Veins of Malignancy: Recognizing Tumor Thrombus in Treatment-Refractory DVT

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PARKVIEW HEALTH

BACKGROUND

- Deep vein thrombosis (DVT) is a common vascular disorder that can result in significant morbidity.
- While most cases are attributed to hypercoagulable states, malignancy-related DVT due to tumor invasion of venous structures is a rare but critical differential.
- Tumor thrombus, defined as intravascular extension of neoplastic tissue, is most seen in renal cell carcinoma (RCC). This form of thrombus is typically resistant to conventional thrombolytic therapy and portends a poor prognosis.

PATIENT PRESENTATION

History of Present Illness:

- An 82-year-old male presented with progressive swelling and pain in the left lower extremity.

Physical Exam:

- Physical exam revealed significant edema and tenderness without signs of ischemia or cellulitis.

Laboratory Data:

- Mostly unremarkable. CBC and CMP normal

Diagnostics:

- Venous Doppler ultrasound (US) demonstrated an extensive occlusive thrombus extending from the left common femoral vein to the popliteal vein.

IMAGING

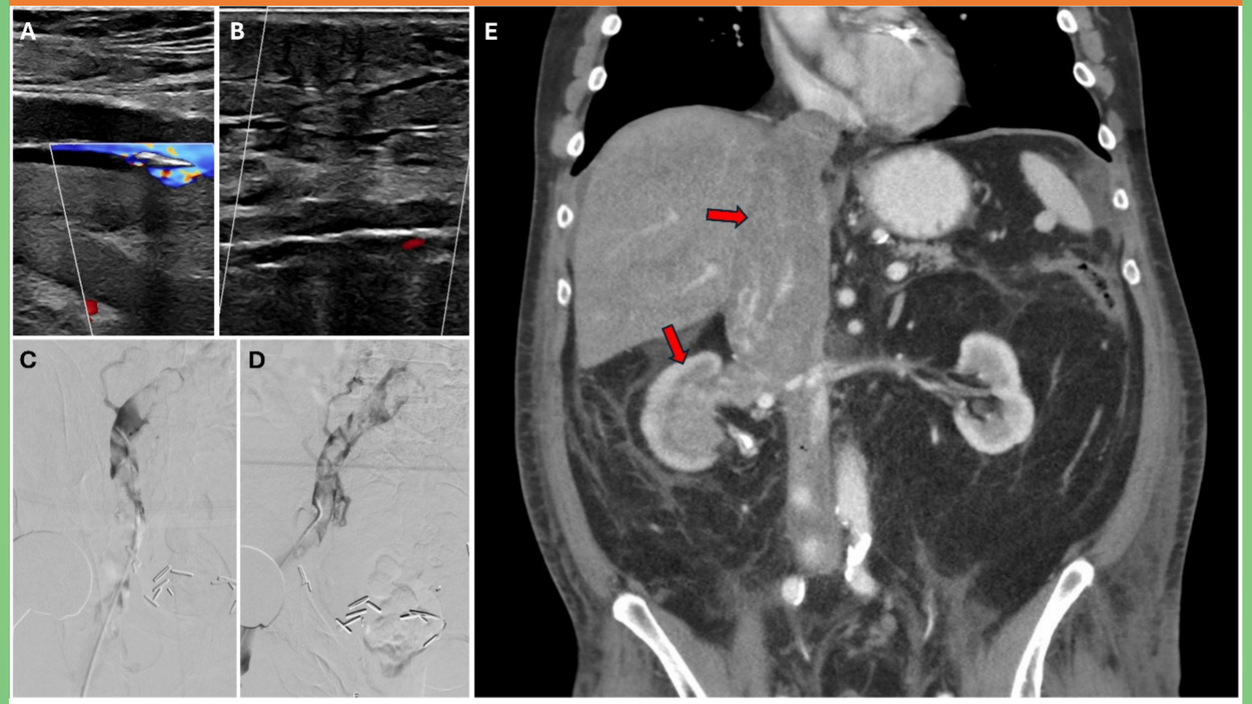

Figure 1: A: Doppler ultrasound of the left common femoral vein bifurcation, demonstrating thrombosis. B: Doppler ultrasound of the left popliteal vein, revealing thrombosis. C: pre-tPA thrombolysis image of external iliac vein. D: post 24 hours tPA thrombolysis revealing remaining clots E: Coronal view of CT abdomen and pelvis revealing a 5 × 7 × 4.5 cm right renal mass with a tumor thrombus extending into the right renal vein and IVC, reaching the inferior margin of the right atrium.

CLINICAL COURSE

- The patient was started on heparin infusion subsequently underwent IR-guided catheter-directed thrombectomy with a 24-hour tPA infusion.
- Follow-up US showed persistent thrombus in the left iliac vein. Given the lack of response to thrombolysis, a contrast-enhanced CT of the chest, abdomen, and pelvis was performed, revealing a 5 × 7 × 4.5 cm right renal mass with a tumor thrombus extending into the right renal vein and IVC, and reaching the inferior margin of the right atrium.
- Additional findings included two hypoattenuating hepatic lesions and pelvic lymphadenopathy, consistent with metastatic RCC.

DISCUSSION

- This case highlights the diagnostic and therapeutic challenges of thrombolytic-resistant DVT due to underlying malignancy.
- Failure of standard anticoagulation and thrombolysis should prompt evaluation for tumor thrombus, particularly in patients without traditional risk factors. Early imaging with contrast-enhanced CT or MRI is essential for diagnosis.
- Tumor thrombus involving IVC, especially with right atrial extension, is associated with poor outcomes and often limits therapeutic options.
- According to RCC staging guidelines, the extent of tumor thrombus is critical: involvement of the IVC below the diaphragm corresponds to stage T3b, while extension above the diaphragm or invasion of the IVC wall is staged as T3c.
- Multidisciplinary coordination is critical in counseling and managing such complex presentations.

REFERENCES

1- Reese AC, Whitson JM, Meng MV. Natural history of untreated renal cell carcinoma with venous tumor thrombus. Urol Oncol. 2013 Oct;31(7):1305-9. doi: 10.1016/j.urolonc.2011.12.006. Epub 2012 Jan 10. PMID: 22237466.

2. Quencer KB, Friedman T, Sheth R, Oklu R. Tumor thrombus: incidence, imaging, prognosis and treatment. Cardiovasc Diagn Ther. 2017 Dec;7(Suppl 3):S165-S177. doi: 10.21037/cdt.2017.09.16. PMID: 29399520; PMCID: PMC5778532.

3-Klatte T, Pantuck AJ, Riggs SB, Kleid MD, Shuch B, Zomorodian N, Kabbinavar FF, Belldegrun AS. Prognostic factors for renal cell carcinoma with tumor thrombus extension. J Urol. 2007 Oct;178(4 Pt 1):1189-95; discussion 1195. doi: 10.1016/j.juro.2007.05.134. Epub 2007 Aug 14. PMID: 17698087.