An autopsy case of acute aortic dissection during postpartum period

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Summary

Background: Aortic dissection in young women without Marfan disease is related in most instances to pregnancy. This is a potentially catastrophic occurrence. *Case*: An autopsy case of acute aortic dissection type B (Stanford classification), clinically undiagnosed during late puerperium period in a young woman with no discernible risk factors (e.g. family history and signs of connective tissue diseases) is presented. Autopsy with ancillary investigations revealed that knowledge of this albeit relatively rare complication of postpartum may assist the clinician in earlier diagnosis and referral of patients for surgical treatment. *Conclusion:* This case is presented to raise awareness and review the literature for the critical care of postpartum patients.

Key words: Descending thoracic aortic dissection; Postpartum; Autopsy.

Introduction

Acute aortic dissection occurring during pregnancy and peri- and postpartum periods is a rare but recognized phenomenon [1-4]. The results can be devastating for both mother and fetus with reported mortality of one percent per hour for the first 48 hours [5, 6]. Most reported cases are associated with connective tissue disease (e.g., Marfan's syndrome), systemic hypertension, and congenital heart disease (e.g. coarctation and bicuspid aortic valve) [5, 6]. Aortic dissection during puerperium is rarely reported in literature [1, 7, 8]. The authors describe the case of an acute type B aortic dissection (Stanford classification) occurring in an apparently fit and healthy postpartum woman with no discernible risk factors.

Case Report

A previously healthy 29-year-old Japanese woman (gravida 2, para 2), 155 cm, 55 kg was urgently transported to the medical center for evaluation and treatment of loss of consciousness 19 days after a full-term Cesarean delivery. She suddenly developed severe back pain for several minutes, then collapse and unresponsiveness. On presentation, the woman was in cardiogenic shock; she was cold and pale with a systolic blood pressure of < 20 mm Hg and a loss of consciousness (Glasgow Coma Scale of 3 points). The patient immediately underwent rapid sequence orotracheal intubation and mechanically ventilated. Computed tomography (CT) with angiographic contras showed left hemothorax and pericardial effusion collection (Figure 1), suggesting cardiovascular collapse. She developed cardiac arrest and underwent aggressive resuscitation and emergent thoracotomy without recovery.

Review of the obstetrician records revealed that she had regular antenatal checkups and under medication with arterenol; her blood pressure was kept stable at about 120-140 / 78-90 mmHg. Cesarean section in full-term gestation was performed because of an increase blood pressure (158/100 mm Hg). She did not have any history of serious illness, operations, or hospitalization as per the information obtained from her mother and husband.

Unexpected sudden death in a healthy asymptomatic 2-gravida led the authors to submit a pathological autopsy in order to provide a reasonable explanation regarding the cause of death in order to rule any suspicion of negligence in the minds of the bereaved family. She appeared to be well-developed and nourished. A partially-healed vertically-placed Cesarean section mark was evident in the abdomen. The left thoracic cavity contained 2,000 ml of partially coagulated blood. The exposed aorta showed dissection at its descending thoracic portion (Figure 2). There was no evidence of hemopericardium. An intimal tear was not found in the aortic arch or abdominal aorta. A perforating tear measuring 5 x 5 mm was present in the aortic posterolateral wall at the beginning of the thoracic portion, suggesting that the dissection had occurred in the descending aorta with massive and progressive distal extension. Other portions of the aorta and its main branches were essentially intact. Postmortem toxicological screening of blood did not detect alcohol, common illicit, or prescribed drugs or pesticides. The death was attributed to hemothorax due to ruptured dissecting descending thoracic aorta.

Discussion

Aortic dissection is rare in young women but, when it does occur, is often associated with pregnancy [1-3]. During pregnancy, the highest incidence is in the later months, thus leading to speculation that the hemodynamic alterations of pregnancy may play a role. There is little in the literature regarding postpartum onset of aortic dissection including rupture of aneurysm, as in the present case, [1, 7, 8]. Investigators have found that the aortic media in rabbits [9] and humans [10] changes morphologically and biochemically during pregnancy. In particular, the reticulum becomes fragmented, the elastica attenuates with lots of corrugation, and there is a decrease in the amount of acid mucopolysaccharides. These changes probably render the aorta more vulnerable to dissection in pregnancy. In support of this, similar changes were found in the aortas of pregnant women who had had aortic dissections [11]. How-

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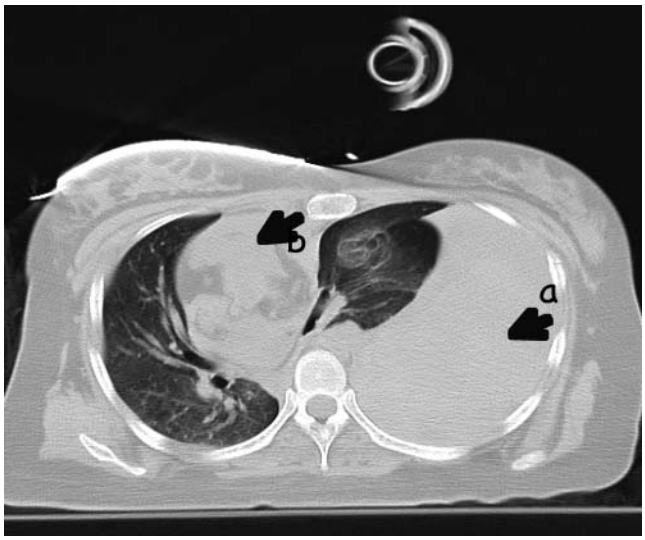

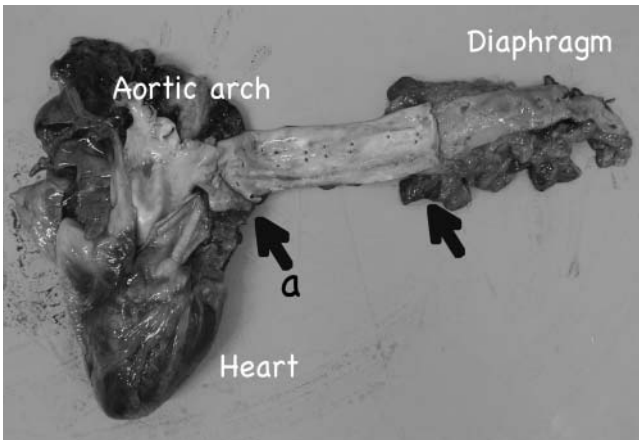

Figure 1. — Axial CT image with angiographic contras showing hemothorax of left side (a) and a large clot inside the pericardium and pericardial fluid (b). Intubation tube is visible.
Figure 2. — Photograph of the descending thoracic aorta. Dissection occurred between the arrows in its descending thoracic portion. A perforating tear measuring 5 x 5 mm was confirmed (at the arrow in the posterolateral wall at the beginning of the thoracic portion) (a).

ever, other investigators have not found differences between the aortas of pregnant and non-pregnant women [12]. The condition is also described in systemic hypertension and is associated with the use of crack cocaine [7]. The patient's serological studies for exogenous pathogens and antibody assay did not yield any positive findings.

In the present case, the decedent was a young non-Marfan woman, who underwent a lower segmental Cesarean delivery without any operative or postoperative complications. She suddenly developed severe back pain for several minutes, and then collapsed and lost consciousness on the 19th day of puerperium. Subsequent complete pathological autopsy along with ancillary investigations revealed that she died due to hemothorax from ruptured dissecting descending thoracic aorta. She had no prior history of chronic hypertension. Most cases in the literature focus on patients that are at risk for aortic dissection and discuss appropriate surgical intervention prior to acute complications. The condition needs to be identified and promptly addressed because mortality increases if surgical treatment is delayed. The diagnosis of acute aortic dissection should be considered if circulatory collapse and chest or back pain suddenly occur during the peri- and postpartum periods.

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