Editorials

Venous thromboembolism in India

Venous thromboembolism (VTE)—deep venous thrombosis (DVT) and pulmonary embolism (PE)—is not an uncommon complication in hospitalized patients and those undergoing surgical procedures. VTE is prevalent throughout the world. About 2 million new cases of DVT and 600 000 new cases of PE occur every year in the USA (population 300 million). It has been generally agreed that VTE is a disease of the West and is infrequent in eastern populations (including Indians).

A study spanning 19 Asian centres revealed that DVT occurred in 41% of patients undergoing major joint surgery without thrombo-prophylaxis.[1] The incidence of symptomatic VTE in another prospective epidemiological study of 2420 Asian patients undergoing major orthopaedic surgery without thrombo-prophylaxis (SMART study) was 2.3%, as high as that in western patients.[2] Thirty-two of 53 patients who underwent major orthopaedic surgery without thrombo-prophylaxis had DVT which was proven on venography.[3] In a recent global epidemiological study, 52% (42% medical and 64% surgical) of 68 183 (55% medical and 45% surgical) inpatients in 358 hospitals across 32 countries were found to be at risk for developing VTE.[4] India contributed 2058 patients (46% medical and 54% surgical), where 54% (45% medical and 61% surgical) of hospitalized patients had risk factors for VTE—the same as in the rest of the world. An autopsy study on 1000 medical patients at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh revealed that PE was present in 159 (16%) of 1000 patients who died in the hospital—it was a fatal embolus in 36 and was a major contributor to death in 90 patients; in 30 patients, the embolus was an incidental finding at autopsy as death occurred due to some other cause. A clinical (pre-mortem) suspicion of PE was recorded in 30% of patients and a diagnosis of PE could be made in <10%; >80% of 159 patients with PE were young (<50 years).[5]

Both DVT and PE may be clinically silent (asymptomatic) and hence not suspected. Even when symptomatic, the clinical features are non-specific; presence of pain, swelling and tenderness in the lower limbs (characteristic of DVT) are not always due to DVT, and symptoms and signs of PE (chest pain, tachypnoea and dyspnoea) can mimic those of chest infection, myocardial infarction and adult respiratory distress syndrome (ARDS)—all common in hospitalized (medical and surgical) patients.

VTE is not only disabling but increases hospital stay and cost of treatment; PE can also be fatal. Along with myocardial infarction and arrhythmia (due to electrolyte imbalance), PE is one of the commonest causes of sudden unexplained deaths in hospitalized patients—10% of all hospitalized deaths in UK are due to VTE. VTE causes 500 000 deaths every year in the European Union (population 500 million). Both DVT and PE are associated with long term sequelae such as varicose veins, venous ulcers, pulmonary artery hypertension and recurrent VTE.

Investigations required to confirm or rule out DVT (d-dimer, Doppler ultrasonography, isotope venography, conventional contrast venography) and PE (conventional contrast pulmonary angiography, CT pulmonary angiography, ventilation perfusion isotope scan) may not be available/possible to do (in a sick or postoperative patient) or may be invasive or expensive. The diagnosis of VTE, therefore, is infrequent. The preferred investigation for diagnosis of DVT is Doppler US and for PE CT pulmonary

angiography. Patients with recurrent VTE should be investigated for thrombophilia, e.g. antithrombin deficiency, protein C and S deficiency, factor V Leiden, etc.

Treatment of VTE is difficult. It requires anticoagulation with therapeutic doses of heparin and warfarin, which are associated with side-effects including bleeding. This requires monitoring the coagulation profile. Patients with proximal (ilio-femoral) DVT may need hospitalization for the first few days but those with distal DVT can be treated on an outpatient basis using low molecular weight heparins (LMWH) instead of unfractionated heparin (UFH). Treatment has to continue for a variable period, usually 3–6 months; perhaps even longer, depending upon whether it is secondary, idiopathic or recurrent DVT.[6] Also, compared with prophylaxis, the treatment of VTE is more expensive and associated with complications that may result in more bleeding.

However, VTE is easily preventable. Prophylactic measures include lifestyle modifications, and mechanical and pharmacological methods. Patients needing hospitalization should be encouraged to remain ambulant, as far as possible. Those waiting for elective surgery should be advised to discontinue smoking, oral contraceptive pills (OCPs) and hormone replacement therapy (HRT) for at least 4–6 weeks. Mechanical measures such as elastic graduated compression stockings (GCS), intermittent pneumatic compression (IPC) and venous foot pumps (VFP) should be used in bed-ridden patients and those undergoing surgery. The evidence for mechanical prophylaxis is not as strong as that for pharmacological prophylaxis. Pharmacological prophylaxis involves the use of heparin in low (prophylactic) doses which are associated with no or little increase in the risk of clinically important bleeding and do not warrant monitoring the coagulation profile. Both UFH and LMWH are equally good, though LMWH may be better than UFH in patients at high risk of DVT. LMWH have the logistic advantage of once daily (compared with 2–3 times a day for UFH) dose (because of their longer half-life) and are associated with less risk of bleeding and heparin-induced thrombocytopenia (HIT).

Strong (Grade A) recommendations based on randomized controlled trials (Level 1 evidence) are available to support the use of thrombo-prophylaxis in various patient groups, e.g. general surgery, orthopaedic surgery, gynaecological surgery, trauma, medical illnesses, cancer, etc. A meta-analysis of 46 randomized controlled trials showed that the use of low dose UFH reduced the risk of DVT from 22% to 9%, that of PE from 2% to 1.3% and of fatal PE from 0.8% to 0.3%.[7] All patients (medical or surgical) who are admitted should be screened for their risk for VTE. Some common risk factors for VTE are old age, obesity, immobilization, cancer, sepsis, prolonged surgery, pelvic surgery, major orthopaedic surgery, etc. Based on the presence or absence of these risk factors, which carry varying weightage, patients can be stratified into very high, high, moderate and low risk for VTE. Those at high or very high risk should receive prophylaxis—both mechanical and pharmacological. Pharmacological prophylaxis may be started pre- or postoperatively. It should be continued for at least 7 days or until the patient is ambulant. Patients with very high risk may require extended prophylaxis (for 4–6 weeks) which can be given at home even after they are discharged from the hospital. Caution needs to be taken if spinal/epidural anaesthesia is to be used. Patients at high risk of bleeding and those with contraindications to heparin should receive mechanical prophylaxis only.

VTE prophylaxis is effective—it reduces the risk of DVT by two-thirds and that of PE by half; it also saves lives. VTE prophylaxis has been identified as the number one measure to improve the safety of hospitalized patients.

Guidelines of many scientific societies strongly recommend that every hospital should have a policy for VTE prophylaxis.[6] Several approaches provide group-specific thrombo-prophylaxis cover (e.g. all patients with cancer, all patients undergoing hip replacement surgery, etc.) or individual risk assessment.

In the first instance, VTE prophylaxis seems to add to the cost of treatment of the patient. In the long run and on a collective basis, however, VTE prophylaxis is a cost-effective measure as costs of management of DVT and PE, if and when they occur are very high.[8]

In spite of all the evidence in its support, VTE prophylaxis remains grossly

underutilized. In the ENDORSE study, only half of 35 329 patients who were at risk for VTE received appropriate prophylaxis. In India, <20% of patients, who were at risk, received prophylaxis. In a study of 100 patients admitted to intensive care units (ICU) in Kolkata, only 1 of 2, who should have received thrombo-prophylaxis, actually received it.[9] The major reason for not using pharmacological thrombo-prophylaxis is fear of bleeding. Pharmacological prophylaxis was used in only 229 of 466 (47%) patients admitted to an ICU in a hospital in Mumbai who should have received it and the commonest reason cited for not using it was fear of bleeding.[10] The risk of bleeding is, however, very small; a meta-analysis revealed that the use of low dose UFH did not increase the risk of major bleeding.[11] The risk of facing a medicolegal suit for not using thrombo-prophylaxis when it should have been used seems to be more. The number of patients requiring thrombo-prophylaxis in India, with a population of more than one billion, will be huge and costs prohibitive. It may be better to use both mechanical and pharmacological prophylaxis in those at very high and high risk and advise only early mobilization and mechanical methods in those at moderate risk.

VTE (DVT and PE) is prevalent in India as Indian patients too have various risk factors for VTE. VTE may not be easy to diagnose and may be more expensive and difficult to treat. However, it is preventable by adopting lifestyle, mechanical and pharmacological measures. Pharmacological prophylaxis (with heparins—UFH and LMWH) is safe; it is also cost-effective.[12] VTE prophylaxis is highly underutilized in India. There is need for more awareness about the problem of VTE and the role of VTE prophylaxis.

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