

Pulmonary embolism and deep vein thrombosis

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ABSTRACT

In hospitalised patients, venous thromboembolism, which includes deep vein thrombosis and pulmonary embolism, is common. Systemic thromboprophylaxis is critical, particularly in individuals with inherited or acquired patient-specific risk factors, or in patients having procedures with a high risk of postoperative deep vein thrombosis and pulmonary embolism.

These individuals, who are on preventive or therapeutic anticoagulant dosages, may need surgery. Depending on the type and urgency of the surgery, as well as the degree of anticoagulation as determined by studies, general or regional anaesthetic may be considered. If the anaesthesiologist is aware of the pharmacokinetics of medicines that alter haemostasis, the question about the type of anaesthesia can be resolved.

Key Words: Pulmonary embolism; mechanical thromboprophylaxis; deep vein thrombosis; general anaesthesia

INTRODUCTION

Heart Today's anaesthesiologists, who specialise as perioperative physicians, are frequently confronted with life-threatening situations (high-risk patients or surgeries). One such disorder is venous thromboembolism, which includes deep vein thrombosis and pulmonary embolism. Though doctors and surgeons in India have begun to recognise the need of thromboprophylaxis in preventing the morbidity and mortality associated with venous thromboembolism (VTE), there is still a lot of heterogeneity in how this dangerous condition is treated.

In 1998, a 25-year population-based study found a symptomatic VTE yearly incidence of 117 per 100,000 people [1]. Over the last 20 years, the rate of Deep Vein Thrombosis (DVT) among hospitalised patients has risen from 0.8 percent to 1.3 percent (reported in 2005) [2]. DVT has been discovered to be common in people having surgical treatments. DVT is about 14 percent in gynaecological surgery, 22 percent in neurosurgery, 26 percent in abdominal surgery, and 45 percent to 60 percent in patients undergoing hip and knee procedures without thromboprophylaxis [3]. Though the exact incidence of VTE in the Indian population is unknown due to inconsistent reporting of such cases, it is not likely to differ significantly from that in the western population [4].

Pulmonary Embolism

Because the signs and symptoms of PE are not highly specific, the clinical diagnosis of acute pulmonary embolism is not very accurate. Well's Diagnostic Scoring System was utilised to diagnose PE based on the clinical presentation. A high likelihood score (>6 out of a maximum of 12.5) indicates a high risk of PE (58 percent). Patients with concomitant cardiac or pulmonary illness make diagnosis more complicated. Dyspnoea, tachypnoea, and pleuritic pain are the most common clinical manifestations in patients with PE, with one or more of these symptoms occurring in 97 percent of patients [5].

Mechanical thromboprophylaxis

Mechanical thromboprophylaxis can be used on its own or in conjunction with pharmaceutical thromboprophylaxis. These devices improve venous blood flow, preventing venous stasis in the legs. They should not be used in people who already have DVT. Graduated compression stockings deliver various degrees of pressure to the leg and thigh, with the most pressure applied at the ankle and gradually decreasing proximally. Venous stasis can be avoided by using a pressure gradient. Legs are subjected to intermittent pneumatic compression. To prevent venous stasis, these cuffs alternately inflate and deflate. Mechanical foot pumps improve blood flow in leg veins by providing intermittent plantar compression (IPC) in each foot [6].

General anaesthesia

If general anaesthesia is required, balanced anaesthesia, similar to that used for major surgery, may be used. During anaesthesia, the co-morbid conditions require specific attention. Compression stockings or intermittent pneumatic compression on the lower limbs may be used to avoid DVT in some circumstances. In patients having general anaesthesia, tissue factor, plasminogen activator inhibitor-1 (PAI-1) and tissue plasminogen activator all increase significantly, resulting in a hypercoagulable and hypofibrinolytic state. Increased amounts of thrombin-antithrombin complexes and fibrinopeptide A have been found to support this theory. PAI-1 levels in epidural anaesthesia patients remain normal at preoperative levels. As a result, epidural anaesthesia has proven to be effective in preventing hypercoagulable states and DVT [7,8].

The fine equilibrium of the haemostatic system is disturbed by surgical operations and other conditions such as immobility, infections, cancer, medications, hypothermia, metabolic acidosis, colloids, and extracorporeal circulation. To diagnose pulmonary embolism during surgery, meticulous intraoperative surveillance is required.

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