Letter to the editor

An unusual emergency department case: ruptured ectopic pregnancy presenting as chest pain

Eric Dichter, James Espinosa, James Baird, Alan Lucerna

Department of Emergency Medicine, Rowan University SOM, Kennedy University Hospital, Stratford, New Jersey, USA

Corresponding Author: Alan Lucerna, Email: lucernaa@gmail.com

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INTRODUCTION

Ectopic pregnancy occurs at a rate of 1%–2% of all pregnancies, and tends to occur at a higher rate (up to 4%) in patients receiving fertility treatments.^[1] Women with ectopic pregnancies are often asymptomatic or may complain of amenorrhea, vaginal spotting, and lower abdominal cramping pain. They may also report common symptoms of early pregnancy such as nausea, vomiting, dizziness, and flu-like illness. Once ruptured, patients classically present with severe abdominal pain, rebound and rigidity, tachycardia, and hypotension.^[1] Here we present a case of a young woman with a very atypical presentation of ruptured ectopic pregnancy.

CASE REPORT

A 36-year-old female presented to the emergency department (ED) complaining of the sudden onset of substernal chest pain, described as pressure and pleuritic, that began one hour prior to arrival at home. She stated that she was approximately seven weeks pregnant by first date of her last menstrual period and had not yet had a pelvic ultrasound. This was her second pregnancy. She had one living child. She had no history of previous abortions, ectopic pregnancies, or fertility treatment. She denied any other medical conditions. Her surgical history included a tonsillectomy. Social history was negative for tobacco, alcohol, and drug use.

The patient and her husband reported having sexual intercourse one hour prior to arrival, and within minutes thereafter developed substernal chest pressure with associated shortness of breath, which was made worse with deep breathing. She admitted to nausea and she noted that she had vomited once prior to arrival. She also

reported having had intermittent spotting and suprapubic pressure throughout the past month of her pregnancy, but denied abdominal pain or vaginal bleeding at the time of presentation.

Her initial vital signs were within normal limits, without evidence of tachycardia or hypotension. Physical examination revealed a well-appearing female in no acute distress, resting comfortably. Her pulmonary and cardiac exams were unremarkable. On abdominal exam, the patient had mild suprapubic tenderness without evidence of guarding, rebound, or rigidity. Normal saline, morphine sulfate, and ondansetron were given for the patient's comfort.

A chest X-ray was performed which showed no acute abnormalities. An electrocardiogram showed a normal sinus rhythm at 66 beats per minute without acute ST segment or T wave changes. A complete blood count (CBC) revealed a white blood cell count of $15.9 \times 10^3/\mu\text{L}$, hemoglobin of 11.3 g/dL, and platelets of $248 \times 10^3/\mu\text{L}$. A basic metabolic panel was unremarkable. The initial Troponin-I was less than 0.02 ng/mL. The quantitative beta-HCG was 13 909 mIU/mL, slightly below the predicted 15 000–200 000 mIU/mL for her gestational age. Urinalysis was unremarkable except for microhematuria with 5–10 red blood cells per high-powered field.

Considering her complaint of chest pain during pregnancy, the possibility of a pulmonary embolism (PE) was discussed with the patient. Work-up options were discussed, including a consideration of a computed tomography-angiogram (CTA) of the chest versus a ventilation-perfusion study (V/Q scan). The decision was made to perform a CTA chest for PE, which revealed no evidence of pneumonia, pericardial effusion, aortic

dissection, or pulmonary embolism. However, the study did show a small amount of ascites in the upper abdomen around the liver and spleen, for which the radiologist recommended further imaging (Figure 1).

A trans-vaginal pelvic ultrasound was then obtained to further evaluate her ascites and in order to obtain a baseline 1st trimester confirmation of an intrauterine pregnancy. This study revealed moderate heterogeneous fluid in the cul-de-sac, with no intrauterine pregnancy (IUP) visualized and with a two centimeter right ovarian cyst (Figure 2). The radiologist noted the differential diagnoses as non-visualized early IUP, normal or abnormal, versus non-visualized ectopic pregnancy.

At that time, the patient was re-evaluated. She continued to maintain stable vital signs with a stable abdominal exam, mild continued suprapubic tenderness without rebound, rigidity or guarding. Her chest pain had improved but was still present after being medicated with morphine sulfate. A type and screen and repeat hemoglobin and hematocrit revealed a decrease in her

hemoglobin from 11.3 to 10.0 g/dL. A call was placed to obstetrics and gynecology, who evaluated the patient and decided to take the patient at once to the operating room for diagnostic laparoscopy.

Laparoscopy revealed a hemoperitoneum with 950 mL of blood with a right fallopian tube ectopic pregnancy. Evacuation of clot and a right salpingectomy was successfully performed. The patient tolerated the procedure well and was ultimately discharged without complication to home.

DISCUSSION

The patient presented had no history of fertility treatments. Her chief complaint was post-coital substernal, pleuritic chest pain and shortness of breath, accompanied by the more minor complaints of nausea and vomiting. Of particular interest, her chest pain in the setting of pregnancy led to performing a CTA of her chest to rule out pulmonary embolism. The "upper abdominal ascites" visualized on CT was in actuality a hemoperitoneum surrounding her liver and spleen, which likely was irritating her diaphragm with resultant referred pain to via the phrenic nerve and intercostal nerves T5–11. Patients with cholecystitis are well known to have referred pain to the right chest and shoulder, and hemoperitoneum may present similarly.

A review of the literature revealed one previous documented cases of a ruptured ectopic pregnancy presenting with a chief complaint of chest pain. Bildik et al^[2] reported a case of ruptured heterotopic pregnancy that presented as acute left sided chest pain, and the patient was ultimately diagnosed with ruptured left fallopian tube ectopic pregnancy on laparoscopy.

There have been unusual presentations of ectopic pregnancy reported in the literature. For example, Hull^[3] presented two unusual presentations—an advanced tubal pregnancy that formed a fistula with the abdominal wall and an early tubal pregnancy that formed a fistula with the ileum with rectal bleeding. Sanda et al^[4] presented a case of an abdominal compartment syndrome due to a ruptured ectopic pregnancy. However, a review of the literature revealed no previous documented cases of a ruptured ectopic pregnancy presenting with a chief complaint of chest pain.

Although rare, one must consider the diagnosis of ruptured ectopic pregnancy in women with complaints of chest pain in early pregnancy with no confirmed IUP. Current reviews of ectopic pregnancy emphasize such elements as pelvic pain, vaginal bleeding, unexplained

Figure 1. CTA chest, revealing a small amount of free fluid around the liver and spleen that was incompletely visualized.

Figure 2. Pelvic ultrasound revealed a moderate amount of heterogenous free fluid in the cul-de-sac.

syncope or hemorrhagic shock.^[5] In the future, such reviews may need to include the possibility of a chest pain presentation.

Additionally, only one previous case of a ruptured ectopic pregnancy presenting after coitus has been reported in the literature by Ahmed et al. While ruptured ovarian cysts are known to occur via this mechanism, a ruptured ectopic pregnancy induced by sexual intercourse appears to be exceedingly uncommon. As such, women presenting with complaints of abdominal or chest pain after recent coitus should be evaluated for a potential ruptured ectopic pregnancy.^[6]

CONCLUSIONS

Ruptured ectopic pregnancy is a devastating consequence of the implantation of embryos outside the uterus. The classic triad of ectopic pregnancy includes abdominal pain, amenorrhea, and vaginal bleeding. Progression of symptoms to severe abdominal tenderness, peritoneal signs, and shock is indicative of a ruptured ectopic pregnancy.

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