Overview of Venous Thromboembolism Epidemiology

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Pulmonary embolism (PE) and deep venous thrombosis (DVT) afflict millions of individuals worldwide and account for several hundred thousand deaths annually in the United States. Few health care providers realize that the case fatality rate for PE, approximately 15 percent, exceeds the mortality rate for acute myocardial infarction. During the past 5 years, a remarkable transition started in North America. The lay public began to become aware of the magnitude of disability from venous thromboembolism (VTE), which encompasses PE and DVT.

The same features of VTE that fascinate the public have kept clinical scientists spellbound by this illness. VTE is a common problem, yet often difficult to diagnose. It strikes a wide range of individuals, from teenagers to nonagenarians. Its onset is usually unpredictable, and the likelihood of recurrence after completing a time-limited course of anticoagulation remains uncertain. Though most individuals survive, VTE impairs quality of life by increasing susceptibility to chronic thromboembolic pulmonary hypertension and chronic venous insufficiency. It also exerts a psychological toll on patients who wonder whether they will suffer a recurrent event, whether it will affect their family members, and whether it will lower their quality of life as well as shorten their lifespan.

The incidence of VTE has also risen, primarily because of an increase in the diagnosis of DVT. The incidence is similar among men and women. VTE strikes immobilized hospitalized patients with comorbid disease. Less well appreciated are risk factors out-of-hospital: 1) obesity, 2) cigarette smoking, 3) age, 4) cancer (including liquid tumors), 5) long-haul air travel, and 6) “asymptomatic” DVT.

The previous uncertainty about the clinical relevance of asymptomatic proximal DVT no longer exists. Asymptomatic proximal leg DVT has a high associated mortality rate among patients hospitalized with medical illnesses. The 90-day mortality rate in hospitalized medical patients was 14% for those with asymptomatic proximal leg DVT at Day 21, compared with a 1.9% 90-day
mortality rate for those with no DVT at Day 21. This finding underscores the appropriateness of targeting asymptomatic proximal leg DVT as an endpoint in clinical trials of thromboprophylaxis.

An especially problematic risk factor is obesity, which has become pandemic in the United States. Obesity doubles or triples the likelihood of VTE. As patients survive longer with cancer, the frequency of VTE is increasing, because cancer patients have twice the incidence of VTE as noncancer patients. This increased risk of VTE is present not only in adenocarcinomas of the pancreas, stomach, lung, esophagus, prostate, and colon, but also threatens patients with “liquid tumors” such as myeloproliferative disease, lymphoma, and leukemia. The VTE incidence is highest among patients initially diagnosed with metastatic disease. Less well known acquired risk factors include acute infection and chronic obstructive pulmonary disease.

The epidemiology of PE is also a women’s health issue. Pregnancy, hormonal contraception, and postmenopausal hormonal therapy each contribute to increased risk.

Perhaps the most frequently discussed acquired risk factor is longhaul air travel. The risk of fatal PE in this setting is less than 1 in 1,000,000. However, when death occurs, it is dramatic and especially tragic because the victim is often an otherwise healthy young person. It appears that among some individuals, there is activation of the coagulation system during air travel. The reason for hypercoagulability remains uncertain. However, the mechanism does not appear to be due to hypobaric hypoxia.

Hospitalized patients with medical illnesses such as pneumonia or congestive heart failure are at high risk of developing VTE. The stasis and immobilization associated with postoperative venous thrombosis may paradoxically increase after hospital discharge, because with short hospital lengths of stay, patients may be too weak and debilitated at home to ambulate after surgery. Vigilance is required to ensure that appropriate patients receive extended VTE prophylaxis at the time of hospital discharge.

The VTE cost burden is high. VTE is often a chronic illness, with a high recurrence rate. DVT and PE impair the quality of life. The DVT FREE Registry is improving our understanding of VTE epidemiology.

References
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