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Clinical Case Reports

Pleural Adenocarcinoma Presenting with Deep Venous Thrombosis: An Unusual Incidental Finding

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Abstract

Summary: Deep venous thrombosis (DVT) is a common vascular condition with recognised risk factors, such as immobility, trauma, and hypercoagulable states. However, in patients without identifiable causes, the possibility of an underlying malignancy should be considered. We report the case of a 50-year-old male non-smoker who presented with lower limb swelling secondary to extensive DVT and was incidentally diagnosed with pleural adenocarcinoma following evaluation of a right-sided pleural effusion. This case highlights the importance of maintaining a high index of suspicion for occult malignancies in patients with unprovoked DVT to enable early diagnosis and timely management.

Keywords: Adenocarcinoma, Pleural Neoplasms, Venous Thrombosis.

Introduction

Venous thromboembolism (VTE) is strongly associated with cancer, with a relative risk increase of 5–20 times.[1-3] Approximately 7–12% of patients with idiopathic DVT are later diagnosed with occult malignancy.[3] Pleural adenocarcinoma, a rare malignancy (<5% of pleural cancers), can manifest with pleural effusion, chest pain, or respiratory symptoms.[10,11]DVT may complicate the disease course in up to 10% of cases.[12] This case highlights pleural adenocarcinoma initially presenting with unprovoked DVT, which is an unusual clinical scenario.

Case Presentation

A 50-year-old non-smoker male, a security guard by occupation, presented with a history of left leg pain for 18 days, which was gradual in onset, sharp, more around the ankle, described as 7/10 on the visual analogue scale (VAS), persistent, and aggravated by walking, relieved partially by oral or IM analgesics. The swelling had progressed to the mid-thigh at the time of presentation. Other risk factors, such as prolonged immobilisation, trauma, insect bites, prolonged travel, or drugs contributing to such symptoms, were not reported. On systemic enquiry, he reported a dry cough and dull right-sided chest pain on inspiration with MRC grade II dyspnoea. The patient's medical and surgical history was unremarkable. The patient was a *Naswar* addict for 30 years but had no history of smoking, alcoholism, or IV drug abuse. Upon admission, the patient was calm and comfortable, vitally stable, maintaining saturation on room air with a notable left leg swelling extending from the ankle to mid-thigh with a 2 cm girth difference compared to the right leg, with overlying skin being shiny and erythematous, warm, and tender to touch with grade II pitting oedema and positive Homan's sign. Peripheral pulses were palpable, with no lymphadenopathy.

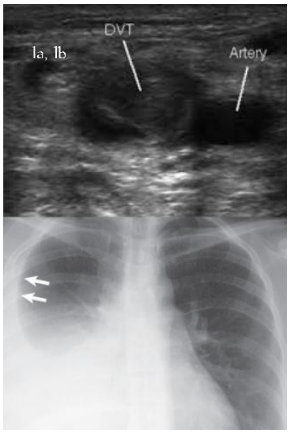

Figure 1: Leg Doppler and Chest X-Ray

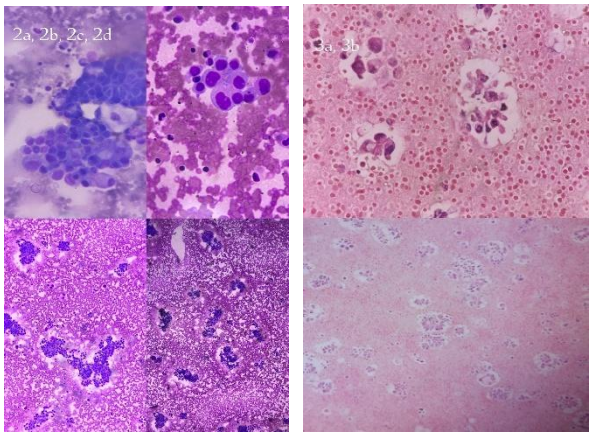

Figure 2 & 3: Pleural fluid cytology

Systemic examination revealed unmasked presence, reduced chest movements, reduced focal fremitus, stony dull percussion note, and reduced breath sounds in the right middle and lower chest.

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Investigations

Preliminary laboratory workup revealed normocytic normochromic anaemia with normal liver and kidney function. Inflammatory markers were elevated along with D-dimer levels (2000ng/mL). The coagulation profile was also normal. Doppler Ultrasound of (Leg) revealed acute DVT extending to the left common, internal, and external iliac, superficial femoral, and great saphenous veins (Figure 1a). Chest X-ray (Figure 1b) showed right-sided costo-phrenic angle blunting and opacifications consistent with right-sided pleural effusion, thus prompting the need for USG chest for quantification as well as to perform radiologically guided diagnostic pleurocentesis. Pleural fluid was exudative lymphocytic on microscopy with negative Gram and ZN staining, thus ruling out tuberculous effusion, which is quite common in our setting. Pleural fluid cytology revealed atypical cell clusters with pleomorphic, eccentrically placed nuclei, a high nuclear-to-cytoplasmic ratio, and abundant cytoplasmic mucin, consistent with metastatic adenocarcinoma. (Figure 2a, 2b, 2c, 2d) (Figure 3a, 3b). Immunohistochemistry was positive for TTF-1, CK7, AE1/AE3, and Napsin-A, which are markers associated with adenocarcinoma.[7-9] Molecular genetics studies were negative for EGFR mutations.

Chest CECT (pre- and post-contrast) revealed massive right pleural effusion with compressive collapse, pleural thickening, and an enlarged pre-tracheal lymph node (Figure 4a, 4b, 4c). Coronal images revealed diaphragmatic and mediastinal pleural thickening with right lung collapse and mediastinal shift (Figure 5). CT of the abdomen and pelvis showed a central filling defect extending from the left common iliac to the femoral vein, consistent with extensive DVT (Figure 6a, 6b, 6c). The bone scan showed no evidence of metastasis. Bronchoscopy findings were normal.

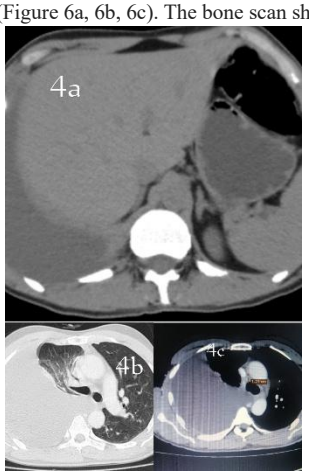

Figure 4: CECT chest

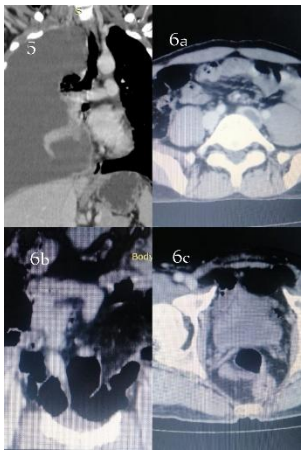

Figure 5 & 6: CT Abdomen & Pelvis

Treatment

According to the TNM staging,[13-15,] our patient had stage IV adenocarcinoma with VTE. With good functional status, he underwent chest tube insertion and talc pleurodesis.[10,11] In a patient with poor status, an indwelling pleural catheter is preferred. DVT was managed with LMWH (80 mg twice daily). The family was counselled about the prognosis and palliative options. The patient received four cycles of platinum-based chemotherapy (cisplatin plus pemetrexed). The EGFR mutation was negative, precluding targeted therapy.[4-6]

Outcome And Follow-Up

The patient tolerated the chemotherapy and pleurodesis. Symptomatic improvement was noted in breathlessness and limb swelling. Despite these challenges, coordinated care between both facilities (pulmonology and oncology) ensured optimal management, highlighting the value of specialised centres and collaborative medical practice.[10,11]

Discussion

This case demonstrates the importance of a thorough workup in patients presenting with idiopathic DVT [(1-3).] Malignancy is a major risk factor for DVT, with a relative risk of 5-20 times. Occult malignancy is present in 7– 12% of idiopathic DVT cases. In diagnosed malignancies, the 12-month incidence was 4.2% to 4.7%. Approximately 10% of cases of Pleural Adenocarcinoma develop DVT during the disease course. Pleural adenocarcinoma is rare,[7-9,12] and most often presents with pleural effusion, dyspnoea, and chest pain. Diagnosis is usually delayed because the symptoms are nonspecific and mimic those of other benign pleural diseases. In our case, the patient presented with left leg DVT and right-sided malignant pleural effusion, an unusual initial combination. While thromboembolic events are well documented in association with malignancy, reports describing pleural adenocarcinoma presenting with DVT are scarce.

Venous thromboembolism (VTE) in the context of cancer is associated with poor prognosis and worse long-term survival.[5,6,12] Therefore, timely diagnosis and treatment are crucial in these patients. Current evidence favours LMWH over warfarin and DOACs for both treatment and prophylaxis of malignancy-related VTE, given its superior efficacy and safety profile.[4-6]

Pleural adenocarcinoma is primarily diagnosed through pleural fluid cytology and confirmed with immunohistochemistry. Markers such as TTF-1, CK7, and Napsin A are typically positive and help differentiate pleural adenocarcinoma from malignant mesothelioma and pleural metastases of nonpulmonary origin (e.g. breast or gastrointestinal cancers). Molecular profiling, including EGFR mutation testing, can further refine the diagnosis and guide targeted therapy.[7-9]

The treatment of pleural adenocarcinoma is stage-dependent. Early stages (I–II), although rare, can be managed surgically with adjuvant platinum-based chemotherapy or radiotherapy. Stage III, with mediastinal nodal involvement, is usually unresectable and treated with systemic

chemotherapy, such as cisplatin/carboplatin plus pemetrexed, often combined with immunotherapy (e.g. pembrolizumab). Stage IV, defined by malignant effusion or distant metastasis, is treated palliatively with chemotherapy, targeted therapy (EGFR/ALK/ROS1 inhibitors if mutations are present), and immunotherapy (PD-1/PD-L1 inhibitors). Malignant effusions are managed with pleurodesis (e.g. talc) or indwelling pleural catheters in patients with poor functional status for symptom relief.

The prognosis of pleural adenocarcinoma remains poor, with a median survival ranging between 6 and 12 months, depending on the stage and treatment response. However, early recognition and multidisciplinary care may improve patient outcomes.

Learning Points

This case highlights left leg DVT as a rare initial sign of pleural adenocarcinoma with malignant effusion in a patient without typical risk factors for DVT. This underscores the need to investigate unexplained DVT for occult malignancies. Early recognition of the cancer–thrombosis link and multidisciplinary management, including pleural drainage and systemic therapy, are key to improving patient outcomes.

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