

CLINICAL IMAGE

Blood finds its own way: Axillary vein thrombosis with extensive chest-wall collaterals

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Key Clinical Message

Hemodialysis catheters are associated with upper extremity deep vein thrombosis, and chronic venous occlusion leads to the formation of collateral pathways. Knowledge of these pathways aids in accurate interpretation of upper extremity venograms. Arteriovenous fistula is the preferred access for chronic hemodialysis, and long-term use of catheters should be avoided.

KEYWORDS

catheter, collaterals, hemodialysis, thrombosis

1 | QUIZ QUESTION: WHAT IS THE REASON BEHIND THIS ABNORMAL VASCULAR ANATOMY?

A 49-year-old man with a history of end-stage renal disease on hemodialysis for 17 years presented with shortness of breath. He had a working left upper extremity arteriovenous fistula but was previously dialyzed using catheters for several years. A contrasted computed tomography scan was obtained

to exclude pulmonary embolism, which incidentally demonstrated a large system of chest-wall collateral vessels at the level of the right axillary vein, suggesting chronic deep vein thrombosis (DVT) in the right axillary vein (Figure 1). There was no occlusion in the superior vena cava. His shortness of breath improved with adequate ultrafiltration.

Hemodialysis catheters are associated with vascular endothelial damage and clot formation. Subclavian is the most common upper extremity vein associated with thrombosis

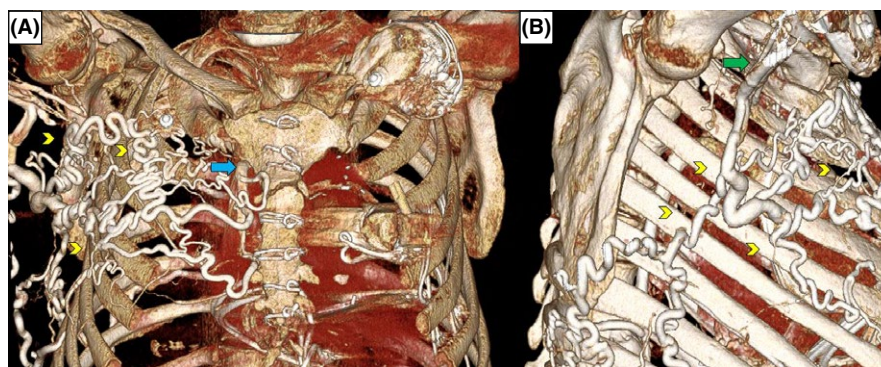


FIGURE 1 Coronal (A) and lateral (B) views of 3-dimensional reconstruction of the CT scan of the chest with contrast demonstrating intravenous contrast from the right upper extremity entering a large system of collateral vessels (chevrons) at the level of the right axillary vein (green arrow), suggesting chronic DVT/occlusion in the right axillary vein. Collaterals can be seen entering the internal thoracic vein (blue arrow)

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(18%-67%), followed by axillary (5%-25%) and the brachial (4%-11%).¹ When a central vein is chronically occluded, collateral pathways develop to maintain venous drainage. These collateral venous pathways are well known to occur in superior vena cava occlusion but rare in subclavian or axillary vein occlusion.^{2,3} When they do occur, axillary vein occlusion leads to chest-wall collateral pathways as in our case. The role of anticoagulation is not established in incidentally found chronic thrombosis, especially in asymptomatic patients. While catheters are the most common cause of upper extremity DVT, it can also occur spontaneously. Risk factors include young age, strenuous upper extremity activity, repetitive overarm hyperabduction, and congenital or acquired thoracic outlet anatomic abnormalities.⁴

INFORMED CONSENT

Informed consent has been obtained for the publication of this clinical image from the patient.

AUTHORSHIP

All the authors made substantial contribution to the preparation of this manuscript and approved the final version for submission. AK: drafted the manuscript and was attending Nephrologist on the case. DB: assisted in revising the manuscript. GC: performed literature search and acquired the images.

CONFLICT OF INTEREST

The authors have declared that no conflict of interest exists.

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