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Refractory Venous Thrombus Propagation in the Setting of Therapeutic Anticoagulation

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A 68-yr-old gentleman with atrial fibrillation, hypertension, and diabetes mellitus sustained an acute ischemic stroke involving the left posterior cerebellar artery. Lower limb venous duplex revealed deep venous thromboses in the right common iliac vein and bilateral popliteal veins. He was started on warfarin and intravenous heparin; however, he developed heparin-induced thrombocytopenia. An inferior vena cava (IVC) filter was placed. He was subsequently admitted for acute inpatient stroke rehabilitation. He continued warfarin, and his international normalized ratio remained within the therapeutic range. His bilateral lower limb swelling increased. Repeat lower limb venous duplex revealed progression of the left lower limb thrombus from the popliteal to the common femoral and saphenous veins. The thrombus in the right lower limb progressed from being nonocclusive to being occlusive. Computerized tomography of the chest, abdomen, and pelvis revealed thrombotic extension above the IVC filter (Fig. 1). Given the patient's worsening thromboses while on therapeutic warfarin, his anticoagulation was changed to fondaparinux. One week after initiating fondaparinux, repeat computed tomography demonstrated minimal retraction of the proximal end of the thrombus that extended above the IVC filter (Fig. 2). The patient was discharged on fondaparinux in stable condition to a subacute rehabilitation facility.

Anticoagulants, whether oral or parenteral, have limitations. Warfarin requires international normalized ratio monitoring and may be affected by genetic polymorphisms, vitamin K dietary intake, and drug interactions.¹

New oral anticoagulants, including dabigatran (direct thrombin inhibitor) and apixaban (antifactor X), demonstrate a dose-efficacy relationship and have a fast onset of activity and short duration of action but require twice-daily dosing.² Parenteral anticoagulation includes heparin, low-molecular-weight heparin, and fondaparinux. Low-molecular-weight heparin and fondaparinux require daily injection, are metabolized by the kidney, and may accumulate in renally impaired patients.¹ IVC filters are used as an alternative to anticoagulation. Complications include pneumothorax, hemorrhage, and vessel injury.³ Anticoagulation, used with IVC filter, has been recommended for selected patients, although a study found that asymptomatic IVC filter thrombi rarely progress to complete occlusion,

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with anticoagulation having little effect on filter thrombus resolution and pulmonary embolism occurrence.⁴

Our patient developed thrombus propagation through the IVC filter while on therapeutic warfarin. After treatment with fondaparinux, the patient's thrombus demonstrated slight retraction.

Anticoagulation, whether orally or parenterally, is a treatment mainstay for venous thromboembolism. Given the many limitations and complications with anticoagulation, physicians must closely monitor all patients to prevent and treat thromboembolism.

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FIGURE 1.
Arrow denotes thrombus while on therapeutic coumadin.

FIGURE 2.
Thrombus after 1 wk on fondaparinux.