The article by Borst-Krafek et al\(^1\) in the March issue of the Journal of Vascular Surgery reminds readers that pulmonary embolism (PE) occurs frequently with “proximal” deep venous thrombosis (DVT). Inasmuch as therapeutic decisions regarding DVT are largely driven by perceived risk for embolism, the high incidence of PE (42%-51%) reported in certain subsets of patients in this large study is of considerable concern. The hypothesis that detectable venous thromboembolism (VTE) is more frequent or its consequences more severe with more cephalad extent of the primary extremity thrombus makes intuitive sense. As the host vein increases in diameter, larger potential emboli might be more likely to obstruct major pulmonary artery segments. Therefore, if the incidence or severity of PE varies according to its anatomic source, a proximal location of DVT would increase its clinical significance.

In this study, 22% of thrombi thought to be located above the inguinal ligament extended into the inferior vena cava (IVC). However, symptoms and physical findings did not delineate the location of the primary thrombus. For those considering caval interruption, the indication for a predeployment contrast study is reinforced by the reported one chance in five of IVC extension. The 42% incidence of PE with IVC thrombosis was lower than that for iliac (51%) or femoral (50%) vein thrombosis, although the frequency of PE was statistically indistinguishable among these venous segments. “Massive” PE was excluded from this series, and, on the basis of incomplete information, it is presumed that most of the documented emboli were asymptomatic. Accordingly, the observation that there was no difference in incidence of symptomatic PE among the patient groups may be tenuous.

An increasing volume of literature has confirmed the clinical observation that infrapopliteal DVT (ie, tibial and peroneal vein thrombosis) is associated with a comparatively low risk for embolism.\(^2\) The data presented by Borst-Krafek and colleagues principally suggest that, although PE is common, it occurs no more frequently with suprainguinal DVT than with extensive thigh DVT. For the purposes of this study, the term “proximal” has been redefined to mean suprainguinal DVT. In general, the literature, including previous publications from these authors, has assumed that proximal implies popliteal vein or higher, thereby recognizing the differential risk for VTE between calf vein thrombosis and popliteal vein thrombosis.\(^2\) Thus, as in this presentation, it is important for investigators to specify their definition of “proximal.”

This Viennese dermatology group has published regularly on treatment of VTE, with specific interest in the relationship of pelvic extension and PE.\(^4,5\) A feature of their management algorithm is emphasis on compression and early active ambulation, combined with heparin and oral anticoagulation therapy.\(^4,5\) Because of the perceived inaccuracy of duplex ultrasound scanning for diagnosis of suprainguinal thrombus, their previous contributions identified suprainguinal thrombosis with radionuclide venography. These authors have adroitly addressed the diagnosis of suprainguinal DVT in their present report with magnetic resonance venography (MRV), a technique that is reported to be as accurate as contrast-enhanced venography and certainly is less invasive.\(^6,7\) Although MRV was compromised by frequent false-negative studies, current improvements in technique have largely resolved this concern. In addition to improved visualization of suprainguinal veins, MRV enables bilateral studies in a single examination and provides images of nonaxial profunda and internal iliac veins. Despite these considerations, duplex scanning remains a valuable resource for routine practice, because MRV requires approximately 50 minutes to perform and is inappropriate for patients with claustrophobia or who have metallic implants. Given the reported results, MRV is unlikely to influence treatment (ie, thrombectomy, thrombolysis, IVC filtration) in a similar population. Thus, outside of a research protocol, it is not clear when clinicians should consider requesting this expensive diagnostic investigation if a duplex scan already suggests proximal extension.

The focus of this report is a cohort of 212 consecutive patients in whom the diagnosis of suprainguinal DVT was...
made with duplex ultrasound scanning. This cohort was culled from 1246 patients who received treatment of symptomatic lower extremity DVT. Only 2 patients had phlegmasia cerulea dolens, no thrombolysis or thrombectomy was performed, no patients died, and no filters were placed during 4 weeks of follow-up. Specifically excluded from the study group were patients with massive PE (presumed class 3 or 4 disease with hemodynamic compromise), who would have been admitted to the intensive care unit and not followed up by the authors, and patients with DVT with no evidence of suprainguinal extension at duplex ultrasound scanning.1,8

Although internal referral patterns at the authors’ hospital are not described, they state that “Nearly all patients...were first investigated in the department.” The reader would like to assume that all iliofemoral DVTs were treated consecutively by the authors, but the authors also disclose that a “hospital-specific bias cannot be excluded.” A previous manuscript addressing a similar topic notes exclusion of patients who were seen in consultation by members of the dermatology department but were “immobilized in other departments because of surgery, trauma, or internal organ dysfunction,” speculating that these patients may represent a different population.4 Although it is not specified that “immobilized” patients with VTE were not included in their database, or referred to their hospital, it would be difficult for these patients to comply with the early mobilization specified in the treatment algorithm. Therefore the reader is left to wonder whether these data include immobilized, and often postsurgical, patients with DVT.

No clinical differences in frequency of PE were encountered between patients with iliac thrombus alone, those with IVC extension, and those with isolated femoral thrombus in the study cohort. Nevertheless, selection of the comparison group was not optimal. Because all of the patients in the study cohort were thought to have DVT extending into the pelvic veins, this comparison group must be considered to have been preselected because they had extensive femoral DVT. In the group with less extensive femoral thrombus, from which this sample was derived, pulmonary scans were not obtained routinely; for this reason, the incidence of PE could not be compared directly with a comparable figure in the study cohort. There is little information to suggest that frequency of PE with infrainguinal DVT is lower than that above the inguinal ligament, and a definite conclusion almost certainly would require a more thorough study of a tightly defined comparison group consisting of only femoral or popliteal DVT. The authors’ observations are interesting, but even they note that the limited duration and compliance of their clinical follow-up compromise substantive conclusions regarding frequency of chronic extremity symptoms.

In summary, this experienced group has reported a large series of VTE, which appears to confirm that proximal DVT is associated with a high incidence of PE, a valuable contribution irrespective of whether there actually is a different incidence of PE between caval, pelvic, and femoral DVT. Although the 42% incidence of PE with IVC thrombosis was the lowest of the three, it was not statistically different from pelvic or femoral DVT. Management of proximal DVT with the authors’ anticoagulant algorithm for mobile patients resulted in a similar incidence of PE regardless of the anatomic origin of DVT, but additional data may be necessary before these results can be extrapolated to immobilized patients with DVT.

REFERENCES


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Please see related article by Dr Borst-Krafek et al on pages 518-22 of the March 2003 issue.