

POSTPARTUM OVARIAN VEIN THROMBOSIS: A RARE CAUSE OF ACUTE PELVIC PAIN

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Introduction

Ovarian vein thrombosis (OVT) is an uncommon but potentially serious postpartum complication. It could also be associated with pelvic inflammatory disease, malignancies, and pelvic surgery. Ovarian vein thrombosis occurs in 0.05–0.18% of pregnancies and is diagnosed on the right side in 80–90% of the affected postpartum patients.^{1,2} Clinical features of OVT are nonspecific. Abdominal pain in lower quadrants, fever and leucocytosis are common findings. Clinical symptoms may mimic acute appendicitis and many other various clinical conditions such as ovarian torsion, pelvic inflammatory disease, tubo-ovarian abscess, hematoma of the broad ligament and pyelonephritis.

OVT can cause serious complications such as sepsis, inferior vena cava (IVC) thrombosis, pulmonary thromboembolism and renal vein thrombosis which may even lead to death. Systemic anticoagulation and intravenous antibiotics are the treatment strategies.

Ultrasonography and cross sectional imaging such as CT or MRI play a main role in diagnosing this condition. Prompt diagnosis and treatment of this condition is needed to reduce the morbidity and mortality that are related either to the thrombosis or to associated sepsis.

Case report

A 29-year-old primi mother presented with right flank pain and high fever along with leucocytosis on the second day following

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emergency LSCS for foetal distress. The clinical diagnosis was made as acute appendicitis. Diagnosis of right tubo-ovarian abscess had been made on initial abdominal and pelvic ultrasonography. As the baby was transferred to a tertiary care children's hospital for specialized neonatal care, the mother was transferred to the nearby maternity hospital on the fourth day following the LSCS. She had been subjected to an urgent contrast enhanced CT scan (CECT) of the abdomen and pelvis on the fifth day and the same diagnosis of right tubo-ovarian abscess was made. No retained products of conception or free fluid was detected on CT and the appendix was found to be normal (figure 1).

Her abdominal pain and the fever did not subside despite optimal intra venous antibiotic treatment, thus she was referred for a repeat ultrasound scan on the sixth day. High leukocyte count persisted indicating a possible ongoing infection. At this time she was rather ill looking, abdomen was distended and there was no mass palpable. LSCS incision was in the healing phase. Lower abdominal tenderness was noted on clinical examination. Right iliac fossa region anatomy was obscured on sonography possibly due to overlying bowel gas shadows. However an enlarged right ovary was identified on the same. In addition there was a hypoechoic, elongated structure with a distinct echogenic wall measuring 3.7cm * 2.3 cm in the right adnexal region subadjacent to the enlarged right ovary. This lesion was non compressible. Patient had tenderness to the probe pressure over this region. There was no free fluid in the pelvis. Endometrial cavity was empty. An

ovarian pathology was suspected based on sonography.

In view of the complex clinical picture a second look at the CT scan was carried out along with previous sonographic findings which confirmed the right adnexal hypo dense structure. It also showed a tubular structure with an enhancing wall and a hypo dense lumen, extending up to the right renal hilum. The enlarged right ovary was separately visualized (Figure 2).

Another meticulous ultrasound scan was performed having understood the CT findings, and it confirmed a thickened and thrombosed right ovarian vein as a hypoechoic tubular structure ascending cephalad, with absent colour flow and spectral wave form on Doppler.

The diagnosis of right ovarian vein thrombosis was made based on both sonographic and CECT findings in the background of right lower abdominal pain occurring in the post partum period. This diagnosis was made on the sixth day following the LSCS.

Anticoagulation treatment was promptly commenced by the clinician and the patient was followed up on sonography after one week. Patient's condition improved remarkably and fever as well as the abdominal pain resolved completely. Subsequent ultrasonography failed to show any progression of the thrombosis.

Discussion

Women are five times more likely to suffer from a thromboembolic event during

pregnancy¹. The most common postpartum thromboembolic events include deep vein thrombosis and pulmonary embolism. However, ovarian vein thrombosis complicates 0.05%–0.18% of pregnancies⁴. The first case of postpartum ovarian vein thrombosis was described by Austin O G in 1956.

Ovarian vein thrombosis is a rare but potentially fatal complication of postpartum period. Its occurrence in non pregnant patients has seldom been reported. OVT occurs 80-90 % in right side as seen in this patient. This could be caused by compression of the right ovarian vein against the sacral promontory due to an enlarged dextroverted uterus and presence of retrograde flow in the left ovarian vein^{2,3}. The pathophysiology of ovarian vein thrombosis is ascribed to Virchow's triad of hypercoagulability, venous stasis and endothelial trauma.

Patients with ovarian vein thrombosis typically present with fever, pelvic pain and a high leucocytes count, which was witnessed in the indexed case. The incidence peaks around postpartum day two of full-term deliveries and occurs within ten days of postpartum in 90% of cases. In our case the patient showed symptoms typically by the second day. As the presenting symptoms are quite nonspecific, there is a tendency to delay in diagnosis of ovarian vein thrombosis, as well illustrated in our patient. The differential diagnosis for ovarian vein thrombosis include appendicitis, tubo-ovarian abscess, ovarian torsion, pyelonephritis, and pelvic thrombophlebitis. In our case too, the initial diagnosis was

made as acute appendicitis clinically, and as right tubo ovarian abscess on sonography.

The diagnosis of ovarian vein thrombosis is commonly made with CECT of abdomen and pelvis. Characteristic finding on CECT is the visualization of the thrombosed ovarian vein. It is seen as an enlarged tubular retroperitoneal structure originating in the region of the adnexa and extending cephalad in the retroperitoneum to the level of the renal vein. The thrombus and peripheral rim-enhancement of the wall of the vein are seen as a filling defect outlined by an enhancing wall. Secondary signs on CT scans are perivascular inflammatory fat stranding, enlarged uterus with retained endocavitary fluid, and inhomogeneously enhancing parauterine mass believed to be secondary to accompanying pelvic thrombophlebitis. Multiplanar reconstructed coronal images would improve visualization of the thrombus in its entire length,^{3,8,9}. However, ultrasonography is commonly used as the preliminary radiological investigation in postpartum women, as it is more patient and user friendly with no risk of ionizing radiation. On sonography, the thrombosed ovarian vein appears as an anechoic to hypoechoic tubular structure extending superiorly from the adnexa, lateral to the IVC and aorta, retroperitoneally^{7,9}. Doppler ultrasound provides a quick and inexpensive initial examination of the ovarian vein with absent color-flow and spectral waveform. Sensitivity and specificity of color Doppler US is reportedly low relatively due to overlying bowel gas which limits the sonographic visualization, particularly in the post partum period.

MRI is the most reliable investigation with sensitivity as well as specificity of almost 100% and is recommended in all patients with inconclusive US and Doppler findings with clinical suspicion of OVT⁸. Unfortunately our patient could not be offered MR imaging due to limited availability. MR does not require IV contrast material as in CT⁶ due to its higher sensitivity for detecting blood flow and to the paramagnetic effects of iron (in the form of methemoglobin), which enables differentiation between flowing blood, acute thrombus (less than 1 week old), and sub acute thrombus (between 1 week and 1 month).

Treatment for ovarian vein thrombosis includes intra venous antibiotics and anticoagulation. Low-molecular-weight heparin has been shown to be as effective as unfractionated heparin for treating ovarian vein thrombosis. Our patient received the anticoagulation treatment immediately following the diagnosis with good outcome. Complications of ovarian vein thrombosis include sepsis, thrombus extending to the inferior vena cava and renal veins, and pulmonary embolism. Our patient fortunately did not develop thrombus extension to IVC or pulmonary embolism. The incidence of pulmonary embolism is reported to be 13.2%. Mortality due to ovarian vein thrombosis is less than 5%, and most reported cases are due to pulmonary embolism⁶. These complications can also be managed surgically with thrombectomy or with an inferior vena cava filter placement,

particularly if conservative management has been ineffective or contra indicated.

Take home message: Ovarian vein thrombosis is a rare disease entity, but could present late in postpartum women with serious consequences, hence a high index of suspicion for diagnosis and appropriate management is required to avoid complications associated with high morbidity and mortality.

Authors do not have competing interest to declare

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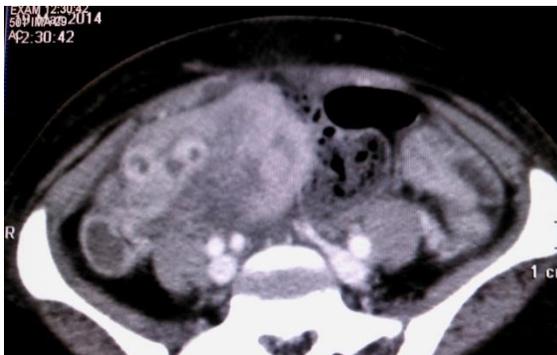


Figure 1: CECT axial view of the pelvis

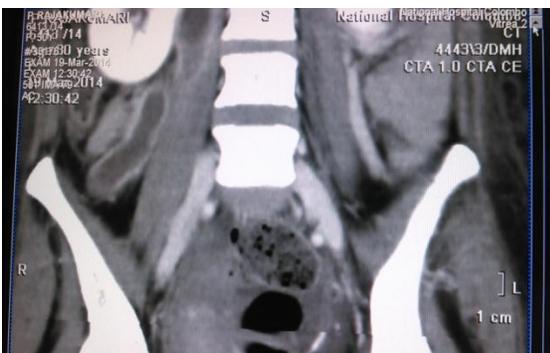


Figure 2: CECT coronal view of the pelvis showing a tubular structure with an enhancing wall and a hypo dense lumen, extending up to the right renal hilum.