Case Report

Spontaneous Hemothorax in a Patient of Ruptured Ectopic Pregnancy

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Abstract

Hemothorax is a condition characterized by the accumulation of blood within the pleural cavity. Most hemothoraces result from direct trauma, blood vessel rupture, tumor, or iatrogenic complication. Rarely, a hemothorax results from a medical condition such as pulmonary embolism or rupture of an aortic aneurysm. Here, we report an atypical case of hemothorax in a 24-year-old female following hemoperitoneum secondary to a ruptured ectopic pregnancy who had neither amenorrhea nor per vaginal bleeding. She underwent a laparotomy and was operated on for a ruptured right tubal ectopic. Hemothorax was diagnosed postoperatively – which had possibly developed through diaphragmatic fenestrations – and managed with a chest drain.

Keywords: Diaphragmatic fenestrations, hemoperitoneum, ruptured ectopic pregnancy, spontaneous hemothorax

Introduction

An ectopic pregnancy is characterized by extrauterine implantation of the conceptus, presenting as lower abdominal pain, amenorrhea, per vaginal bleeding, and syncopal attacks.

Hemoperitoneum is common in ruptured ectopic pregnancy but hemothorax is a rare occurrence. Their coexistence may suggest that hemothorax occurs secondary to increased abdominal pressure resulting from hemoperitoneum and transdiaphragmatic communication of the blood into the pleural cavity aided by the negative intrapleural pressure during inspiration.[1]

A hemothorax is blood in the pleural cavity and is defined as pleural fluid hematocrit ≥50% that of peripheral blood.

We are reporting a case of hemothorax in a ruptured ectopic pregnancy.

Case Report

A 24-year-old female presented with complaints of diffuse and nonradiating pain in the abdomen with nausea and vomiting for 5 days. There was no history of loose stools, constipation, fever, altered behavior, or burning micturition. Her menstrual history was normal, her last menstrual period was 28 days before presentation, and her obstetric history was notable for two live children born through normal vaginal delivery. On examination, the patient was afebrile, restless, and had tachycardia: pulse rate was 120/min, blood pressure was 100/60 mmHg, and SpO_2 was 94% on room air. She was pale and tachypneic with a respiratory rate of 21/min. She was conscious but drowsy. Her chest was clear on auscultation. Her abdomen was mildly distended, generalized tenderness was present, and shifting dullness was absent. Guarding and rigidity were absent. Cullen's sign was present and bowel sounds were sluggish. Her hemogram revealed hemoglobin (Hb) of 3.2 g/dL with a leukocyte count of 23,000/mm^3 (P88/L8/E2/M2) and a hematocrit of 8.1%. Kidney function test (KFT) showed urea: 185 mg/dL and creatinine: 1.8 mg/dL. Electrolytes were normal. She had normal bilirubin level and transaminitis with Aspartate transaminase, Alanine transaminase and Alkaline phosphatase levels of 1253, 1021 and 93 IU/L respectively. Serum amylase and lipase were 478 and 698 U/L, respectively.

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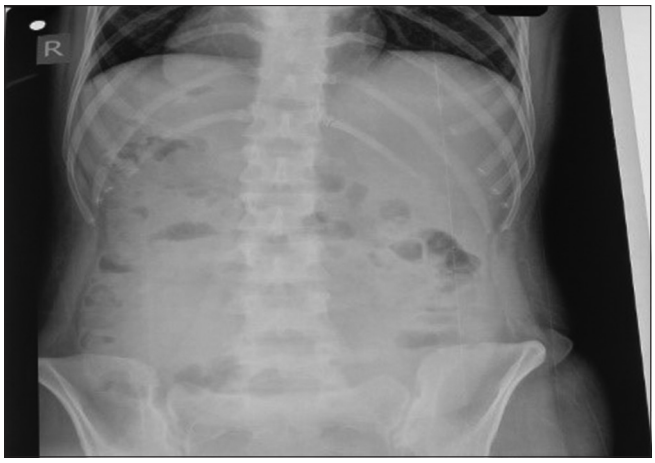

Figure 1: X-ray at admission which is normal

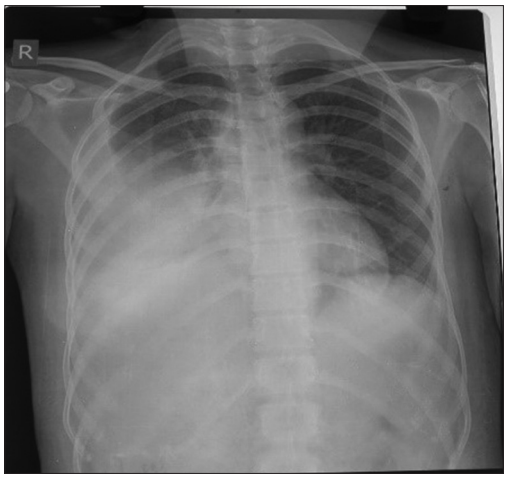

Figure 2: Postoperative X-ray of the patient showing moderate effusion

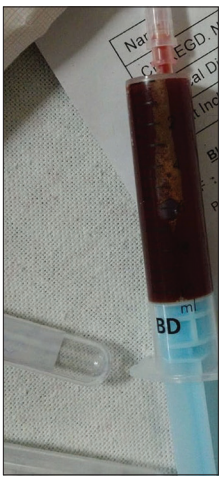

Figure 3: Diagnostic thoracocentesis revealed unclotted blood

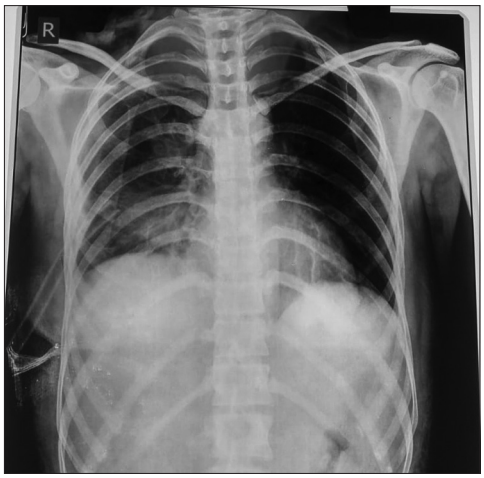

Figure 4: X-ray after chest tube insertion depicting resolution of the effusion

Chest X-ray was normal [Figure 1] and electrocardiogram suggested sinus tachycardia. Ultrasonography (USG) of the abdomen with pelvis revealed obscured pancreas with mild ascites with minimal fluid in the pouch of Douglas.

A provisional diagnosis of acute hemorrhagic pancreatitis with sepsis/multiple organ dysfunction syndrome/acute kidney injury/ascites was made. Diagnostic paracentesis was unsuccessful. The patient was kept nil per oral and treated with antibiotics, blood transfusion, and fluids. Contrast-enhanced computed tomography (CECT) of the abdomen and pelvis was planned. A urine pregnancy test was done and it was positive. USG of the pelvis was repeated the next day in view of high suspicion of ectopic pregnancy and deterioration of her clinical condition. It was suggestive of septate gross ascites, empty uterus, and well-defined discoid lesion of size 26.5mm in the right adnexa with a yolk sac suggestive of a ruptured ectopic pregnancy.

The patient was immediately transferred to the gynecology ward, shifted to the operation theatre, and operated on. During laparotomy, 1.8 L of hemoperitoneum was drained and right ruptured tubal pregnancy was found for which right side salpingectomy was done. The patient was shifted to a postoperative ward for further monitoring. Her hemogram, liver function test, and KFT improved: Hb: 8.1 g/dL, total leukocyte count: 13,000/mm^3, and platelet: 1.8 lakh/uL. She started complaining of breathlessness in the immediate postoperative period. Her saturation was 90% on room air and breath sounds were decreased over the right basal area; a chest Xray was repeated which was suggestive of moderate pleural effusion [Figure 2]. She was shifted back to the medicine ward and a diagnostic thoracocentesis was done which yielded unclotted blood [Figure 3]. Pleural fluid analysis suggested 60% neutrophils, 40% lymphocytes, lactate dehydrogenase: 3680 U/L, protein: 6 g/dL, and hemorrhage and a hematocrit of 13.8% (peripheral blood hematocrit: 26%) A therapeutic pleural tap was done and 750 ml of blood was drained. Hemoglobin level did not fall throughout the hospital stay. Serial chest X-rays also revealed pleural effusion for which a chest tube was inserted and 1 L of hemothorax was drained. CECT of the chest and abdomen with computed tomography Angiography of the major neck vessels was done. which

excluded any trauma or pancreatic pathology. There was evidence of mild loculated right-sided pleural effusion with right middle zone collapse and consolidation. The chest tube was removed after the resolution of hemothorax [Figure 4]. Her saturation improved to 96% and tachypnea resolved. She was discharged in a stable condition on Day 20.

Discussion

Hemothorax is caused by medical or surgical conditions. Its differentials include trauma, infections, coagulation disorders, vascular disease, inflammation, malignancy, and rarely atypical presentation of endometriosis.[2] Nontraumatic hemothoraces are associated with metastatic or malignant pleural disease,[3] anticoagulant therapy, ruptured thoracic aorta, and pancreatic pseudocyst.[4]

The mechanism of this interesting condition has been speculated. We are seemingly aware of hepatic hydrothorax in cirrhosis of the liver wherein diaphragmatic fenestrations (porous diaphragm syndrome) on the right side may be present giving rise to peritoneopleural communications.[5] Increased intra-abdominal pressure secondary to massive ascites (in our case, hemoperitoneum) and negative intrathoracic pressure during inspiration creates a unidirectional channel for the passage of intraperitoneal fluid collection. The mechanism of hemothorax, in this case, seems to be diaphragmatic shunting as well. Other rare mechanisms include trophoblastic invasion into the pleura by an ectopic implanted on the diaphragm[6] and passage of blood along the connective tissue sheaths of the esophagus through the hiatus into the mediastinum, followed by rupture into the pleural space.[7]

This case was also remarkable for the diagnosis of hemothorax in the postoperative period after the drainage of hemoperitoneum. A possible explanation for this is the slow collection of blood in the abdomen with a gradual rise of intra-abdominal pressure, eventually leading to hemothorax which was significant enough to cause respiratory distress only in the postoperative period. The serial imaging corroborates to this theory as the initial sonogram showed only mild ascites while the subsequent one had gross ascites. The X-ray at admission was normal and we could not clinch the diagnosis preoperatively as it was repeated 2 days after admission in the postoperative period.

This rare occurrence has been scarcely reported in India. Agrawal *et al*. report a similar case in which a patient had hemothorax associated with a ruptured ectopic pregnancy.[2] Suree Sompradeekul and Jitruckthai were able to demonstrate the passage of blood to the pleural cavity from the peritoneal cavity.[8]

While a ruptured ectopic demands an immediate exploratory laparotomy with salpingectomy, spontaneous hemothorax is managed with a chest tube insertion to evacuate the blood and to assess the rate of bleeding. In patients with initial drainage of more than 1500 ml of blood or ongoing hemorrhage of more than 200 mL/h over 3–4 h, video-assisted thoracoscopic surgery (VATS) or thoracotomy is indicated. In patients with low drain output without loculations or clots drain is removed after the resolution, the presence of clots or loculations calls for a fibrinolytic therapy or VATS/thoracotomy.[9,10]

Conclusion

Hemothorax in a patient with ectopic pregnancy is exceedingly rare. If a female with a ruptured ectopic pregnancy and hemoperitoneum presents with breathlessness, hemothorax should be considered. This rare complication must be kept in mind and high clinical suspicion is important for prompt treatment of both hemothorax and ruptured ectopic pregnancy.

Declaration of patient's consent

The author confirms that she has obtained the appropriate consent from the patient to publish this case report. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal her identity.

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Conflicts of interest

There are no conflicts of interest.

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