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Case Report
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Ovarian Vein Thrombosis: A Rare Postoperative Complication in Patients with Ovarian Cancer

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Abstract

Background: Venous Thromboembolism (VTE) is a major concern in gynecological cancer, particularly in epithelial ovarian cancer. Patients are at a higher risk due to a hypercoagulable state, with an incidence of 120/10,000. Cytoreductive surgery with Hyperthermic Intraperitoneal Chemotherapy (HIPEC) poses a 30% to 50% VTE risk. Postoperative and chemotherapy-related deep vein thrombosis rates are 13.65% to 27.0%. The ovarian vessels are an uncommon location for deep vein thrombosis, making it difficult to manage. The most common sites of deep vein thrombosis are in the lower and upper limbs. Prompt diagnosis and treatment reduce mortality from 30% to 10%. ERAS protocols emphasize thromboprophylaxis based on risk scores, starting 12 h pre-surgery and continuing four weeks postoperatively. Managing this postoperative complication requires a comprehensive approach that includes risk assessment, prophylaxis, and vigilant monitoring.

Case Report: We present a case of a 47-year-old patient diagnosed with high-grade serous ovarian carcinoma in stage IIA, undergoing primary cytoreduction and adjuvant chemotherapy with Carboplatin + Paclitaxel. Three months post-surgery, she presented to the emergency room with persistent febrile equivalents, nausea, early satiety, mild abdominal pain, and unilateral headache. Clinical examination revealed stable vital signs, abdominal tenderness, and elevated inflammatory markers. Imaging studies indicated thrombosis of the right ovarian vein extending to the vena cava. Anticoagulation therapy was initiated, leading to favorable clinical outcomes. This case highlights the importance of considering VTE in gynecological cancer patients, necessitating vigilant monitoring and prompt intervention to mitigate associated risks.

Discussion: The limited research on ovarian vein thrombosis in cancer patients highlights its novelty and clinical importance. While some literature suggests that thromboprophylaxis may not be necessary for chemotherapy outpatients unless they exhibit additional high thrombotic risk factors, recent evidence favors its use in patients undergoing neoadjuvant chemotherapy for ovarian cancer. This approach has been shown to lower rates of Venous Thromboembolism (VTE) without raising the risk of bleeding episodes.

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Introduction

The term Venous Thromboembolism (VTE) encompasses both Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE), and is recorded in a proportion that ranges between 25% and 38% of patients suffering from gynecological cancer, within which the highest risk is in patients with Epithelial Ovarian Cancer (EOC) [1]. The incidence of venous thromboembolic disease in patients with ovarian cancer is 120/10,000 [2].

Treatment of EOC depends on the stage of diagnosis. Two-thirds of patients debut in stage III-IV, where the choice of treatment depends on the feasibility of performing optimal primary cytoreduction (without residual disease, an independent prognostic factor for survival). In patients who are not candidates for surgery, it is suggested to perform neoadjuvant chemotherapy and interval surgery, with or without Hyperthermic Intraperitoneal Chemotherapy (HIPEC) [3].

Cytoreductive surgery with HIPEC is associated with a 30% to 50% risk of Venous Thromboembolism (VTE) in the absence of prophylaxis, with thromboembolic events up to 13.5% and acute pulmonary embolism up to 4.4%. Being a life-threatening event within 30 days postoperative [4].

The risk of DVT is 13.6% to 27.0% during the postoperative period or the course of adjuvant chemotherapy in patients with ovarian cancer [5]. Pelvic venous compression increases the risk of DVT even before surgery.

Postoperatively, early ambulation is recommended whenever possible, with patients getting out of bed on day 1. Mechanical prophylaxis using Intermittent Pneumatic Compression (IPC) until the patient is actively mobilized. Pharmacological thrombus prophylaxis is recommended unless there is a contraindication to use. The most commonly used agents are low molecular weight heparin (enoxaparin), fondaparinux and unfractionated heparin [4].

It is suggested that two-thirds of cases of deep vein thrombosis are usually not diagnosed and the mortality of this group is 30%. However, in the third of diagnosed patients who receive treatment correctly, mortality drops to 10% [6].

The most common DVT is in the lower and upper limbs, with thrombosis of the ovarian vessels being an uncommon location and therefore difficult to manage. It is reported in hypercoagulable states such as oncological patients, infections and obstetric patients. It constitutes a potentially fatal pathology, due to its late diagnosis and its ability to generate cardiovascular complications.

Regarding the symptoms, the condition is nonspecific and can manifest with fever, pelvic pain, nausea and vomiting. Therefore, it can be easily confused with other causes of acute abdomen.

Both MRI and CT with intravenous contrast play an important role, since complications can be fatal and immediate treatment with anticoagulation and antibiotic therapy is essential.

The ERAS Protocol suggests thromboprophylaxis before and after surgery, in those patients with high risk according to thrombosis score. The first dose is usually administered 12 h before surgery and continued for a total of 4 weeks postoperative [4].

Case Presentation

A 47-year-old patient is presented with a diagnosis of high-grade serous ovarian carcinoma, with SET-type morphology (solid, endometrioid, transitional-like). In stage IIA due to involvement of the right and left ovaries and right fallopian tube.

Primary cytoreduction was performed, the patient was left without residual disease in February 2023. At the time of the consultation, she was undergoing adjuvant chemotherapy treatment with Carboplatin + Paclitaxel. The patient had completed 2 cycles and was planning to undergo a third cycle of systemic treatment. She was also being treated with filgrastim for leukopenia secondary to adjuvant treatment. Genetic counseling was performed, which reported a mutation at the CHEK2 gene level.

Three months after surgery, the patient went to the emergency room due to persistent febrile equivalents for the last 72 h. In addition, she reported nausea, without vomiting, a feeling of early satiety, and mild abdominal pain, which was located on the right flank, which increased when moving. In addition to these symptoms, the patient mentioned that she had experienced unilateral headache for approximately 12 h.

On physical examination, the patient was clinically and hemodynamically stable, with normal vital signs. Abdomen with median supra-infraumbilical scar, soft, depressible, painful on palpation of the right flank, with defense, without peritoneal reaction. No menorrhagia or leukorrhea.

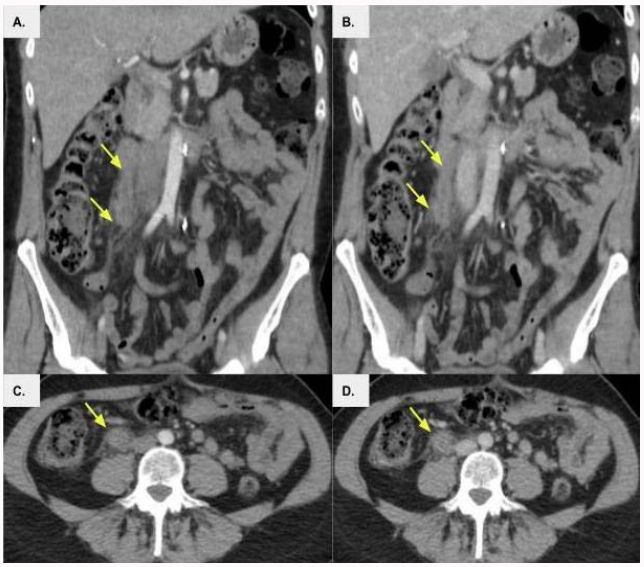

Figure 1: A and C) CT with coronal and axial reconstruction with contrast in arterial time. B and D) CT with coronal and axial reconstruction with contrast in portal time.

Among the complementary studies carried out, were covid antigen and influenza that both tested negative. The laboratory showed mild anemia, elevated inflammatory parameters (CRP 13, ESR 80) with leukopenia (white blood cells 3.57). Hepatogram and normal kidney function.

In the first instance, an abdominal ultrasound was performed in which no free fluid was observed in the abdominal cavity projection. On the right flank, coinciding with the site of pain, an aperistaltic tubular structure with a cul-de-sac was visualized, which may be related to the cecal appendix, presenting a caliber of 10 mm, with adjacent inflammatory changes. Finding compatible with acute appendicitis. To evaluate the clinical context.

A CT scan of the abdomen and pelvis with contrast was performed, which reported that the right ovarian vein was enlarged with hypodense content inside, suggestive of thrombosis, with extension to the mouth of the vena cava. The latter is not affected by thrombosis. The mouth of the right renal vein is 35 mm superior to the thrombosed ovarian vein (Figure 1).

Angio MRI of the Central Nervous System was also performed in the context of headache in a thrombotic event, without pathological findings or evidence of thrombosis.

Hematology consultation was carried out and medical treatment with enoxaparin sodium at a dose of 60 mg twice a day was decided. On the fifth day, anticoagulant medication is rotated to Acenocoumarol.

The clinical evolution was favorable, with improvement in abdominal pain, but since she was a patient with prothrombotic risk factors, she was granted sanatorium discharge with an indication for oral anticoagulation indefinitely.

The third month after the thrombotic event, the patient performed a new control CT scan where no new findings associated with the history of ovarian vein thrombosis were seen.

Discussion

A clinical case of a 47-year-old patient with a diagnosis of high-grade serous carcinoma, with SET-type morphology, stage IIA, who presents ovarian vein thrombosis while undergoing adjuvant systemic treatment, is presented.

There is little published literature on ovarian vein thrombosis in cancer patients and prophylactic treatment in patients with chemotherapy to prevent this disease. It can be emphasized that in the recent publication (2023) by Hübner a, Shigeki et al. [7]. "Incidence of venous thromboembolism in patients with advanced stage ovarian cancer undergoing neoadjuvant chemotherapy: Has the time come for thromboprophylaxis?" Whose results reveal a high incidence of venous thrombosis in patients diagnosed with advanced-stage ovarian carcinoma undergoing chemotherapy treatment (21.4%). This data supports the consideration of thromboprophylaxis in all patients with advanced-stage EOC undergoing NACT [1].

Various articles publish that thromboprophylaxis in outpatients who are treated with chemotherapy is not indicated, except in outpatients who present other factors that determine a high thrombotic risk [8]. In contrast, in the recent article published by the University of Michigan in the Journal Gynecologic Oncology, thromboprophylaxis was systematically implemented in patients with ovarian cancer who were undergoing neoadjuvant chemotherapy. In this study, they concluded that VTE rates during primary treatment after the implementation of prophylaxis decreased significantly from 21% to 8%, without presenting an increase in bleeding episodes [9].

A limitation of this study is that it is a clinical case with low-level evidence support. However, the uniqueness of this case lies in its rarity, since it has barely been addressed in the scientific literature. Furthermore, its intriguing nature is highlighted by the complexity of its diagnosis, as well as the significant potential for morbidity and mortality in patients if it is not detected in time.

In the patient presented, possible placement of a vena cava filter with hemodynamics is discussed, but due to its proximity to renal vessels (distance less than 40 mm) it is contraindicated and drug therapy with anticoagulants is preferred. The literature is reviewed and in order to insert the filter, the inferior vena cava must have an optimal diameter for deployment ≥ 28 mm due to the high risk of migration or inadequate fixation of the device [10].

The literature agrees with what has been done, since, although placement of filters in the vena cava above the renal veins has been described, are not used regularly, due to the risk of potential complication is the occlusion of the renal vein. with compromise to renal function [10].

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