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Ovarian vein thrombosis after coronavirus disease (COVID-19) mimicking acute abdomen: two case reports

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Abstract
Coronavirus is a source of deep venous thrombosis (DVT) due to complications such as over-coagulation, blood stasis, and endothelial damage. Ovarian vein thrombosis (OVT) is a very serious and rare disease. In this study, we report tow rare case of women with coronavirus who were hospitalized with a right ovarian vein thrombosis mimicking acute abdomen who progressed well on anticoagulation. Our report adds further document in Side effects and rare localisation of obstruction of veins and arteries in patient with corona virus.

Keywords Coronavirus disease · Ovarian vein thrombosis · Acute abdomen

Highlights

- In the first case, our patient was diagnosed with an idiopathic OVT because no risk factors for OVT were found, the patient's abdominal pain subsided few days after starting anticoagulation.
- In the second case, the patient had no risk factors for OVT other than childbirth, It is noteworthy that we did not see any evidence of venous thrombosis in previous deliveries before COVID-19 and the biological assessment for thrombophilia or autoimmune disease was negative, consequently, it is thought that such acute thrombosis taked place during COVID-19 disease.

Introduction

The novel coronavirus infection (COVID-19) caused by the new coronavirus SARS-CoV-2 is a very serious disease that causes an exaggerated inflammatory response. This exaggerated inflammatory response can lead to severe manifestations. The thrombosis risk is at increased in patients with coronavirus, due to blood stasis, over-coagulation status, and endothelial dysfunction [1]. Ovarian vein thrombosis (OVT) is a very rare and serious disease that affects mostly women in postpartum [2], but may also be associated with pelvic inflammatory disease, malignancies, Crohn's disease and pelvic surgical procedures [3, 4]. A high index of suspicion is required in order to diagnose this rare cause of abdominal pain, which can mimic acute abdomen. In this study, we report tow cases who was hospitalized with a right ovarian vein thrombosis after infection with coronavirus.

First case presentation

A case of 58-year-old female with a history of hypertension, hyperlipidemia, type II diabetes mellitus, and Coronary artery disease. Patient's oropharyngeal swab test results of SARS-CoV-2 by qualitative real-time reverse-transcriptase–polymerase-chain-reaction (RT-PCR) method was positive one month before her current symptomatology. The patient had no significant surgical

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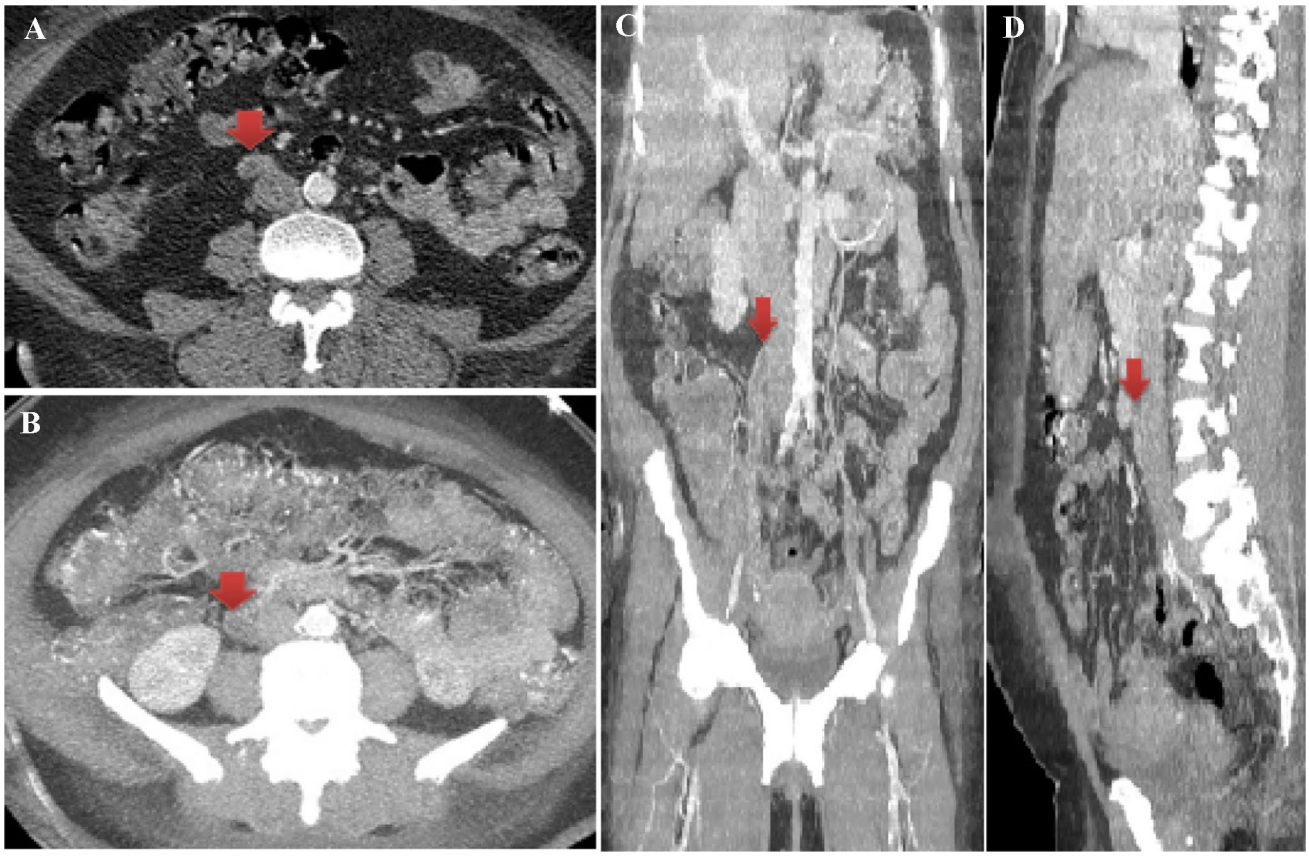

Fig. 1 Axial (**a, b**), coronal (**c**) and sagital (**d**) image of abdominal CT scan showing ovarian vein thrombosis (OVT)

history, she presented to the emergency department (ED) with a 36-h history of severe abdominal pain, anorexia, nausea, and low-grade fever. Vital signs were normal, oxygen saturation of the blood of 98% Physical examination reveals a low-grade fever 38 °C, pain on palpation at abdomen. On ultrasound, all abdominal and pelvic organs were reported to be normal, abdominal–pelvic CT scan were demonstrated dilation of the right ovarian vein compatible with a right OVT (Fig. 1). Blood analysis showed WBC 10,000/µL/mmc, Hb 10 mg/dL, PLT 369,000/mmc, C reactive protein (CRP) of 126 mg/L, D-dimer 1000 ng/mL, fibrinogen 425 mg/mL, INR 1.06. The patient was treated with enoxaparine 0.4 cc bid followed by asenocoumarole 5 mg since the achievement of the INR therapeutic range. Through constant monitoring and follow up, blood analysis were normalized at 1 month.

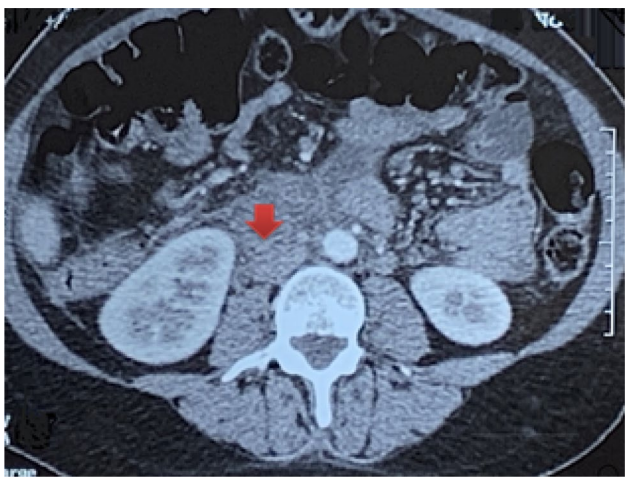

Fig. 2 Axial image of abdominal CT scan showing ovarian vein thrombosis (OVT)

Second case presentation

A case of 32-year-old female, 3G3P, patient's oropharyngeal swab test results of SARS-CoV-2 by qualitative real-time reverse-transcriptase–polymerase-chain-reaction (RT-PCR) method was positive three weeks before her a spontaneous uncomplicated vaginal delivery after labor induction. The patient had no ather significant medical or surgical history, and she did not take any regular medications, at five days postpartum, she presented to the emergency department (ED) with a 48-h history right lower quandrant pain,

anorexia, nausea, and low-grade fever. Vital signs were normal, oxygen saturation of the blood of 98% physical examination reveals a low-grade fever 38 °C, pain on palpation at right lower quadrant (McBurney sign), leucocytosis (14,000/µL) with 85% neutrophils and C reactive protein (CRP) of 150 mg/L. An ultrasound showed a salpingitis. Her symptoms were attributed to salpingitis, the patient was started on intravenous (IV) antibiotics, without improvement after 48 h of IV antibiotics, abdominal–pelvic CT scan were compatible with a right OVT (Fig. 2). Blood analysis showed WBC 13,400/microliter /mmc, Hb13.4 mg/dL, PLT 306 000/mmc, D-dimer 890 ng/mL, fibrinogen 345 mg/mL, INR 1.06. A biological assessment for thrombophilia or autoimmune disease was negative. The patient was treated with enoxaparine 0.6 cc bid followed by asenocoumarole 6 mg since the achievement of the INR therapeutic range. Through constant monitoring and follow up, blood analysis were normalized at 2 weeks.

Discussion

In December 2019, in Wuhan, the first case of COVID-19 pneumonia was reported, and the disease spread rapidly to other parts of the world [5, 6].

COVID-19 is associated with a coagulopathy characterized by high levels of d-dimer mild thrombocytopenia, and fibrinogen degradation products, slight prolongation of the prothrombin time, and elevated levels of fibrinogen and factor VIII [7, 8]. Although the drivers of this coagulopathy are uncertain, overexpression of tissue factor, endothelial dysfunction, and activation of the contact and complement systems are potential candidates. In patients dying of COVID-19, multiple thrombi are found in the vessels of the lungs, and those of the liver, heart, and kidneys. This hypercoagulable state may explain the high rate of venous thromboembolism (VTE) reported in patients with COVID-19 despite anticoagulant thromboprophylaxis [8, 9].

Austin in 1956 has described, the first case of postpartum ovarian vein thrombosis [10]. Ovarian vein thrombosis (OVT) is a very serious and rare disease that affects mostly postpartum women. Rare causes of this entity are pelvicinflammatory disease, malignancies, Crohn's disease and pelvic surgical procedures [3, 4]. Patients with malignant tumors, are at risk for developing OVT, but is often asymptomatic and thrombus can resolve without any treatment [4]. Hypercoagulation conditions as antiphospholipid syndrome, systemic lupus erythematosus, paroxysmal nocturnal haemoglobinuria, presence of factor V Leiden, hyperhomocysteinaemia, heparin induced thrombocytopenia and protein C and S deficiency are all reported as risk factors for OVT [11, 12].

Only one case of ovarian venous thrombosis (OVT) has been reported in a pregnant woman after infection with coronavirus with no evidence of venous thrombosis history in her previous deliveries or medical history [13].

In the first case, the patient had no risk factors for OVT. Therefore, it is thought that such acute thrombosis taked place during COVID-19 disease. In the second case, the patient had no risk factors for OVT other than childbirth, it is noteworthy that we did not see any evidence of venous thrombosis in previous deliveries before COVID-19. The both presented with a Symptomatology mimicking acute abdomen.

Because the clinical signs of the disease are vague, it is important to use imaging such as Doppler ultrasound, CT scan, and MRI to prevent catastrophic complications as extension of the thrombus to the inferior vena cava and renal veins, and pulmonary embolism. The mortality of OVT can be as high as 5% and is mostly due to pulmonary embolism the incidence of which is reported to be 13.2% [14]. Anticoagulation is the mainstay of treatment of OVT.

Our report adds further document in side effects and rare localisation of obstruction of veins and arteries in patient with corona virus.

Conclusion

OVT is a rare condition, with serious complications if left untreated. Index of suspicion is required for the prompt diagnosis and management especially in cases that mimic acute abdomen especially in the current endemic context of COVID-19 where thromboembolic complications are common.

Declaration

Conflict of interest There is no conflict of interests that prejudices the impartiality of this scientific work.

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