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Managing Acute Limb Swelling in DVT with Adenocarcinoma

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Abstract

Deep vein thrombosis (DVT) is a potentially life-threatening condition often associated with malignancies, particularly adenocarcinomas. Malignancy-associated DVT is commonly a manifestation of Trousseau's syndrome, characterized by a hypercoagulable state driven by tumor-related pro-inflammatory and pro-thrombotic mechanisms. Gallbladder adenocarcinoma, a rare and aggressive malignancy, predisposes patients to thromboembolic events, often serving as an early indication of the disease. A patient presented with progressive left lower limb swelling, low-grade intermittent fever, and localized inflammation over three months. Clinical examination revealed a tender, warm swelling in the subcutaneous plane without ulceration or discoloration. Laboratory findings showed an elevated D-dimer level of 5.0 µg/mL, with other parameters within normal limits. Doppler ultrasonography confirmed extensive DVT in the left lower limb, involving the great saphenous vein. PET-CT imaging identified gallbladder adenocarcinoma with metastasis to the liver, peritoneum, and lymph nodes. This case underscores the significant association between unprovoked DVT and malignancy, emphasizing the importance of advanced imaging techniques like PET-CT in diagnosing underlying malignancies and guiding timely interventions.

Introduction

Deep vein thrombosis (DVT) is a significant medical condition characterized by the formation of thrombi within the deep venous system, often leading to complications such as pulmonary embolism. When DVT occurs in association with malignancy, it is frequently a manifestation of Trousseau's syndrome, a hypercoagulable state induced by cancer. This phenomenon highlights the intricate relationship between venous thromboembolism and malignancies, particularly adenocarcinomas, which are strongly associated with thrombotic events due to the secretion of pro-thrombotic substances and inflammatory cytokines.

The risk of thromboembolism in cancer patients is well-documented, with studies showing it as a leading cause of morbidity and mortality [1] . emphasized the high incidence of thromboembolic events in cancer patients undergoing outpatient chemotherapy. Moreover, gallbladder cancer, a rare but aggressive

malignancy, often presents with nonspecific symptoms and is associated with a poor prognosis due to its propensity for early metastasis and systemic complications, including thrombosis [2,3] .

The association between primary malignancy and venous thromboembolism has been widely explored in literature [4] demonstrated that patients presenting with unprovoked DVT or pulmonary embolism had an increased likelihood of harboring an undiagnosed malignancy. Similarly, highlighted the role of thorough diagnostic investigations in identifying underlying malignancies in patients presenting with thromboembolic events [5] .

This case report focuses on a patient presenting with acute limb swelling due to extensive DVT, ultimately diagnosed with metastatic gallbladder adenocarcinoma. The discussion underscores the critical need for an integrated diagnostic and therapeutic approach in such complex presentations to improve patient outcomes and highlight the role of malignancy as an underlying cause of venous thromboembolism.

Case Presentation

A 56-year-old male presented to the outpatient department with progressive swelling of the left lower limb and low-grade fever over three months. Initially in good health, the patient developed intermittent fever three months prior, followed by the gradual onset of painful swelling in the left lower limb. The swelling was associated with localized inflammation of the surrounding skin but lacked skin changes, ulceration, or discoloration. On inspection, the swelling was insidious in onset and gradually progressive, accompanied by inflammation of the surrounding skin without ulceration or discoloration. Palpation revealed that the swelling was tender, warm to the touch, soft in consistency, and located in the subcutaneous plane without adherence to underlying structures. Laboratory investigations showed an elevated D-dimer level of 5.0 µg/mL, while complete blood count, kidney function tests, and liver function tests were within normal limits. Doppler ultrasonography revealed a long segment of DVT in the left lower limb, extending into the great saphenous vein. PET-CT imaging identified a metabolically active malignant lesion in the gallbladder with liver infiltration and metastasis to the peritoneum, lymph nodes, and omentum. Additional findings included mild-to-moderate ascites, hypermetabolic lymph nodes in periportal, portacaval, bilateral internal mammary, cardiogenic, and supradiaphragmatic regions, and multiple omental and peritoneal deposits with increased metabolic activity suggestive of metastasis. No other hypermetabolic malignant lesions were identified elsewhere in the body. These findings confirmed malignancy-associated DVT, highlighting the critical role of advanced imaging in uncovering systemic malignancies.

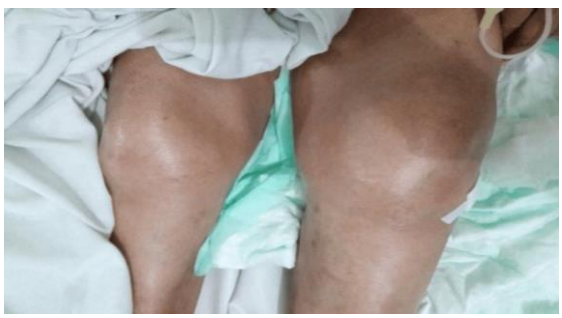

Figure 1: Clinical presentation of the patient's lower limbs demonstrating significant swelling and inflammation of the left lower limb, consistent with deep vein thrombosis. The skin appears inflamed without ulceration or discoloration.

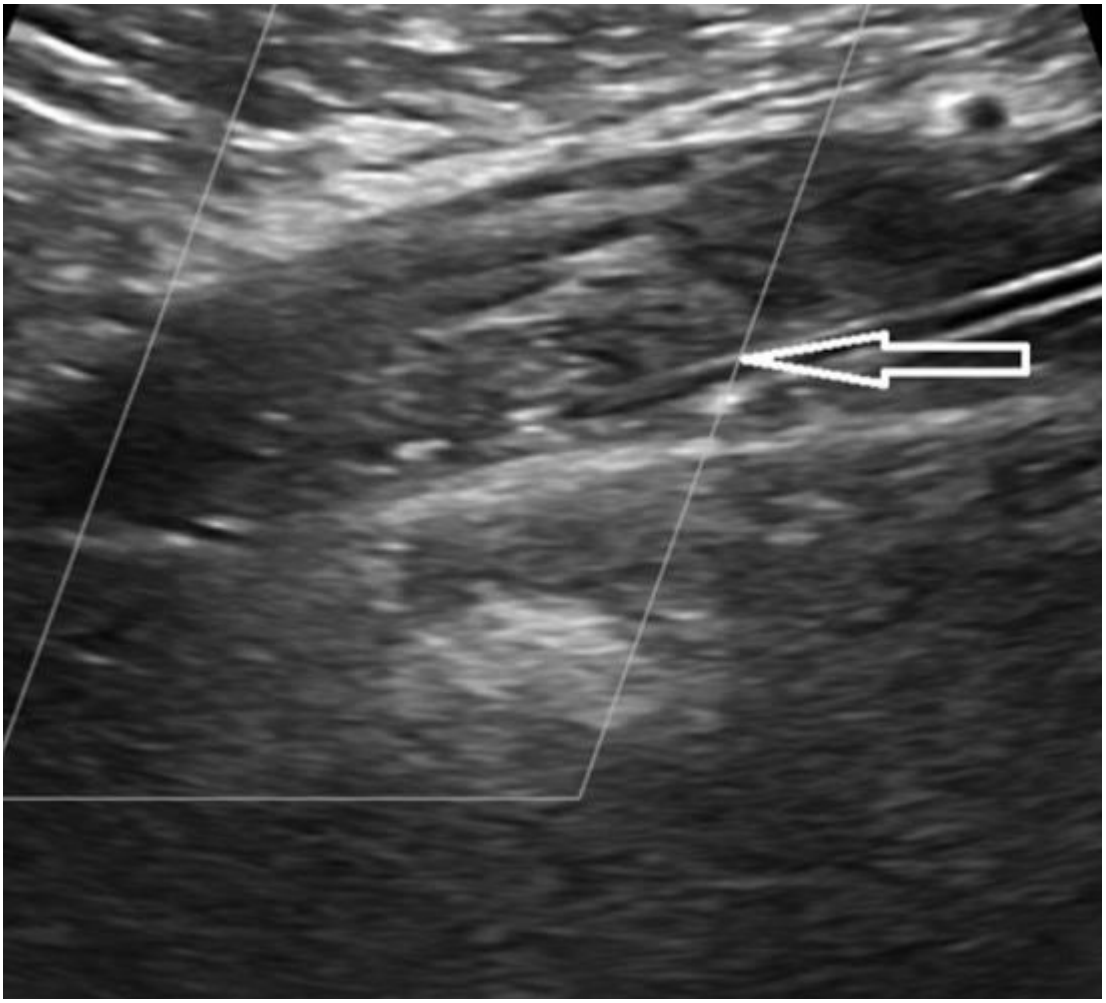

Figure 2: USG Doppler: Revealed a long segment of DVT in the left lower limb with extension into the great saphenous vein.

Discussion

The clinical presentation in this case, characterized by progressive left lower limb swelling, intermittent low-grade fever, and localized inflammation, strongly suggests malignancy-associated deep vein thrombosis (DVT). Examination findings, including a soft, tender swelling confined to the subcutaneous plane and confirmed by Doppler ultrasonography, are hallmark features of thrombotic events linked to malignancy. These findings are consistent with several well-documented studies. Highlighted that idiopathic DVT or pulmonary embolism (PE) frequently serves as a sentinel event for underlying malignancy [4] . Their study reported that a significant proportion of patients with unprovoked DVT were diagnosed with cancer within the subsequent year. This underscores the critical importance of evaluating patients with unexplained DVT for potential malignancies, as was done in this case. The strong association between thromboembolism and cancer has been further corroborated by, who identified thromboembolism as a major complication and a leading cause of mortality in cancer patients [1] . Their findings emphasized that adenocarcinomas, including gastrointestinal cancers, induce a hypercoagulable state through the release of pro-inflammatory cytokines and procoagulant factors. In this case, gallbladder adenocarcinoma was identified as the primary malignancy, aligning with these findings.

The absence of external skin changes or ulceration in this case is consistent with the findings of study on Trousseau's syndrome [6] . The authors described malignancy-associated thrombosis presenting with localized inflammation, swelling, and thrombosis, often in atypical venous locations. The involvement of the great saphenous vein in this case further supports the observations of Sakakibara et al. (1999), who documented cancer-associated thrombosis in unusual venous sites and highlighted the importance of Doppler ultrasound for accurate diagnosis. [2] described cases of advanced gastrointestinal malignancies, including gallbladder cancer, presenting with thrombotic complications such as DVT. The gradual progression of swelling and inflammation documented in their cases mirrors the clinical trajectory observed in this patient. Such presentations reinforce the link between cancer burden and thrombotic events. [7] emphasized the necessity of thorough etiological investigations in patients presenting with DVT or PE, advocating for imaging and laboratory evaluations to uncover potential underlying malignancies. This approach was integral in this case, where PET-CT imaging revealed gallbladder adenocarcinoma with extensive metastasis, including involvement of the liver, peritoneum, and multiple lymph nodes. [5] highlighted the critical role of PET-CT in diagnosing underlying malignancies in patients presenting with unprovoked DVT. In this case, PET-CT findings were pivotal in identifying gallbladder cancer and its widespread metastasis, demonstrating the utility of advanced imaging in uncovering the primary cause of thrombotic events.

Conclusions

This case underscores the importance of recognizing unprovoked DVT as a potential harbinger of underlying malignancy. The findings align with existing literature that emphasizes the strong association between cancer, particularly adenocarcinomas, and hypercoagulability leading to thrombosis. Comprehensive diagnostic evaluations, including imaging modalities such as PET-CT, are crucial in identifying malignancies in patients with unexplained DVT. Early recognition and intervention are essential for improving patient outcomes and managing malignancy-associated thrombotic complications effectively.

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