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CASE REPORT

Postpartum ovarian vein thrombosis: report of a case and review of literature

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ABSTRACT

Postpartum ovarian vein thrombosis (POVT) is an uncommon disease and it may complicate streptococcal group B infection of the vagina and endometrium. Obstruction of the right ureter is an uncommon complication of POVT. We present a case of POVT complicated by thrombus extension in the inferior vena cava and ureteral obstruction with urinary leakage, and outline the clinical presentation, radiological investigations useful in diagnosis and treatment of the disease process.

INTRODUCTION

There is an increased risk of thrombosis in pregnancy and puerperium.[1] Deep vein thrombosis complicates approximately 5 of 1000 pregnancies and pulmonary embolism is seen in 1 of 2000 pregnancies and the incidence of both is much higher in the puerperium. Compression of the inferior vena cava (IVC) by the uterus and hormonal changes underlie the thrombus formation in the deep veins of the lower limbs and pelvis. Changes in fibrinolysis and coagulation during pregnancy are possibly the most important factors (protein S deficiency; increased fibrinogen and concentration of factors II, VII, VIII, IX and X; increased platelet adhesion; and decreased fibrinolysis).[1] Underlying thrombophilia, such as antithrombin III deficiency, factor V Leiden, protein C or S deficiency can present for the first time as thrombosis in the postpartum period.[1,2] Postpartum ovarian vein thrombosis (POVT) is an uncommon disease that affects approximately 1 of 2000 deliveries or abortions and it may complicate streptococcal group A infection of the vagina and endometrium.[3] Obstruction of the right ureter is an uncommon complication of POVT.[4,5] We present a case of POVT complicated by thrombus extension in the IVC and ureteral obstruction.

CASE REPORT

A 33-year-old woman, gravida 1 para 1, presented five days after a normal vaginal delivery with right lower quadrant abdominal pain. She had had an uncomplicated pregnancy and was previously healthy. She had no chest pain or dyspnoea. She had no history of tobacco, alcohol or drug abuse. There was no clear tendency for thrombosis in her family. Physical examination showed an acutely ill and anaemic woman. The pulse was 100 beats/min, blood pressure was normal and temperature was 38.6°C. The findings of cardiopulmonary examination were unremarkable. Abdominal examination revealed right lower quadrant tenderness with no rebound tenderness and the right lumbar region was sensitive to palpation. Bimanual examination elicited cervical motion tenderness and right adnexal tenderness. There was no evidence of deep vein thrombosis in the lower extremities.
Laboratory examination showed a haemoglobin of 7.8 mmol/l, MCV 86 fl, white blood cell count $15.1*10^9$/l and C-reactive protein (CRP) 135 mg/l. Renal and liver function tests were normal. Urine and blood cultures were negative. Streptococcus group B was cultured from a vaginal smear. She had negative test results for antinuclear antibodies, anticardiolipin (IgM and IgG) antibodies and factor V Leiden. She had normal homocysteine and protein C and S levels.

An abdominal and pelvic ultrasound showed a thrombus (about 3 cm) in the right ovarian vein extending into the IVC (*figure 1*), also a moderate obstruction of the right ureter and rupture of a calyx and urinary leakage (*figure 2*). Computerised tomography (CT) confirmed the ultrasound results (*figure 3*). Findings on chest radiograph and electrocardiogram were normal.

The patient was treated with anticoagulants in the form of fraxiparine (low-molecular-weight heparin) together with the oral anticoagulant acinocumarol. Acinocumarol was continued for three months. A ten-day course of amoxycillin-clavulanic acid was also administered. She made a good recovery and was discharged from the hospital after five days. The ultrasound examination was repeated six months later and showed complete resolution of the thrombus and normalisation of the changes in the right kidney.

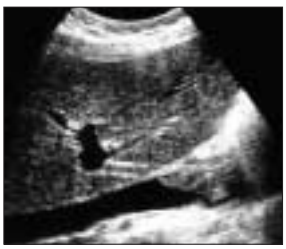

Figure 1
An abdominal and pelvic ultrasound showing thrombus in the IVC extending into the right ovarian vein

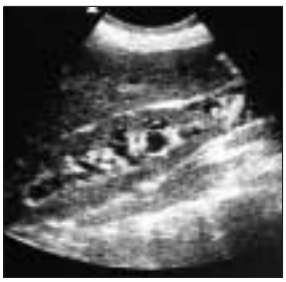

Figure 2
An abdominal ultrasound showing obstruction of the right pelvicalyceal system and rupture of calyx with urinary leakage

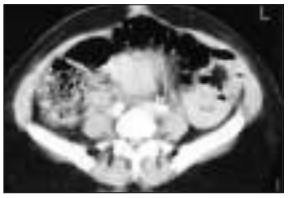

Figure 3
Computerised tomography of the abdomen showing a dilated right ureter next to a thrombosed right ovarian vein

DISCUSSION

The incidence of POVT is between 1:600 and 1:2000 deliveries.[1] Ovarian vein thrombosis has seldom been reported in nonpregnant patients.[6] POVT is a clinical entity characterised by lower abdominal or flank pain, fever and leucocytosis.[1,5] Of patients with POVT, 90% present within 10 days (1 to 17 days) after delivery.[1] The classical clinical picture is pain in the lower abdomen, and fever not responding to antibiotic treatment.[3]

A total of 80 to 90% of cases involve the right ovarian vein, while the left ovarian vein is involved in only 6%, and it is bilateral in 14% of the cases.[7]

A rare presentation of POVT is acute obstruction of the right ureter.[4,5] The obstruction of the left ureter as a presentation or complication of POVT has seldom been reported. Anatomically, the right ovarian vein crosses in front of the right ureter at the level of the L4 vertebra on its way to the inferior vena cava,[8] it is longer than the left and has multiple incompetent valves. The left ovarian vein does not cross the left ureter. Also, the left vein has retrograde blood flow, which probably prevents bacterial contamination.[8]

The most important reported aetiological factors are multiparity, puerperium, the postoperative period (e.g. caesarean section), infection (e.g. streptococcus group A or B, thrombophlebitis),[3] Crohn's disease[9] and malignant tumours.[10]

Other risk factors include systemic lupus erythematosus, antiphospholipid syndrome, presence of factor V Leiden, paroxysmal nocturnal haemoglobinuria, hyperhomocysteinaemia, protein C and S deficiency[1,2] and heparin-induced thrombocytopenia.[11] Thrombophilia screening testing in our patient turned out to be normal.

The current theory of POVT pathogenesis is based on the Virchow's triad of thrombosis, which consists of endothelial injury, stasis and hypercoagulability. Endometritis or infectious thrombophlebitis promotes endothelial injury. The most likely underlying causative factor in our patient is streptococcus group B infection of the vagina and /or the endometrium. This is a rare infection in the puerperium, but can rapidly develop into life-threatening puerperal sepsis, multiorgan infection and shock.[3]

The diagnosis of POVT can be established by ultrasound, CT scan or MRI examinations.[12-14] Kubik-Huch *et al.*[12] compared the radiological methods used in POVT and found the following sensitivities and specificities: Duplex ultrasonography (sensitivity 55.6%, specificity 41.2%), contrast-enhanced CT scan (sensitivity 77.8%, specificity 62.5%), magnetic resonant angiography (MRA) (sensitivity 100%, specificity 100%). Therefore, the MRA is recommended for the diagnosis of POVT, but because of the cost and speed, the contrast-enhanced CT scan is an accurate alternative. Ultrasound examination or CT scan is recommended

for the initial evaluation and is also a useful method for follow-up.[15] MRA can be reserved for doubtful situations. Initial ultrasound in our patient showed the thrombus in the ovarian vein, which was confirmed by CT scan. Laparoscopy can also be a useful alternative diagnostic method.[16]

POVT should be differentiated from the more common causes of lower abdominal pain in the postpartum period, most notably appendicitis, endometritis, pyelonephritis, urinary tract infection, adnexal torsion or abscess, intestinal volvulus and thrombosis of the renal veins.

The most dangerous complications of POVT are:

- extension of the thrombus into the inferior vena cava[17] and renal veins[18] or iliofemoral veins;
- pulmonary embolism (3 to 33% of the cases),[19] sometimes septic emboli with potentially fatal consequences. With the use of anticoagulants, mortality has dropped from 25% to less than 5%;[2]
- multiorgan failure;
- acute obstruction of an ureter[5] and spontaneous kidney rupture;[3]
- approximately 25% of women who present with POVT have ileus;
- increased risk of ovarian infarction.[3]

Because this infrequently reported entity carries a risk of significant morbidity and mortality if inadequately treated, any woman who presents in the postpartum period with an unexplained lower abdominal pain, fever and leucocytosis should be evaluated by ultrasound or CT scan to make or refute the diagnosis of POVT. Anticoagulants are the mainstay of treatment. However, there is no uniform agreement regarding length of anticoagulation. Broad-spectrum antibiotic treatment should be immediately initiated after collection of cultures. Group A streptococcus is very sensitive to β-lactams. An antibiotic course of 7 to 10 days is usually sufficient.[15]

Treatment modalities for an extensive degree of thrombosis, such as POVT with free-floating thrombus in the IVC or failure to respond to standard medical therapy, are described in the literature and range from placement of an IVC Greenfield filter or hysterectomy and thrombectomy to ligation of the inferior vena cava. These are usually performed in conjunction with the continued administration of anticoagulants and antibiotics.[17, 20]

There are no recommendations for prophylaxis during a subsequent pregnancy and the recurrence rate for POVT is low.[2] However, if a patient is proved to have a hypercoagulable state, then prophylaxis is advocated.

In summery, POVT should be considered in any woman in the postpartum period with unexplained lower abdominal pain, fever and leucocytosis. An obstruction of the ureter is a well-known but seldom reported complication of POVT. For the initial evaluation CT or ultrasound examination is indicated.

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