The Hidden Clot: A Case of Recurrent Atypical Venous Thrombosis Highlighting the Need for Vigilant Diagnostic Evaluation

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Abstract

Venous thromboembolism (VTE) is the third most common cardiovascular disorder worldwide. While lower-extremity deep vein thrombosis and pulmonary embolism are typical presentations, thrombosis in atypical sites remains challenging to recognize and diagnose.

Case Description:
A 27-year-old female flight attendant with history inflammatory bowel disease (IBD), tuberculosis and combined oral contraceptive (COC) use presented with an acute abdominal pain. Initial contrast-enhanced CT revealed thrombosis of the left renal and ovarian veins. Laboratory tests showed elevated hs-CRP and D-dimer, with positive ANA but negative antiphospholipid antibodies. She was treated with intravenous heparin followed by oral rivaroxaban, though adherence was inconsistent due to episodes of heavy vaginal bleeding. Repeat CT imaging eight months later demonstrated resolution of the initial thrombi but revealed a new thrombus in the inferior vena cava extending into the right common iliac vein, accompanied by recurrent elevation of D-dimer.

This case illustrates the interplay of multiple risk factors for VTE, including IBD, prolonged immobility during long-haul travel, COC use, tuberculosis, and rifampicin therapy. These overlapping chronic and transient triggers likely contributed to recurrent thrombosis despite ongoing treatment.

Conclusions:
Recurrent VTE in unusual venous sites can occur particularly in patients with multiple risk factors. Early recognition, appropriate imaging, and anticoagulant therapy adherence are essential to preventing progression and recurrence.

Background:

Introduction

Venous thromboembolism (VTE) affected approximately 10 million individuals of all ethnicities annually and recognized as the third most common cardiovascular disorder worldwide, following myocardial infarction and stroke.[1,2] The incidence of VTE is rising in both Western and Asian countries, a number that may be caused by improved disease recognition due to advances in imaging modalities and diagnostic sensitivity.[3]

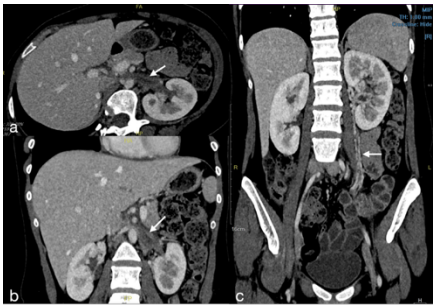
It was initially believed that VTE was not commonly found in the Asian population. However, the growing

publications mainly from Taiwan, Korea, and Hong Kong indicated a rising number of cases, ranging from 15% to 20% of cases.[3–5] While lower limb venous thrombosis and pulmonary embolism are commonly found in daily practices, recurrent thrombosis in atypical sites, such as cerebral venous sinuses, splanchnic, renal, or ovarian veins remains diagnostically challenging.[6,7]

Case Description

A 27-year-old female flight-attendant presented with a two-day history of abdominal pain, localized primarily in the upper abdomen and radiating to the back. There's no swelling on her lower extremity. She also experienced a similar episode in September 2024, which occurred following a prolonged car journey of nine hours, during which she predominantly steered with her right hand while leaning on her left side. The pain worsened after an 18-hour-long flight. The patient also has a history of inflammatory bowel disease (IBD) diagnosed in 2024 and a history of vaginal delivery five years ago. Her current medications include oral mesalazine (Salofalk) and a combined oral contraceptive of drospirenone/ethynil-estradiol.

The patient was initially hospitalized in January 2025 because of a severe abdominal pain. A contrast-enhanced abdominal computed tomography (CT) scan was ordered and revealed a formation of thrombus in the left renal vein and the left ovarian vein. Laboratory investigations demonstrated a markedly elevated high-sensitivity C-reactive protein (hs-CRP) of 42.5 mg/L and a D-dimer level of 2.04 µg/mL. Autoimmune screening showed a positive antinuclear antibody (ANA) test, while anti-double stranded DNA (anti-dsDNA) antibodies were negative, and anticardiolipin antibodies (ACA IgG and IgM) were within normal limits.



Picture 1. Contrast enhanced abdominal CT-scan shows left renal vein (a,b) and left ovarian vein (c) thrombus.

The patient was treated with 20,000 units intravenous unfractionated heparin per 24 hours for five days and 20 mg oral rivaroxaban once daily. Subsequent laboratory testing revealed a reduction in D-dimer to 0.96 µg/mL. She was discharged with instructions to continue rivaroxaban at the same dosage daily.

During her course of treatment, the patient was reportedly came to the gynecology clinic because of unusually heavy vaginal bleeding and the patient reportedly consumed the rivaroxaban only when the vaginal bleeding lessened. The patient was also diagnosed with pulmonary tuberculosis following a positive interferon-gamma release assay (IGRA) test and positive sputum GeneXpert test in July 2025. Standard anti-tuberculosis treatment was initiated, comprising of rifampicin, isoniazid, pyrazinamide, and ethambutol.

A follow-up contrast-enhanced abdominal CT scan in September 2025 showed no thrombus in the left renal and left ovarian veins. However, a new thrombus was identified in the inferior vena cava (IVC) at the level of the L4 vertebral body, extending to the right common iliac vein. Blood work evaluation during the same period demonstrated a recurrence in thrombotic activity, shown by an increased D-dimer level of 1.58 µg/mL.

Picture 2. Follow up contrast enhanced abdominal CT-scan shows a new thrombus formation in the right common iliac vein

Discussion

Venous thrombosis refers to the development of a blood clot within a vein, which, if dislodged and travels, becomes an embolus, thereby termed venous thromboembolism. The pathophysiology of VTE is classically described as Virchow's triad, which comprises three key elements: venous stasis, endothelial injury, and hypercoagulability, that contribute to the formation of vascular thrombosis. VTE traditionally categorized as provoked (with at least one identifiable risk factor) or unprovoked (no identifiable risk factors), but newer literature distinguishes patients with VTE as having transient (reversible) or chronic risk factors.[7–9]

Table 1. Risk factors for venous thromboembolism[7]

Chronic or potentially persistent risk factors	Major transient risk factors	Minor transient risk factors
Antiphospholipid antibody syndrome	Hospitalization > three days with limited mobility	Hospitalization < three days
Autoimmune disease (e.g., collagen vascular disease, rheumatoid arthritis)	Hospitalization for COVID-19 treatment	Oral contraceptives or hormone therapy
Body weight < 110 lb (50 kg) or > 264 lb, 9 oz (120 kg); body mass index > 30 kg per m2	Immobilization (leg injury limiting mobility or bed rest for more than three days)	Pregnancy
Chronic immobilization	Surgery (general anesthesia lasting > 30 minutes)	Presence of a major risk factor one to three months before initial venous thromboembolism
Chronic infections	Trauma	Prolonged travel (≥ two hours; highest risk with air travel > four hours or car travel > eight hours in a 24-hour period)
Heart failure		
Inflammatory bowel disease		Surgery (general anesthesia < 30 minutes)
Male sex		
Malignancy		
Medication use (especially hormone therapy, combined oral contraceptives, testosterone, and heparin)		
Myeloproliferative disorders		
Nephrotic syndrome		
Recurrent pregnancy loss		

In the first year after stopping anticoagulant, patients with provoked VTE due to transient risk factors have a lower recurrence risk (3.33%) compared to those with unprovoked VTE (10.3%). In individuals with unprovoked VTE, the recurrence risk rises to over 30% at 10 years, whereas in those with provoked VTE, the risk does not increase significantly beyond the first year.[8,10]

Lower limb venous thrombosis represents the most frequent site of VTE formation, while among non-extremity sites, the most common are portal vein thrombosis, followed by cerebral venous sinus thrombosis and pulmonary embolism. Unusual-site VTE represents approximately 10% of all venous thrombosis cases, involving venous territories other than the deep or superficial veins of the lower limbs and the pulmonary circulation. While some cases may remain asymptomatic and resolve spontaneously, others can manifest with nonspecific abdominal pain, portal hypertensive bleeding, or bowel infarction. [8,9,11–14]

In this case there are a few factors that could have contributed to the formation of thrombus. A history of IBD is associated with approximately a threefold higher risk of VTE compared to the general population. Prolonged immobility, such as long-distance driving or long-haul flights ("economy class syndrome"), may also act as a transient risk factor, although the causal relationship between travel and VTE is still not fully established.[15,16] Women who are using combined oral contraceptives

(COCs) containing drospirenone and ethinyl estradiol has a two- to ninefold increased risk of thrombosis compared with non-users, though COC use may not be the sole contributing factor.[17,18] Furthermore, patients with active tuberculosis have a threefold increased risk of VTE, which may arise from the prothrombotic effects of the infection itself or from rifampicin therapy used as part of the treatment.[19]

In women, other than the usage of hormonal contraception, pregnancy also poses as a risk factor in the development of venous thrombosis. Compared to non pregnant women, pregnant women are four to five times more likely to develop VTE.[20]

Diagnosing VTE in uncommon sites might still proven to be a challenge to date. Ultrasound (US) with doppler is typically the first-line imaging modality for diagnosing the intra-abdominal venous thrombosis, which may show findings such as an expanded vein, intramural echogenic blood clot, absent flow in color Doppler, loss of spectral Doppler waveform.[8] Some limitations of US for diagnosing DVT include operator dependency and inability to directly image the whole deep venous system. In addition, in obese or edematous patient, poor acoustic window can make it harder for the operator to detect a thrombus.[2]

On contrast-enhanced CT, thrombus usually appear as a hypoattenuated intraluminal filling defects, often lead to occlusion and distention of the vessel. Ancillary findings may include perivascular soft-tissue infiltration, dilatation of the venous system upstream of the clot and development of collateral vasculature. Acute thrombus may forms an acute angle between the clot and the vessel wall, whereas chronic thrombus tend to forms more obtuse angles. CT offers superior visualization compared to US for evaluating the deep pelvic vein and IVC, with reported sensitivity ranging from 71% to 100% and specificity ranging from 93% to 100%. Some drawbacks of CT imaging includes the radiaton exposure, the need for iodinated contrast administration, and potential image artifacts caused by metallic implants.

MRI also plays an important role in the evaluation of thrombosis, particularly in the diagnosis of cerebral sinus venous thrombosis (CSVT), as it can be performed with and or without contrast material. On non-contrast enhanced MRI, the most consistent feature of acute thrombus is a hyperintense signal on T1-weighted spin-echo MR images and hypointense signal on echo-planar T2* susceptibility-weighted MR images. The downsides of MRI include longer acquisition times, which increase the risk of motion artifacts, and limited availability in certain clinical settings.[2,8,21,22]

Conclusion

We report a case of an adult female with recurrent venous thromboembolism, initially involving the left renal and ovarian veins, with subsequent thrombosis detected in the inferior vena cava extending into the right common iliac vein during follow-up. The nonspecific presenting symptoms emphasizes the difficulty of early recognition and diagnosis of venous thromboembolism. Accurate and effective diagnosis requires careful selection of appropriate imaging modalities, as proper imaging not only confirms the condition but also plays a pivotal role in guiding treatment strategies, assessing prognosis, and planning long-term follow-up.

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