Digital subtraction venography provides invaluable anatomic and hemodynamic information about the venous system, particularly in patients with congenital venous anomalies.

An 18-year-old male patient with congenital phlebectasia of the superficial and deep veins of the left calf associated with anomalous veins presented with pain and heaviness. Prior to percutaneous occlusion of the ectatic veins, sonographic image demonstrated a patent popliteal vein (Figure 1). Multiple venous accesses were obtained to study the lower extremity venous drainage. Antegrade venography via an anterior tibial vein and retrograde venography via left femoral vein demonstrated ectasia and incompetence of the posterior tibial veins with reflux (Figure 2), which were embolized with coils. The popliteal and anterior tibial veins were normal. The incompetent posterior veins were embolized with coils. Postembolization venography demonstrated smooth narrowing of the popliteal vein (Figure 3). This persisted even after retracting the catheter into the femoral vein. Differential considerations to explain this finding included venous spasm, external compression secondary to perivenous hematoma, and, less likely, thrombosis. Sonography showed the walls of the vein contracted around the
catheter and excluded thrombosis and perivenous hematoma (Figure 4). Two aliquots of nitroglycerin (50 μg each) were instilled directly into the popliteal vein. Venography 10 minutes after the injection demonstrated resolution of the spasm (Figure 5).

The published literature on venous spasm is scarce. A few case reports described acute venous narrowing or spasm involving the upper extremity veins during pacemaker implantation.1,2 The pathophysiological explanation may be the same as for spasms in arteries. Various vasoactive stimuli cause vasoconstriction by inducing nitric oxide release by the endothelium.3 This mechanism is incompletely understood but appears to involve both the endothelial and muscular layers, which are also present in veins, albeit with fewer smooth muscle cells than are found in arteries.4 As with arterial spasm, we suggest that venous spasm may resolve with nitroglycerin and cessation of further manipulation. Sonography is a useful tool to differentiate the etiology of acute venous narrowing when venography cannot provide such information.

Disclosures

None.

References

Figure 5. Venography after administration of nitroglycerin and removal of the catheter. The spasm of the popliteal vein has resolved (arrows).
Catheter-Induced Venous Spasm
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