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Idiopathic Left Ovarian Vein Thrombosis

Ngon Trang, BS[1], Manasa Kalluri, MD, MPH[2], Tushar Bajaj, MD[2], and Greti Petersen, MD[2]

Abstract

Ovarian vein thrombosis (OVT) was first described in 1956 and is well known for its association with gynecological malignancy, pregnancy, postpartum, pelvic diseases, surgeries, and other thrombophilic etiologies. Most commonly OVT presents on the right ovarian vein. We report a rare case of a 47-year-old Caucasian female G_7P_7 with no significant past medical history who presented to the emergency room for acute nonspecific back pain and left lower quadrant pain of 1 day. Imaging with a computed tomography with contrast demonstrated a new left OVT. After a thorough literature review, this is presumed to be the third reported case of idiopathic left OVT.

Keywords

ovarian, vein thrombosis, abdomen, woman, reproductive

Introduction

Ovarian vein thrombosis (OVT) has been reported in approximately 0.05% to 0.18% of vaginal births and in 2% of births by cesarean section. Most cases of OVT are most often seen on the right ovarian vein.[1] Risk factors include pelvic inflammatory disease (PID), pelvic surgeries, gynecological malignancies, or hypercoagulable states.[2] Typical presentation includes fever, abdominal pain, nausea, and vomiting. Traditionally, most patients would present with pain on the right lower quadrant similar to appendicitis; however, a computed tomography (CT) scan usually aids in differentiating the 2 etiologies. OVT, first described in 1956, is a rare thrombotic condition with an incidence of 60-fold lower compared with leg deep venous thrombosis (DVT),[3] yet could be potentially life-threatening. The incidence of idiopathic OVT is extremely rare; therefore, idiopathic OVT is only described as case reports in the literature. To date, only 9 similar cases of OVT have been reported in healthy patients with no known underlying etiology. Importantly, only 2 case reports describe left idiopathic OVT.[4,5] If prompt recognition and immediate treatment is initiated, complications such as pulmonary embolism or sepsis can be avoided.[1]

Case Presentation

A 47-year-old Caucasian female presented to the hospital for acute onset of nonspecific back pain radiating to her anterior abdomen associated with dyspnea and colicky left lower quadrant pain for 1 day. On review of systems, she denied fever, chills, nausea, or vomiting. Past medical history was significant for gastroesophageal reflux disease, but not on any chronic medications and all her pregnancies were delivered vaginally. Patient also denied recent surgery, history of venous thrombosis, sedentary lifestyle, recent infection, or pregnancy. She previously smoked 10-pack years but quit 5 years prior to this admission. CT scan of the abdomen and pelvis with intravenous (IV) contrast revealed left gonadal vein thrombosis (Figure 1). On admission, patient was afebrile and hemodynamically stable. Pelvic ultrasound showed normal endometrium, no mass or cyst in the uterus, with left ovary measuring 2.4 cm $\times$ 1.5 cm. Further investigation for inherited and acquired thrombophilia, including factor V Leiden gene mutation, prothrombin gene mutation, protein C and protein S activity, hyperhomocysteinemia, systemic lupus erythematous, and antiphospholipid syndrome was obtained and later proved unremarkable. Therefore, the presumptive diagnosis of OVT was made and anticoagulation treatment was initiated with low-molecular-weight heparin. Patient's symptoms completely resolved in the next 24 hours and she

[1]Ross University, Miramar, FL, USA
[2]UCLA—Kern Medical, Bakersfield, CA, USA

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Corresponding Author:
Tushar Bajaj, MD, Department of Medicine, UCLA—Kern Medical, 1700 Mount Vernon Avenue, Bakersfield, CA 93306, USA.
Email: tusharbajajMD@gmail.com

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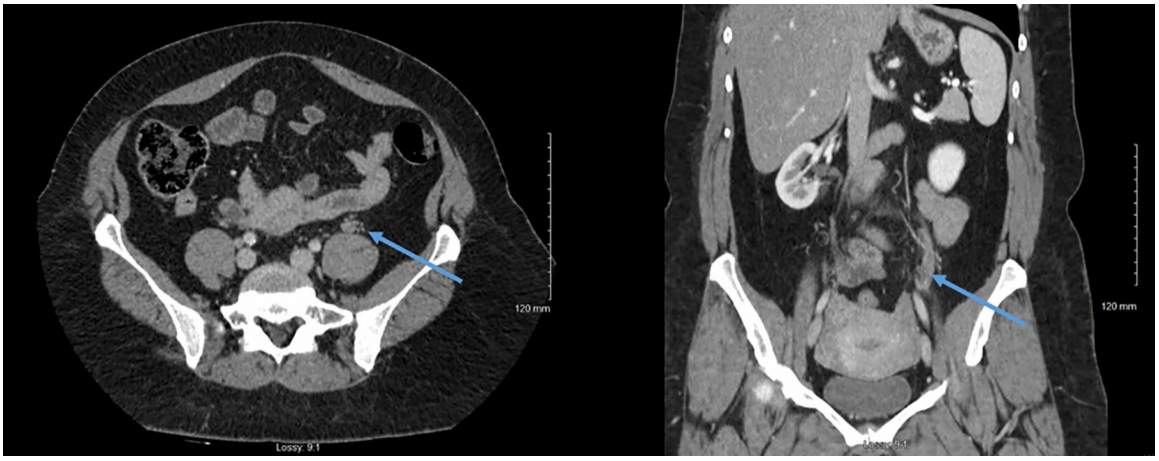

Figure 1. Computed tomography scan of the abdomen and pelvis with contrast demonstrating left ovarian vein thrombosis (blue arrow).

was discharged home on direct oral anticoagulation therapy with rivaroxaban for 3 months. At her 2 month follow-up appointment, CT of abdomen and pelvis with IV contrast showed complete resolution of the left OVT.

Discussion

Ovarian vein thrombosis is an uncommon event historically associated with PID or postpartum period. Mayo Clinic has carried out a retrospective study composed of 40 OVT cases, 34% associated with malignancies, 23% with PID, and 20% with pelvic surgeries.[6] The first known case of OVT was described by Austin in a postpartum woman in 1956.[2] Ninety percent of cases occur within the first 10 days postpartum.[7] Interestingly, 70% to 90% cases of OVT occur on the right ovarian vein, whereas 11% to 14% are bilateral[8] attributing to the presumed longer length, venous tortuosity, and lack of competent valves on the right side. Up to date, only 9 cases of idiopathic OVT have been reported in the medical literature. A case of provoked left OVT was reported status post an uneventful laparoscopic-assisted vaginal hysterectomy for uterine myoma resulting in pulmonary embolism caused by left ovarian thrombosis.[3] The left ovarian vein drains into the left renal vein, any pathology affecting the left kidney such as infection, nephropathy, cancer, or trauma would potentially affect the left ovarian vein.[9] In our case report, however, a thorough investigation did not yield any inciting event or significant risk factor.

The primary imaging modality for the condition is an ultrasound. The sensitivity and specificity of an ultrasound examination is highly operator dependent and overlying bowel with gas may limit adequate visualization. Despite its limitations, ultrasound is beneficial for follow-up imaging to monitor progression. An abnormal ultrasound should be followed by a CT with contrast, which will help identify the characteristic finding of a tubular retroperitoneal mass with central low attenuation extending cephalic to the inferior vena cava. Magnetic resonance imaging is a costly alternative; however, it can provide additional information with strong clinical suspicion in patient with equivocal CT findings or allergies to iodine contrast.[10]

Even though rare, OVT could lead to life-threatening complications including septic thrombophlebitis, ovarian infarction, ureteral obstruction, hydronephrosis, renal failure, extension of the thrombus into the inferior vena cava, and eventually 25% cases of untreated OVT lead to PE and mortality is about 4%.[2] In addition, venous thromboembolism reoccurrence rate is 6.1% at 1 year and 14.3% at 5 years.[6] The mainstay of management is anticoagulation with direct oral anticoagulants. Resolution of OVT has been documented only after 7 to 14 days of anticoagulation therapy.[10] The anticoagulation duration is 3 to 6 months until there is radiographic confirmation of resolution of the thrombus. Mortality rate reduced from 25% to 5% among treated cases. Surgical treatment can be considered in cases of free-floating thrombosis, recurrent PE in spite of medical treatment, or contraindication to anticoagulation use.[11] Some experts have argued that incidental finding of OVT related to surgery may not need anticoagulation unless complications are noted.[9] However, as the devastating PE could be resulted from untreated OVT, treatment with anticoagulation is encouraged.

Our patient was diagnosed with idiopathic left OVT and anticoagulation treatment was started with low-molecular-weight heparin. The patient's symptoms quickly subsided after treatment and was discharged on the next day. Cancer is the most common risk factor for OVT and twice as frequent compared with patients with leg DVT. It is well established that patients with unprovoked venous thromboembolism carry a 4-fold increased risk of occult

malignancy including ovarian cancer followed by pancreatic and hepatic cancer.[3]

Conclusion

When a female patient presents with lower quadrant abdominal pain, with or without fever, or palpable abdominal or pelvic mass, OVT should be in the differential.[7] CT scan of the abdomen and pelvis with IV contrast has a high sensitivity and specificity nearly 100% in detecting OVT.[1] A PubMed literature search for keywords of idiopathic left OVT (including clinical trial, meta-analysis, randomized controlled trial, and systemic review) from 1946 to 2020 demonstrated only 2 previous case reports of this condition.[4,5] We report the third case of idiopathic left OVT in a previously healthy woman. Standard guidelines for diagnosis and management for OVT are lacking. Wysokinska et al[6] studied the incidence and recurrence of OVT compared with lower extremity DVT, which demonstrated that none of the 35 patients with OVT were idiopathic and the recurrence rate was comparable to patients with lower extremity DVT. Treatment with warfarin was 5.3 months and 6.9 months for OVT and lower extremity DVT, respectively, and based on these findings, the authors suggested the application of lower extremity DVT guidelines for the treatment of OVT.[6] The diagnosis of OVT requires a thorough history and physical followed by appropriate imaging and at least 3 to 6 months of anticoagulation.

Authors' Note

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Declaration of Conflicting Interests

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Ethics Approval

Institutional review board (IRB) approval was obtained and accepted for this study IRB #19076.

Informed Consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

ORCID iD

Tushar Bajaj https://orcid.org/0000-0002-8863-9399

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