

Catheter-Directed Thrombolysis for the Treatment of Symptomatic Deep Vein Thrombosis

To the Editor:

We read with interest the recently published monograph by Kearon¹ describing the natural progression and clinical treatment of venous thromboembolism, including deep vein thrombosis (DVT). In addition to noting that anticoagulation is the standard of care for symptomatic venous thromboembolism, Kearon reports that systemic thrombolytic therapy accelerates the rate of lysis of DVT. However, the author fails to discuss more recent findings suggesting that catheter-directed thrombolysis offers a more successful route of administration for thrombolytic agents such as streptokinase (SK), urokinase (UK), and recombinant tissue plasminogen activator (rt-PA).

The author refers to an overview of 8 randomized trials conducted between 1968 and 1990, in which the various authors conclude that moderate or marked thrombolysis occurred in 63% of lower extremity DVT patients receiving systemic SK, UK, or rt-PA therapy along with anticoagulant therapy, compared with 22% of patients receiving anticoagulation alone.² Kearon also refers to a study by Schweizer et al,³ in which the authors found that success was achieved in 54% of lower extremity DVT patients receiving systemic SK, UK, or rt-PA therapy in addition to anticoagulation, compared with 6% of patients receiving anticoagulation alone. Schweizer and colleagues³ report that thromboembolism was associated with major bleeding complications in 9% of cases and pulmonary embolism in 9% of cases.

We draw attention to a group of studies that have evaluated the efficacy and safety of catheter-directed thrombolysis for acute symptomatic DVT, particularly in the iliofemoral region. This procedure is typically performed by an interventional radiologist, or endovascular specialist, and involves continuous low-dose infusion of a thrombolytic agent through a multi-side hole catheter embedded in the thrombus. Infusions are typically 24 to 53 hours, with a total dose significantly less than the dose administered with the systemic approach. In a multicenter study of 287 lower extremity DVT patients (303 limbs) receiving catheter-directed UK therapy, Mewissen et al⁴ report that successful thrombolysis was achieved in 83% of patients. In this study, major bleeding occurred in 11% of patients. Another study of 77 patients (87 limbs) who underwent catheter-directed thrombolysis with UK reported a success rate of 79% and a major bleeding complication rate of 5.7%.⁵

We feel that at institutions with the capabilities to perform catheter-directed thrombolysis, it should be front-line therapy for symptomatic DVT. Moreover, we believe that there is fertile ground for a randomized control trial comparing catheter-directed thrombolysis with systemic anticoagulation and/or systemic thrombolysis.

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Response

Drs Grunwald and Hofmann are mistaken that my review, Natural history of venous thromboembolism,¹ included a description of clinical treatment of venous thromboembolism. There is no description of treatment of venous thromboembolism in my review, nor was there meant to be. However, as much of what is known about the natural history of venous thromboembolism has been observed in patients who have been diagnosed and treated, and as the likelihood of progression and extent of resolution of treated venous thromboembolism is clinically important, this was described.

Drs Grunwald and Hofmann conclude that, "at institutions with the capability to perform catheter-directed thrombolysis, it should be front-line therapy for symptomatic DVT." Although this issue is unrelated to my review, as I have been invited to reply to their letter, I suggest that there is currently inadequate evidence to support such a recommendation.²⁻⁴ Consequently, while I agree that there is a need to evaluate catheter-directed thrombolysis for treatment of deep vein thrombosis in randomized trials, I propose that anticoagulant therapy alone is the appropriate comparator rather than systemic thrombolytic therapy. Clinically important outcomes, including the post thrombotic syndrome, should be the main outcomes for such trials rather than radiologic assessments of the extent of residual thrombosis.

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