



## Case report

## Spontaneous Hemothorax during pregnancy: A case report

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## ABSTRACT

**Introduction and importance:** Spontaneous hemothorax is a rare but life-threatening condition, which is the main cause of respiratory distress during pregnancy and after delivery without any evidence of post-traumatic injury. **Case presentation:** A 34-year-old woman, pregnant at 20 weeks, presented in the emergency department complaining of dyspnea accompanied by epigastric pain, with dominance on the left side. Chest X-ray and CT-scan revealed an opacity by displacing heart to the right side. Considering, there was a probability of bleeding from venous arterial malformation. Inappropriate cervical condition two days after the patient appeared thermodynamically stable a cesarean section was performed.

**Clinical discussion:** Pregnancy leads to increasing the size of AVM by rising cardiac output and hypoxia. Patients who are predisposed to PAVM and intend to be pregnant should be evaluated a priori.

**Conclusion:** Although the hemothorax is a rare phenomenon during pregnancy, management of fetus following this critical condition requires multidisciplinary assessment.

## 1. Introduction

Spontaneous hemothorax is rare but a life-threatening condition [1]. Hemothorax is defined as pleural fluid with a hematocrit greater than 50 % of the peripheral blood hematocrit. This condition is the main cause of respiratory distress during pregnancy and after delivery with no evidence of post-traumatic injury [2]. These symptoms may be considered with pulmonary embolism as a differential diagnosis, and thus administration of anticoagulant can make the symptoms worse [3]. The current study is reported in line with the SCARE criteria [4].

## 2. Case report

A 34-year-old woman, pregnant at 20 weeks, presented in the emergency department complaining of dyspnea accompanied by epigastric pain, with dominance on the left side. A few minutes after admission Clinical symptoms changed, dyspnea progressed and appearance turned pale. According to the physical examination, blood pressure and heart rates were 110/89 and 140–150 ppm, respiratory rate was 28/min, O<sub>2</sub> saturation was 96 %, auscultation of lungs reveals reduced sounds in left hemithorax, and patient's hemodynamic

condition was extremely unstable, although there were no changes in consciousness. In the first lab test patient's hemoglobin was 12 mg/dl.

The patient has no past medical history or trauma except, she had complaints of dyspnea Two months before admission, but cardiac evaluation and echography were normal.

Prenatal care and pregnancy checkups including physical exam, and sonography reported no sign of abnormalities or any life-threatening condition for the fetus the second screening, the karyotyping of the embryo, was positive, which reported a normal female embryo. Also, it was revealed that couples were relatives.

After ICU admission hemoglobin dropped to 8 mg/dl. Chest X-ray showed an opacity in the left side of the thorax by displacement the heart to the right side (Fig. 1). Orthopnea became the dominant symptom as time passed. In the lung CT scan, a mass that appeared, considering clinical manifestations were highly suggestive for AVM.

Before moving the patient to the Intensive Care Unit, a chest tube was inserted in the left hemi thorax at the Emergency Department. 1400 cm<sup>3</sup> high viscosity and dark appearance blood were drained, and later clear blood was seen. Because of dramatic changes in the content of blood cells, the patient had to receive three units of packed cell. The pleural fluid hematocrit for the patient was 18 mg/dl, which was

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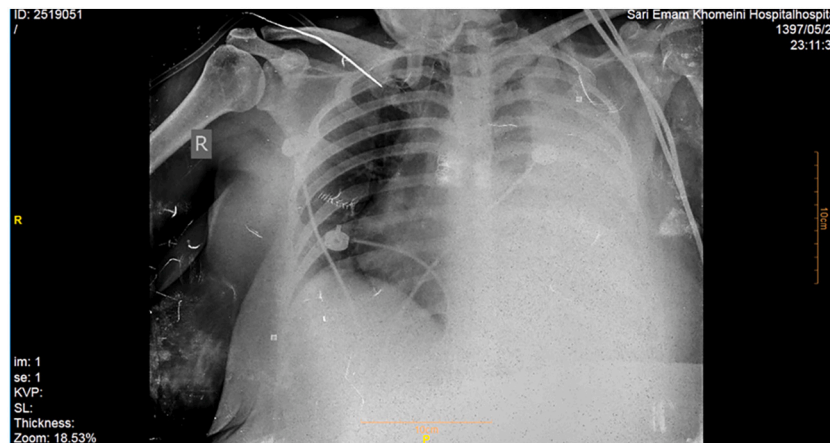


Fig. 1. Left extensive hemothorax.

different from that of other studies demonstrating it to be more than 50 % of the peripheral blood. Fetus monitoring showed cardiac condition as normal. One day after admission, serial Sonography revealed that the functionality of the fetus' heart dropped markedly. During the time, no evidence of embryonic heart function could be observed and the patient suspected intrauterine fetal death. Gynecologic assessment confirmed the diagnosis.

Considering, there was a probability of bleeding from venous arterial malformation. Inappropriate cervical condition two days after the patient appeared thermodynamically stable a cesarean section was performed and the dead meconium fetus was delivered. Then, 48 h later, thoracoscopy and then thoracotomy were performed to find the venous arterial malformation in the lower lobe of the left lung and resected that.

### 3. Discussion

Pneumothorax, vascular issues, pulmonary arteriovenous malformation (PAVM), Osler-Weber-Rendu syndrome, aneurysm rupture, Ehler-Danlos syndrome, neurofibromatosis, hematological disorders, acquired and congenital coagulopathy, and extramedullary hematopoiesis are the main causes can induce hemothorax [5].

Hormonal alternation, following fluctuations of estrogen and progesterone levels, changes the morphological structure of arterial walls and makes them vulnerable and more susceptible to rupture in pregnant women [6]. Pregnancy leads to an increase in the size of AVM by rising cardiac output and hypoxia [7]. PAVMs grow over time secondary to the increased blood flow in pregnancy [7]. Pregnancy is also implicated as a cause of AVMs rupture, which is thought to be due to hemodynamic and endocrine changes during pregnancy including hypertension [8]. Cardiovascular changes in pregnant women are accompanied by raised blood volume, heart rate, stroke volume, cardiac output, left ventricular wall mass, and end-diastolic dimensions [9].

The diagnosis of hemothorax during pregnancy is difficult because it is rare, especially without evidence of external trauma. Without evidence of fetal distress and especially remote from the term, diagnosis and management should be centered on the maternal pulmonary and hemodynamic status. Extensive hemorrhage with mediastinum shifts requires emergency treatment with pregnancy control. During these clinical conditions, in case it is observed that the fetus needs more care, the pregnancy should be terminated [10]. Patients who are predisposed to PAVM and wish to be pregnant should be evaluated a priori [11].

### 4. Conclusion

Even though hemothorax is a rare phenomenon during pregnancy, management and taking care of patients during admission and following a critical condition of the fetus requires multidisciplinary assessment.

### Provenance and peer review

Not commissioned, externally peer-reviewed.

### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

### Ethical approval

Considering Iran national committee for ethics in biomedical research laws. It's not necessary to get Ethical Approval code for case reports, only patients Consent is enough.

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None.

### CRediT authorship contribution statement

A.N. involved in interpretation and collecting of data, and editing the manuscript. M.Z., K.J. and S.K. involved in writing, editing and preparing the final version of manuscript. All authors reviewed the paper and approved the final version of the manuscript.

### Declaration of competing interest

The authors report no conflicts of interest.

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