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Massive Hemothorax Occurring with Intramural Hematoma of the Descending Aorta in the Early Postpartum Period

Jeong Hee Yun, M.D.[1], Yeong Jeong Jeon, M.D.[1], Tae Hee Hong, M.D.[1], Joung Hun Byun, M.D.[2], Sang Won Hwang, M.D.[3], Jae Hong Park, M.D.[3]

Postpartum aortic intramural hematoma (IMH) is a rare but potentially lethal condition. We report a case of aortic IMH with massive hemothorax in a postpartum woman. The patient was a 31-year-old woman who had delivered twins by cesarean section. Two days after delivery, she complained of sudden-onset dyspnea. Chest computed tomography revealed a massive left hemothorax. Exploratory thoracotomy was performed, and we found a defect measuring approximately 6 mm in the adventitial layer of the thoracic aorta and an IMH. We repaired the defect primarily, and no more bleeding was observed. The patient was discharged on the 19th postoperative day without any complications.

Key words: 1. Intramural
2. Hemothorax
3. Pregnancy

CASE REPORT

A 31-year-old woman was admitted to our hospital due to severe dyspnea. She did not have any known relevant medical history other than delivery of twins by cesarean section two days prior. In the local obstetrics and gynecology hospital where her delivery took place, her hemoglobin (Hb) level had been found to be 10.3 g/dL and her platelet count was measured at 86,000/㎕. Despite her low platelet count, she had delivered twins by cesarean section without intraoperative complications. Two days after delivery, she complained of sudden-onset dyspnea. At that time, her chest X-ray showed atelectasis of the left lung, and laboratory findings were abnormal, with an Hb level of 7.9 g/dL and a platelet count of 49,000/㎕. She received red blood cell and platelet transfusions and was then sent to Samsung Changwon Hospital.

When she arrived at our hospital, her arterial blood pressure was 160/90 mmHg, her heart rate was 84 beats per minute, and an arterial blood gas analysis found a partial pressure of oxygen of 67 mmHg (saturated oxygen, 93%). Simple chest radiography showed a large left pleural effusion with total atelectasis of the left lung (Fig. 1A). Due to the previous transfusion, her Hb was 13 g/dL and her platelet count was 146,000/㎕. With the possibility of preeclampsia in mind, other associated signs and symptoms were analyzed. She had no proteinuria or oliguria, no headache or visual disturbances, no epigastric pain, and upper-normal levels of liver enzymes (aspartate transaminase and alanine transaminase lev-

[1]Department of Thoracic and Cardiovascular Surgery, Samsung Medical Center, Sungkyunkwan University School of Medicine, [2]Department of Thoracic and Cardiovascular Surgery, Changwon Hospital, Gyeongsang National University School of Medicine, [3]Department of Thoracic and Cardiovascular Surgery, Samsung Changwon Hospital, Sungkyunkwan University School of Medicine
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Corresponding author: Joung Hun Byun, Department of Thoracic and Cardiovascular Surgery, Changwon Hospital, Gyeongsang National University School of Medicine, 11, Samjeongja-ro, Seongsan-gu, Changwon 51472, Korea
(Tel) 82-55-214-1000 (Fax) 82-55-750-8800 (E-mail) jhunikr@naver.com

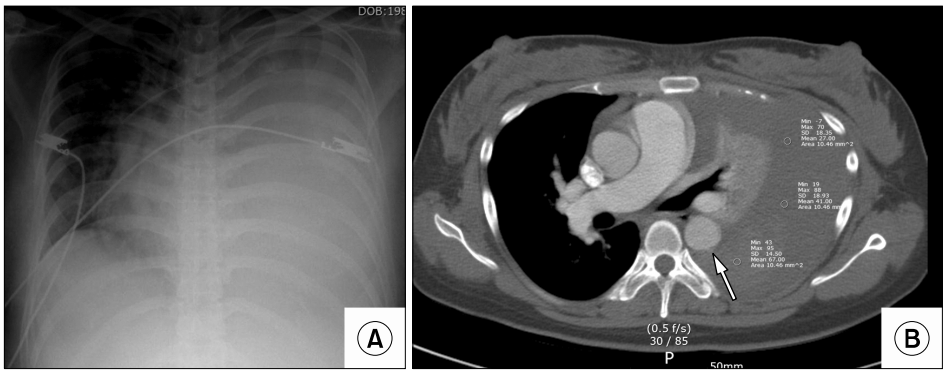

Fig. 1. (A) A simple chest X-ray showed a large left pleural effusion with total atelectasis of the left lung. (B) Chest computed tomography showed a large hemothorax with total atelectasis of the left lung. The red arrow shows the minimally sized defect of the aortic wall. The pleural fluid near the defect displayed higher Hounsfield units than the fluid far from the defect.

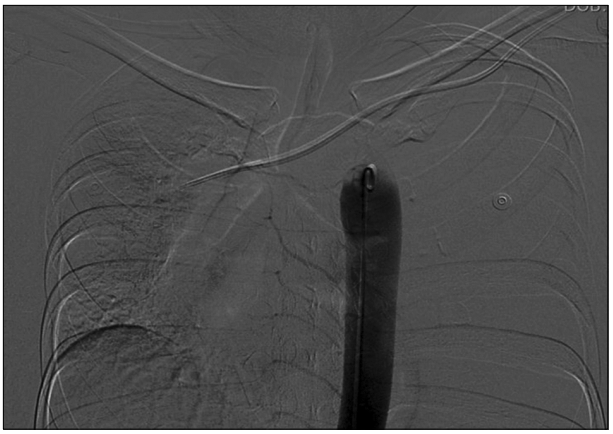

Fig. 2. The aortogram showed no focus of bleeding.

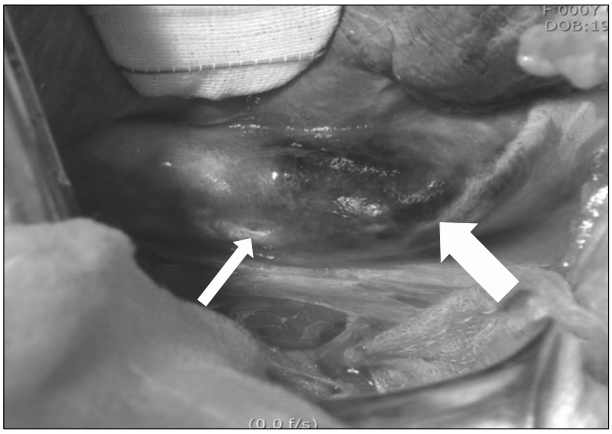

Fig. 3. The operative field, showing a defect measuring approximately 6 mm (thin arrow) in the adventitial layer of the thoracic aorta without intimal injury and an intramural hematoma (thick arrow) of the aorta proximal from the defect.

els of 48 IU/L and 18 IU/L, respectively). Chest computed tomography showed a large hemothorax with total atelectasis of the left lung. It also showed a minimally sized defect of the aortic wall. The pleural fluid near the defect displayed higher Hounsfield units than the fluid far from the defect (Fig. 1B). It seemed that contrast medium was leaking from the defect, and we thought that active bleeding could have been taking place from a small branch of the aorta, such as the intercostal artery.

First, because the patient was somewhat stable, we decided to perform angiography (an aortogram and an intercostal arteriogram) to identify the focus of bleeding and to perform therapeutic embolization if possible; however, no such focus was identified on angiography (Fig. 2). We considered chest tube insertion, but decided against performing it because the sudden decompression of the thoracic cavity by chest tube insertion could lead to massive bleeding. Instead, we performed an exploratory thoracotomy. When the pleura was opened via the sixth intercostal space, which was most accessible to the defect, a large hematoma was noted. The hematoma was removed, revealing a defect in the adventitial layer of the thoracic aorta measuring approximately 6 mm, without intimal injury, and an intramural hematoma (IMH) of the proximal aorta (Fig. 3). No further bleeding through the defect in the adventitia was observed. We thought that the bleeding may have stopped due to the previous platelet transfusions. We decided to repair the defect in the adventitia primarily with 3-0 pledgeted prolene sutures instead of performing an aortic replacement. This decision was made in order to avoid systemic heparinization because the patient had undergone a cesarean section two days previously and had exhibited spon-

taneous thrombocytopenia. After the operation, the patient was transferred to the intensive care unit with an endotracheal tube. She was extubated on the fifth postoperative day due to severe general edema and low coughing power. She was transferred to the general ward on the sixth postoperative day and discharged on the 19th postoperative day without any complications.

DISCUSSION

Aortic IMH occurs when the nutrient vessels of the aortic wall, the vasa vasorum, rupture without an intimal tear. IMH is the precursor or a variant of classic aortic dissection and has a high rate of mortality and morbidity [1]. IMH is classified as a manifestation of acute aortic syndrome, along with aortic dissection (AD).

Although acute aortic syndrome is rare in young women, an association between pregnancy and AD has been reported [2-4]. Due to the similar pathophysiology of IMH and AD, it may be predicted that IMH and pregnancy are also associated. However, scant data have been published regarding IMH in pregnant women.

Pregnancy-related hemodynamic stresses and hormonal effects are considered to be causes of peripartum AD. The pathological study of surgical specimens from peripartum AD patients has revealed some histologic changes in their aortas, including cystic medial degeneration, mucopolysaccharide deposits, and diffuse mucoid imbibitions [2]. Gestational hypertension and preeclampsia are considered potential direct causes of hemodynamic and structural changes in the aortic wall [4]. According to the guidelines of the Society of Obstetricians and Gynaecologists of Canada, preeclampsia is defined as hypertension that develops for the first time at 20 or more weeks of gestation with one or more of the following symptoms: new-onset proteinuria, headache/visual symptoms, chest pain/dyspnea, elevated white blood cell count, prolonged international normalized ratio, low platelet count, elevated serum creatinine, or elevated liver enzyme levels [5]. Preeclampsia may have been involved in our patient, in light of her high blood pressure (BP) reading and low platelet count. If she had been suffering from preeclampsia, the pathophysiology of this episode of IMH might be more easily explained. Unfortunately, we did not have precise information about her previous BP readings and platelet count, so we could not determine whether her high BP was new-onset hypertension or a temporary reaction to pain.

Our case is distinct from other recent reports of AD in peripartum women in that our patient only had aortic IMH, not AD, and it resulted in a massive hemothorax. In addition, she did not have known risk factors, such as an elastic tissue disorder (e.g., Marfan syndrome or Turner syndrome) or a bicuspid aortic valve. Such a case is very rare and difficult to predict. Patients without known underlying contributing factors, as in our case, might be at a higher risk of unexpected aortic dissection resulting in sudden death due to a delay in the diagnosis and subsequent treatment [6].

When a previously healthy pregnant or postpartum woman complains of chest pain or dyspnea, it is typically considered a simple gastrointestinal problem or the natural result of increased abdominal pressure. However, ignoring such a complaint and missing the optimal time for treatment of underlying issues can be lethal. Therefore, acute aortic syndrome should be considered in such cases, even in previously healthy pregnant women.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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