

## Isolated right ovarian vein thrombosis mimicking acute appendicitis

Published on 26.10.2017

**DOI:** 10.1594/EURORAD/CASE.14973

**ISSN:** 1563-4086

**Section:** Abdominal imaging

**Area of Interest:** Vascular Veins / Vena cava

**Procedure:** Contrast agent-intravenous

**Procedure:** Diagnostic procedure

**Imaging Technique:** CT

**Imaging Technique:** Ultrasound

**Imaging Technique:** Ultrasound-Colour Doppler

**Special Focus:** Obstruction / Occlusion Case Type:  
Clinical Cases

**Authors:** Mohamed T. El-Diasty, Ahmed Alharthy.

**Patient:** 39 years, female

### Clinical History:

A 39-year-old female patient presented to the ER with a one day history of right lower quadrant abdominal pain, with no fever, vomiting or diarrhoea. Clinical examination revealed a tender lower abdomen. There was no history of recent abdominal surgery or use of oral contraceptives. The pregnancy test was negative. The initial laboratory tests were unremarkable.

### Imaging Findings:

Contrast-enhanced CT was performed first. Axial (a, b), sagittal (c) & coronal (d) CT show a distended upper part of the right ovarian vein with luminal hypo-density and partial peripheral contrast filling. This appearance is mostly indicative of vein thrombosis. However, due to the possibility of a flow mixing artefact, which is frequently encountered in the IVC and gonadal veins, Doppler US was performed for confirmation.

Grey-scale and coloured Doppler US show a hyper-echoic thrombus filling and distending the upper part of the right ovarian vein with a partial colour flow. The thrombus reaches to the IVC, but does not extend inside the lumen.

### Discussion:

#### Background

Ovarian vein thrombosis [OVT] is a rare condition that presents with abdominal pain and can mimic acute abdomen. OVT occurs commonly in the peripartum period due to hypercoagulability, caused by hormonal changes, ovarian vein stasis, and a potential endothelial injury during delivery or from a puerperal infection [1]. OVT outside of the peripartum period is commonly associated with hypercoagulable state conditions such as malignancy, surgery, trauma, infection, recent hospitalisation, or hereditary thrombophilia. OVT without an underlying cause is extremely rare and is labelled as idiopathic ovarian vein thrombosis. OVT is more commonly found in the right ovarian vein in both pregnant and non-pregnant women [2].

#### Clinical Perspective

Patients usually present with abdominal pain, which simulates acute appendicitis (when on the right side) or renal

colic. An OVT diagnosis may be overlooked, especially in patients outside the peripartum period. A high suspicion index is needed especially when patients are imaged with non-contrast CT in the case of suspected renal colic. The differential diagnosis of OVT includes acute appendicitis, endometritis, pelvic inflammatory disease, pyelonephritis, nephrolithiasis, tubo-ovarian abscess, and ovarian torsion. Most of the patients present with fever. Other common presentations include tachycardia, nausea, and vomiting.

#### Imaging Perspective

Contrast enhanced CT is the modality of choice. In this case, the CT revealed a distended right ovarian vein with an internal filling defect. A similar appearance may be noted in cases with early image acquisition, due to mixing effect between the enhanced and non-enhanced blood. Doppler ultrasound (US) confirmed the presence of thrombosis that does not extend inside the IVC. The sensitivity of Doppler US may be lowered in obese patients. MRI can be used in pregnant patients when CT is contra-indicated.

#### Outcome

Treatment of OVT is controversial. Currently, OVT is usually treated by intravenous anti-coagulation and antibiotics. To date, there is no standard evidence-based protocol for the duration of anticoagulation. The general treatment guidelines for lower extremity DVT can be applied for patients with OVT. Other therapeutic options include catheter thrombolysis, IVC filters and surgery [3].

Complications of OVT include sepsis and extension of the thrombus to the IVC and renal veins. The most common source of mortality is pulmonary embolism, with an incidence reported as high as 13% with a 4% risk of mortality. [4]

#### Teaching Points

OVT should be included in the differential diagnosis of pelvic pain. It may be overlooked in patients outside the peripartum period. Imaging has an important role in the diagnosis, management and follow-up of patients with OVT.

**Differential Diagnosis List:** Isolated right ovarian vein thrombosis, Right ovarian vein thrombosis, Ovarian torsion., Acute appendicitis.

**Final Diagnosis:** Isolated right ovarian vein thrombosis

#### References:

- Garcia R, AP Gasparis, SA Loh, N Labropoulos (2017) rare case of idiopathic bilateral ovarian vein thrombosis. J Vasc Surg Venous Lymphat Disord 5:4 567-570 (PMID: [28623997](#))
- Doherty K, M New (2015) Idiopathic ovarian vein thrombosis in a nonperipartum patient. Obstet Gynecol 125:6 1468-70 (PMID: [25774934](#))
- Labropoulos N, RD Malgor, M Comito, AP Gasparis, PJ Pappas, AK Tassiopoulos (2015) The natural history and treatment outcomes of symptomatic ovarian vein thrombosis. J Vasc Surg Venous Lymphat Disord 3:1 42-7 (PMID: [26993679](#))
- Khishfe BF, A Sankovsky, I Nasr (2016) ) Idiopathic ovarian vein thrombosis: a rare cause of abdominal pain. Am J Emerg Med 34:5 935 e1-2 (PMID: [26475360](#))

**Figure 1**

a



**Description:** Axial contrast enhanced CT show filling defect within the right ovarian vein. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

**b**



**Description:** Axial contrast enhanced CT show thrombosed right ovarian vein. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

**c**



**Description:** Sagittal reformatted contrast enhanced CT show filling defect within the right ovarian vein.

**Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

d



**Description:** Coronal reformatted contrast enhanced CT show thrombosed right ovarian vein. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

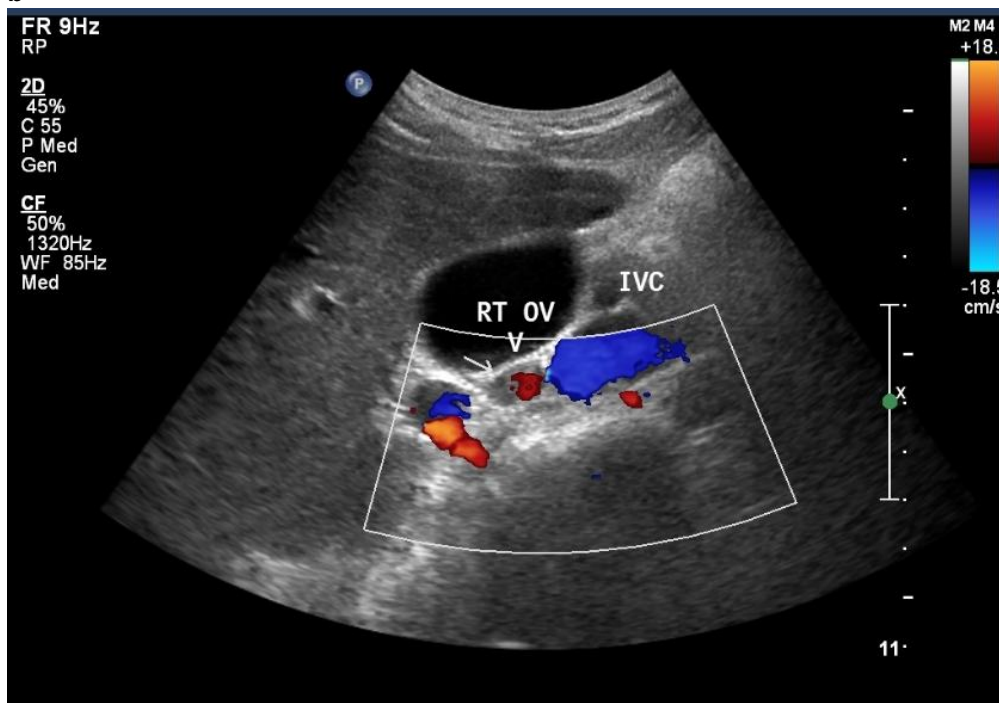
**Figure 2**

**a**



**Description:** Grey-scale US image shows echogenic thrombus within the right ovarian vein. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

**b**



**Description:** Colour Doppler US shows partial flow in the right ovarian vein. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

**c**



**Description:** Grey-scale US image shows thrombus reaching to but not extend inside the IVC. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia

**d**



**Description:** Grey-scale US image shows thrombosed right ovarian vein. **Origin:** Radiology Department, King AbdulAziz University Hospital, Jeddah, Saudi Arabia