pericardial effusion requiring urgent ultrasound-guided pericardiocentesis. A chest *x-ray* showed a widened mediastinum with tracheal and bronchial shift. A computed tomography scan (Figure) confirmed the presence of an anterior-superior mediastinal mass (14 x 11 x 12 cm) encasing the aorta and the PA, with obliteration of the superior vena cava (SVC) and mass effect on the trachea and bronchus. The mediastinal mass was thought to be most consistent with a lymphoma. Plans were made for the patient to be transferred to the local heart institute following a five-day course of methylprednisolone 500 mg *iv* daily to shrink the mass. At the heart institute, she was scheduled to undergo Cesarean delivery with cardiopulmonary bypass (CPB) backup.

Two days after admission, the patient went into spontaneous labour and was transported to the heart institute for urgent Cesarean delivery. An epidural anesthetic was deemed the safest option, allowing for spontaneous ventilation, thereby avoiding collapse of the mediastinal mass and a potentially difficult obstetrical airway. Left radial arterial and upper extremity intravenous catheters were in place, and a large-bore intravenous catheter was placed in the lower extremity. After insertion of an epidural catheter at the L2-L3 interspace, the patient was placed in a left lateral position with a 45° horizontal tilt. The catheter was then injected with 2% lidocaine 12 mL and 8.4% bicarbonate 1 mL. The cardiac surgeon placed left femoral CPB guidewires, a right femoral arterial line, and a Cordis venous line in preparation for CPB if needed. A vigorous baby boy was delivered. Throughout the procedure, 2L of crystalloid was infused, and phenylephrine was titrated at 100–500 $\mu\text{g}\cdot\text{min}^{-1}$ to maintain a mean arterial pressure within 10% of baseline. After delivery, an oxytocin infusion was started, with the addition of norepinephrine 0.01–0.15 $\mu\text{g}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$ to maintain hemodynamic stability.

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Figure Computed tomography (CT) scan of the patient. Mediastinal mass – the large grey structure is the mediastinal mass (lymphoma); no heart tissue is present. AA = ascending aorta; DA= descending aorta; PE = right pleural effusion; HAV = prominent hemiazygous vein; AV= prominent azygous vein; PA = main pulmonary artery; LPA = almost complete collapse of the left pulmonary artery; RPA = right pulmonary artery; RB = compressed right bronchus intermedius; RSPV= right superior pulmonary vein. There is complete absence of the superior vena cava

The patient was transferred to the cardiac intensive care unit postoperatively, and within eight hours, vasopressors were weaned and the epidural catheter and femoral wires were removed. A large B-cell lymphoma was diagnosed on subsequent biopsy, for which chemotherapy and an autologous stem cell transplant were given. The patient was in remission for 18 months, but unfortunately, she developed widespread disease which is no longer treatable.

In this case, the diagnosis of an anterior mediastinal mass was made at term. The patient had the classic manifestations, including compression of intrathoracic structures, SVC obstruction, and cardiac tamponade.^{1,2} General anesthesia in the setting of a mediastinal mass can result in respiratory and hemodynamic collapse. In pregnancy, this

might lead to rapid oxygen desaturation, airway edema from SVC compression, ventilation/perfusion mismatch from limitation of pulmonary blood flow by RV and PA compression, and tracheobronchial compression from reduced airway tone and lung volumes. Circulatory collapse occurs from the combined effects of reduced venous return from SVC obstruction, anesthetic-induced venodilation, and elevated intrathoracic pressure from positive pressure ventilation.

To minimize these risks, our patient was treated with corticosteroids until the onset of labour. At that point, a Cesarean delivery was performed under epidural anesthesia with preemptive insertion of femoral guidewires for immediate CPB capability in the event of circulatory and/or tracheobronchial collapse.^{3,4} In our case, the mediastinal mass was identified at term with limited time for definitive diagnosis, and corticosteroids were initiated speculatively to shrink a presumed lymphoma. The successful outcome of this complex case reflects the anticipatory management strategies and multidisciplinary approach to our patient's care.

Disclosures None.

Conflicts of interest None declared.

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