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Case Report

Post-partum right ovarian vein thrombosis mimicking acute appendicitis: a rare entity

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ABSTRACT

Postpartum ovarian vein thrombosis (OVT) is a rare condition that must be distinguished from other causes of acute abdominal pain because it presents with non-specific, predominantly lower abdominal pain. If the right ovarian vein is involved, pain would be predominantly right-sided and may be missed for acute appendicitis. OVT has been reported to occur in 0.05% to 0.18% in the postpartum period following normal vaginal deliveries, and in up to 2% following caesarean sections. Untreated, postpartum OVT can lead to serious consequences such as sepsis, pulmonary embolism, and even death. We share a case that was admitted to our hospital with symptoms of acute appendicitis that proved later to be due to postpartum ovarian thrombosis. A 28-year-old woman was admitted to our hospital on her 4th postpartum day, following a spontaneous vaginal delivery of a live born full term female baby, complaining of anorexia, nausea, and abdominal pain in her right lower quadrant accompanied by low grade fever. On examination, she appeared ill and had a significant tenderness in her right lower quadrant. An ultrasonography did not reveal any abnormality and did not visualize her appendix. Patient was referred to a consultant gynecologist and was discharged as having no obstetric nor gynaecological cause of her complaint. Patient was admitted to general surgery department where a venography CT of her abdomen confirmed a thrombus in the right ovarian vein with a normal appendix. Blood tests were positive for anticardiolipin. Patient was treated conservatively and responded well to treatment with low molecular weight heparin and antibiotics. OVT is a rare disease, occurring mostly in the postpartum period. Rapid diagnosis is needed to prevent serious consequences and unnecessary surgical procedures, especially when mimicking an acute abdomen.

Keywords: OVT, Appendicitis, Acute abdomen, Postpartum

INTRODUCTION

Ovarian vein thrombosis (OVT) occurs with an incidence of 1 every 600 pregnancies and is a rare cause of abdominal pain.¹ It commonly occurs in the postpartum period, but can also be observed in non-pregnant patients.^{2,3} The underlying physiology that drives thrombus formation can be seen in his Virchow's triad of venous stasis, vessel wall damage and the presence of a hyper-coagulable state.⁴ All these three factors are present during pregnancy and the postpartum period.⁵ Virchow's triad is also seen in major pelvic surgery, inflammatory diseases, coagulopathies, and malignancies, that is why the disease affects a wide range of age groups.⁶ Post-partum

OVT can be distinguished from other causes of OVT by the postpartum appearance of leukocytosis in 2-15 days.⁶ Fatal cases have been reported due to sepsis, inferior vena cava and renal vein thrombosis, and pulmonary embolism. OVT without an underlying cause is very rare and is called idiopathic ovarian venous thrombosis. Several theories have been suggested to describe the increased risk of OVT in the perinatal and puerperal period, including venous congestion or injury, endometritis, and increased circulation of von Willebrand factor and clotting factors I, II, VII, VIII, IX, X.^{2,3} The diameter of the ovarian vein increases three-fold during pregnancy, and blood flow through the vein decreases after delivery, causing congestion.^{2,3} OVT occurs in the right ovarian vein in most

cases (90%). This is most likely due to its length, multiple dysfunctional valves, and right rotation of the gestational uterus.^{3,4}

CASE REPORT

A 28-year-old woman para 2 (live two and one abortion), at fourth day postpartum (following a normal vaginal delivery), was admitted to our hospital with a history of right lower quadrant abdominal pain associated with nausea, anorexia, fatigue, and low-grade fever. She denied any history of vaginal bleeding. Her immediate postpartum period was uneventful. Her menstrual history was insignificant and no history of contraceptives. Further, she had a history of spontaneous abortion at 7 weeks of pregnancy one and a half years ago. She has no medical co-morbidities, nor hematological disorders. She had a second lumbar to the first sacral discectomy a few years ago. On assessment, she was in discomfort due to pain with a pulse of 97/min, blood pressure 140/90 mmHg, and temperature of 38 C. Her abdominal examination was unremarkable except for tenderness at the right iliac fossa. There was no evidence of deep vein thrombosis in the lower extremities. Her cardiovascular, chest, and pelvic examinations were unremarkable. Blood investigations revealed a slightly raised TLC of 11000, with raised neutrophils of 7.69 and a high CRP of 166.53 mg/dl. Abdominal and transvaginal ultrasound reported a tubular heterogeneous area of approximately 81 mm by 30 mm seen in the pelvis on the right side, inseparable from the right ovary a possibility of right salpingitis, inflamed appendicular lump, and inflammatory mesentery with postpartum enlarged uterus without endometrial collection, and normal ovaries. At this point, the consultant gynaecologist was informed. After examining the patient, it was decided that her complaint was not related to her obstetric history. Patient was admitted to the general surgery department where an abdominal CT angiography was done and reported that the right ovarian vein appears dilated and non-enhancing with significant surrounding fat stranding and minimal free fluid, in keeping with right OVT. The right ovary appears bulky with surrounding few collaterals. The uterus is bulky. Left Ovary is normal. The appendix was normal. After establishing the diagnosis of right OVT, the patient was further evaluated for thrombosis. The laboratory investigations included CBC, coagulation profile, Blood culture, Factor 5, antiphospholipid antibody screening, lupus anticoagulant screening, anti-nuclear antibody, and beta-2 microglobulin were performed. Subsequently, she became positive for anticardiolipin and reduced factor 5 (Table 1). Other thrombophilia tests were not performed, such as anti-thrombin III, the methylenetetrahydrofolate reductase gene, and protein C. The patient was managed by a multidisciplinary team approach by involving obstetricians, physicians, hematologists, microbiologists, and radiologists. Her treatment was initiated with therapeutic anticoagulation low-molecular-weight heparin (LMWH), 6000 IU twice a day, and intravenous antibiotic ceftriaxone, 2 grams once daily. Later, LMWH was

overlapped with warfarin (target INR 2-3). The patient has discharged after five days in a stable condition on Warfarin 6 mg once a day for three months with standard monitoring of INR with a range of 2-3. The follow-up was arranged, 6 weeks following discharge from the hospital with a view of repeat imaging if deemed necessary. The patient continued her follow up in a secondary care hospital rather than this tertiary center.

After three months of follow-up an abdominal CT angiography revealed complete resolution of right OVT and she was instructed to discontinue anticoagulation therapy.

Table 1: Investigations.

Test	Result	Normal range
INR	1.26	0.82-1.05
Fibrinogen	4.81	1.5-4.2 g/L
Thrombin time	14	14-21
CRP (C-reactive protein)	166.5	0-5 mg/L
Haemoglobin	11.72	11-14.5 g/dL
Platelet	211.60	150-450/uL
WBC (White blood cells)	11000	2.4-9.5/uL
Neutrophils	7.69	1-4.8/uL
Factor V Leiden mutation	63%	73-109%
Anticardiolipin IgG	20.8 U/mL	Positive
B2 glycoprotein 1 IgG	<6.4	Upper limit 20 U/ml
Anti-nuclear Ab	Absent	Absent
B-HCG	0.2mIU/mL	0-5.0 MIU/ml
Alfa feto-protein	4 IU/mL	0-6 IU/mL
Lupus anticoagulant	39 seconds	30-45.3 seconds
Thyroid stimulating hormone	3.12	0.27-4.2 m(IU)/ml
Prothrombin time	13.90	9.7-12.9
Activated partial thromboplastin time	27.70	22.3-31.5



Figure 1: Contrast enhanced CT of right ovarian vein thrombosis.



Figure 2: CT of resolution of right ovarian vein thrombosis after treatment.

DISCUSSION

The right ovarian vein is longer than the left and does not have functional valves, so it occurs on the right side in 70-90% of cases.^{4,6} This condition classically occurs during the puerperium. However, it can also occur in conditions other than puerperium; including endometritis, pelvic inflammatory disease, malignancies, hyperthrombosis, inflammatory bowel disease, and pelvic and gynaecologic surgery.⁶ OVT is often vague and variable in appearance. A high suspicion index is required to make a diagnosis. Classically, ovarian venous thrombosis presents in the first 7 days of puerperium and usually presents with fever, pelvic pain, and a mass on the right side of the abdomen. Studies show that 80% of cases present with fever and about 55% present with pain in the right iliac fossa.⁷ Differential diagnoses include (among others) acute appendicitis, inflammatory bowel disease, ovarian cysts and ovarian torsion. The differentiation is dependent on imaging studies. MRI angiography has the highest sensitivity and specificity (close to 100%) in detecting OVT. However, most often, venography CT scans are used as diagnostic imaging tool. Ultrasound can also be used, but it depends on the operator.⁸ Laparoscopy is also a useful diagnostic method.^{9,10} Delays in diagnosing and treating OVT can result in life-threatening complications, including extension of the thrombus into the IVC or ilio-femoral vessels, eventually reaching the pulmonary vessels and causing pulmonary embolism. Other serious complications that can occur include septic thrombophlebitis, necrosis of the ovary and infectious embolism.^{10,11} Treatment of OVT includes medical and surgical treatments, both with similar success rates.^{11,12} The main drug therapy approach involves the use of anticoagulants and broad-spectrum antibiotics for 7 to 10 days. The optimal treatment is a combination of anticoagulant therapy and antibiotics.^{13,14} Antibiotic selection may include imipenem and cilastatin, ampicillin and sulbactam, clindamycin, gentamicin and second- or third-generation cephalosporins.¹⁵ Surgical intervention in the initial treatment of OVT is controversial. However,

some physicians prefer surgery in cases of floating thrombosis, pulmonary embolism that recurs despite medical management, and when anticoagulants are contraindicated.¹¹ Although recurrence of OVT in subsequent pregnancies is low, anticoagulant prophylaxis is recommended in future pregnancies.¹³ The duration of treatment with anticoagulants is for 3 months.¹⁴ Small thrombosed pelvic veins can be treated in a short period of 2-3 weeks.^{14,15} Additionally, some authors recommend that asymptomatic OVT can be treated without anticoagulants, unless there is imaging evidence of thrombus extension or development of pulmonary embolism.^{10,13,14} Warfarin is a better alternative because it is more convenient without injections and allows safe breast-feeding.^{14,15}

CONCLUSION

Ovarian venous thrombosis should be considered in each postpartum lady complaining of abdominal pain and fever. Radiographic images such as MRI angiography and venography CT scans are helpful for diagnosis. Prompt diagnosis of OVT is necessary to prevent serious complications. A multidisciplinary approach to suspected ovarian venous thrombosis is of paramount importance to optimize post-partum outcome. Awareness and clinical knowledge are essential for proper management and avoidance of unnecessary surgical procedures.

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