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Ovarian Hemorrhagic Cyst in a 42-Year-Old Female Receiving IVF

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Abstract:

We report a case of a 42-year-old female who presented with lower abdominal/pelvic painand diagnosed with an active hemorrhagic ovarian cyst after undergoing egg retrieval as part of in-vitro fertilization (IVF) treatment. The differential for abdominal pain in women is vast, but for this patient receiving IVF we had to consider ovarian hyperstimulation syndrome and ectopic pregnancy just to name a few examples. It is predictable that most women will suffer from a ruptured ovarian cyst at some point in their lifetime so long as they continue to menstruate

Introduction:

Ovulation is the process of releasing a matured egg from the ovary into the fallopian tube when it can be fertilized by sperm. As a result of ovulation, a fluid-filled sac can from on either or both ovaries known as an ovarian cyst (source 1,3). Hemorrhagic ovarian cysts occurs when an egg is released through a follicle and that follicle bleeds into a cyst. A clinician should recognize that even though most cases of ovarian cysts are benign, some complications including rupture, hemorrhage, or torsion are serious complications that require immediate medical or surgical intervention. Here we discuss a case of a ruptured ovarian cyst secondary to patient receiving in-vitro fertilization therapy

Case Presentation:

42-year-old female G1M1 with a past medical history of hemorrhoids and aortic valve replacement on warfarin presents to the ED for pelvic pain and difficulty urinating. Patient has been receiving IVF therapy for 3 weeks with her last session being 6 days prior to ED visit for egg retrieval. Patient was switched from warfarin to enoxaparin abdominal injections by Maternal Fetal Medicine specialist to avoid teratogenic effects of warfarin and had no complications throughout IVF treatment sessions for the past 3 weeks. Patient has been complaining of diffuse lower abdominal, suprapubic, and lower back pain for several days but denies recent fall or trauma to the abdomen or back. Patient also complained of difficulty urinating, stating that a small amount comes out and is associated with rectal pain and decreased defecation. Patient however denies vaginal bleeding, hematuria, dysuria, chest pain, dyspnea, nausea, vomiting, fever, or chills on ED arrival.

On presentation, her vital signs were blood pressure of 123/75 mm Hg, heart rate of 81 beats per minute (bpm), respiratory rate of 20 breaths per minute, temperature 97.8 degrees Fahrenheit orally, and a pulse oximetry of 100% on room air. Her Body Mass Index was 37.49 kg/M2.

Physical exam revealed a non-toxic, well-appearing female in no respiratory distress. Cardiopulmonary exam revealed normal S1 and S2, no murmurs or friction rub. Pulmonary exam revealed lungs clear to auscultation bilaterally with no rhonchi or rales. Abdominal exam revealed diffuse tenderness to palpation in lower abdomen associated with bruising from enoxaparin injection sites. No rebound, guarding, or pulsatile wave appreciated on abdominal exam. GU exam no external hemorrhoids or active bleeding from the rectum. Negative guaiac staining.

Initially, pelvic ultrasound was ordered and showed a small amount of nonspecific free pelvic fluid. When the patient returned from ultrasound she had a near syncopal episode when standing as witnessed by nursing staff and SBP <95 was recorded on cardiac monitor. Patient states that prior to passing out she felt “pressure” in her rectum but no rectal or vaginal bleeding occurred. Throughout ED course patient continued to have near syncopal episodes associated with rectal pressure, hypotension, and then complete resolution of symptoms after normal saline administration. Chest x-ray showed no acute pulmonary process. CT abdomen and pelvis showed hemorrhagic ascites and enlarged bilateral ovaries with hemorrhagic cysts. After further conversation with the patient, she agreed to CTA abdomen/pelvis scan confirmed left ovarian hemorrhage. ICU and OBGYN team consulted. FFP and vitamin K ordered for anticoagulation reversal. One unit of packed red blood cells administered for acute drop in Hgb to 9.2. Patient flown out via helicopter to Jefferson Center City Maternal Fetal Medicine and ICU team.

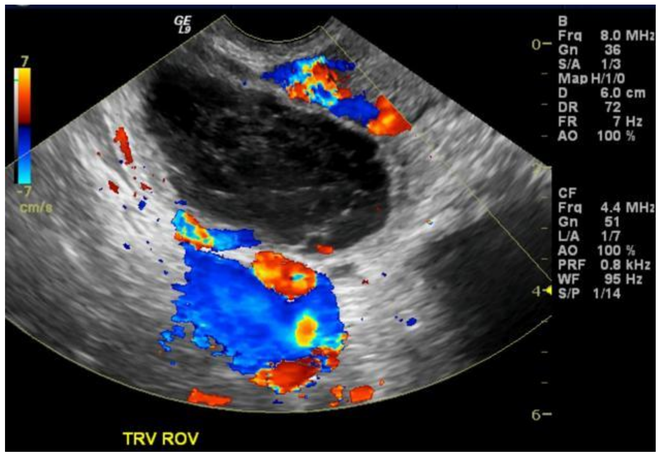

Figure 1: Ruptured ovarian cyst on ultrasound

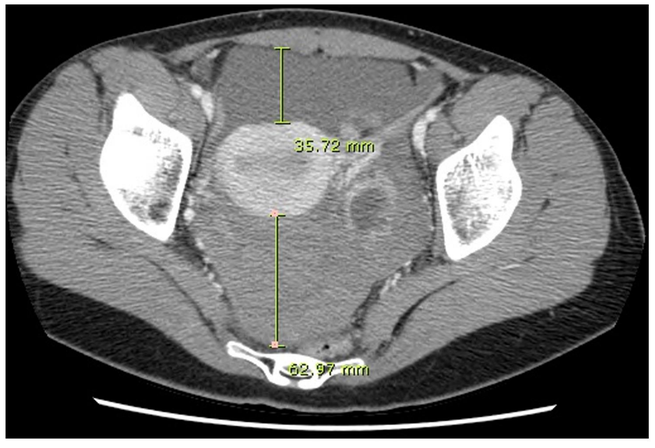

Figure 2: Ruptured ovarian cyst showing area of hemoperitoneum

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Discussion:

The patient presented with lower abdominal/suprapubic pain and tenderness that was demonstrated on CT scan to be due to active ovarian hemorrhage from a ruptured cyst.

Incidence ovarian cysts:

“Approximately 4% of women will be admitted to the hospital for ovarian cysts by age 65.” (source 1) Ovarian cyst prevalence is unknown as most patients tend to be asymptomatic, undiagnosed, and dependent on the population being evaluated. In a survey of ~34000 pre and postmenopausal women, 47% had an ovarian cyst on ultrasound with 63% showing resolution of cyst on repeat ultrasound (source 1). This survey was looking at the risk of simple ovarian cyst abnormalities turning into a carcinoma

Pathophysiology:

Hemorrhagic ovarian cysts occur in patients who are undergoing their menstrual cycle. In response to the release of estrogen and progesterone the stromal cells surrounding the mature Graafian follicle becomes more vascular. After the oocyte is released into the fallopian tube awaiting to be fertilized by sperm, the Graafian follicle turns into the corpus luteum with a highly vascular and fragile granulosa layer that can rupture and form a hemorrhagic ovarian cyst (source 2)

Presentation of ovarian cysts:

A detailed history and physical exam is needed to help make the diagnosis of ovarian cyst. As previously mentioned, ovarian cysts can be symptomatic or asymptomatic. Symptoms include intermittent unilateral pain/pressure in the lower abdomen that is described as either dull or sharp. If the ovarian cyst ruptures, the patient can experience severe pain, vaginal bleeding, nausea, vomiting, and irregular menstruation (source 1).

Laboratory studies:

When an ovarian mass is suspected, the first thing is to determine whether the patient is pre or postmenopausal. If premenopausal, b-Hcg needs to be obtained to rule out intrauterine or ectopic pregnancy. If there are concerns for excessive blood loss from vaginal bleeding, serial hemoglobin and hematocrit should be ordered to evaluate for anemia and possible blood transfusion if needed. Be sure to rule out urinary tract infections or kidney stones as a reason for bleeding (source 1).

Imaging:

Ultrasound (US), computed tomography (CT), and Magnetic Resonance Imaging (MRI) are currently used to assess ovarian pathology including cysts and tumors. US is fist-line as it helps in detection and characterization of the ovarian lesion (tumor vs cyst). If US is unable to properly define if the ovarian lesion is benign or malignant, then additional imaging can be used along with biopsy if necessary (source 10).

Management:

Treatment depends on various factors including the patient’s age, the type of cyst, and size of the cyst. Medical intervention with hormonal contraceptives can be used in a way to regulate ovulation and decrease the probability of developing more cysts (source 5). The main mechanism of action for combined oral contraceptives (estrogen + progesterone) and progestin-only methods is to prevent follicular development and ovulation. Intrauterine devices are less likely to prevent cyst formation but can prevent fertilization from sperm (source 7).

One study found that the use of hormone replacement was associated with a reduction in the prevalence of ovarian cysts in early postmenopausal women aged 40-55 years (source 8). Note that for postmenopausal women, additional diagnostic test such as serum CA-125 and repeat transvaginal ultrasound may be needed to screen for ovarian cancer (source 4).

Surgical treatment:

In severe cases, patients who suffer from an active ovarian hemorrhagic cyst require surgical intervention using a laparoscopic procedure to perform an oophorectomy and cauterization of the bleeding site if necessary. Indications for laparoscopic treatment include: transvaginal ultrasound showing a <5cm mass with liquid, less than 3 fine partitions, a thin wall (<3mm), no vegetations, and a normal doppler (source 9)

Conclusions:

Ruptured ovarian hemorrhagic cyst can be lethal depending on the size of the cyst and amount of blood lost. Here we described a case of a 42-year-old female undergoing egg retrieval for IVF and simultaneously on anticoagulation therapy for aortic valve who initially presented for abdominal pain and became hypotensive with associated syncope in the ED because of active ovarian hemorrhage after. It is crucial to diagnose large ovarian hemorrhages promptly in order to start medical therapy (i.e. anticoagulant reversal) and surgical repair if needed.