



Q/ What's the best way to manage upper extremity venous thrombosis?

EVIDENCE-BASED ANSWER

A/ STANDARD MANAGEMENT IS BEST: Start with unfractionated heparin or low-molecular-weight heparin and follow with long-term therapy with a vitamin K antagonist (strength of recommendation [SOR]: C, expert consensus and case reports). Some evidence supports thrombolytic therapy, placement of a superior vena

cava filter, or surgical thrombectomy in selected patients (SOR: C, expert consensus and case reports). Whether to remove venous catheters during initial treatment for catheter-induced venous thrombosis remains unclear, because limited studies address this issue specifically (SOR: C, expert consensus and case reports).

Evidence summary

Upper extremity venous thrombosis (UEVT)—which typically refers to thrombosis of the brachial, axillary, or subclavian veins—accounts for approximately 10% of all cases of venous thromboembolism.¹ UEVT can occur spontaneously (Paget-Schroetter syndrome) or develop as a complication of cancer or indwelling medical devices (such as long-term central venous catheters).

Although significant evidence-based data exist on treatment of lower extremity venous thrombosis, no good-quality studies specifically address management of UEVT. Review of the current literature revealed several small studies that compared various treatment strategies.

Thrombolytics may work better than anticoagulants in some patients

A small retrospective study randomized 20 patients with UEVT to either treatment with anticoagulant therapy with heparin and warfarin (n=11) or thrombolytic therapy (n=9).² After a mean follow-up period of 81.7 months for the anticoagulation group and 52.1 months for the thrombolytic group, 4 more patients in the thrombolytic group achieved complete clinical recovery and vein patency than in the an-

ticoagulant group ($P=.04$). When patients who recovered completely were added to those who showed some clinical improvement, 89% of the thrombolytic therapy group had satisfactory outcomes, compared with 36% of the anticoagulant group ($P=.028$).

Another small retrospective study looked at 10 consecutive patients with UEVT who were treated with either anticoagulant therapy (n=6) or thrombolytics (n=4).³ Fifty percent of patients treated with anticoagulants experienced partial or complete improvement in symptoms, whereas 100% of patients treated with thrombolytics had partial or complete resolution of both symptoms and thrombi.

Overall, both studies raise the possibility that thrombolytic therapy is more effective than anticoagulation therapy in certain patients. The studies evaluated only active patients, 23 to 58 years of age, who had no contraindications to thrombolytic therapy. Neither study reported data on long-term outcomes such as recurrences, bleeding, or post-thrombotic sequelae.

Surgery may avoid long-term anticoagulation

Two case studies evaluated treatment of UEVT

Clayton Rabens, MD;
Patricia Goodemote, MD
Eglin Family Medicine
Residency, Eglin Air
Force Base, Fla

Barbara Jamieson, MLS
Medical College of Wisconsin
Library, Milwaukee



Unfractionated heparin or low-molecular-weight heparin followed by long-term therapy with a vitamin K antagonist is the standard management strategy.

Thrombolytic therapy, a vena cava filter, or surgery may benefit some patients.

with thrombolytic therapy followed by various surgical interventions (angioplasty, thrombectomy, decompression via first rib resection or anterior scalenectomy, and venous bypass).^{4,5} The first study reported that 8 of 9 patients who underwent first-rib resection and 1 of 2 who underwent scalenectomy were free of residual symptoms at follow-up (mean 2 years, range 6 months to 5 years).⁴ All patients were treated with thrombolytics before surgery.

The second study demonstrated that 50% of the patients treated with a surgical intervention without thrombolysis had complete symptom relief, while the remaining 50% reported relief from pain but still had occasional swelling.⁵ Although more invasive, surgery may eliminate the need for long-term anticoagulation therapy and enable a more rapid return to normal activities.

Data on vena cava filters are limited

Data supporting superior vena cava Greenfield filters to treat UEVT are extremely limited. Of 6 patients with contraindications to anticoagulation therapy who were treated with a Greenfield filter, none had clinical evidence of pulmonary embolism at 14 months.⁶ The study reported no data regarding long-term sequelae or effects of the UEVT on the patients' upper extremity.⁶

When in doubt, don't (necessarily) take it out

For patients with central venous catheter-related deep vein thrombosis, taking out the catheter as part of treatment is controversial and should depend on clinical symptoms, the reason for the catheter, and duration of use, as well as physician judgment.⁷ No RCTs have studied the effects of catheter removal as part of initial treatment. Current guidelines recommend removing the catheter from patients with persistent symptoms who have failed anticoagulant or thrombolytic treatment.¹

Recommendations

The American College of Chest Physicians recommends therapeutic doses of intravenous unfractionated heparin, low-molecular-weight heparin, or fondaparinux for initial treatment of UEVT, followed by at least 3 months of treatment with a vitamin K antagonist.¹ The organization also suggests that surgical thrombectomy, superior vena caval filters, thrombolytic therapy, or catheter extraction may benefit selected patients.


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