Management strategies in patients with high bleeding and clotting risk

Patients undergoing major orthopaedic surgery are at high risk of venous thromboembolism (VTE), with morbid and potentially fatal consequences. Anticoagulant VTE prophylaxis reduces rates of postoperative deep vein thrombosis by up to 60-70% in these patients. Therefore, pharmacological prophylaxis with low-molecular-weight heparins (LMWHs), vitamin K antagonists, or fondaparinux and now new oral anticoagulants, is recommended by current guidelines. However, there remains an ongoing debate regarding when to initiate prophylaxis, and the optimal duration for prophylaxis. The benefit-to-risk ratio associated with pre- and postoperative initiation of thromboprophylaxis in cases of neuraxial anaesthesia has to be debated. As the main route of elimination for many anticoagulants is via the kidney, some patients with impaired renal function receiving thromboprophylaxis may experience increased surgical bleeding, which may have a detrimental effect on clinical and functional outcome. Age also influences bleeding risk. Older patients have more co-morbidities and an increased risk of venous and arterial thromboembolic complications and death compared with younger patients. At the same time, there is an inverse relationship between renal function and age. Therefore, an appropriate antihaemostatic dosing regimen appears to be particularly pertinent for these patients. Providing optimal thromboprophylaxis throughout the critical thrombosis period where a patient is at risk for VTE will ensure the best possible reductions in VTE-related morbidity and mortality.

South African perspective – Anthony Beeton

Patients undergoing major lower-limb orthopaedic surgery, particularly hip fracture surgery, have the unfortunate juxtaposition of the high bleeding risk inherent in the procedure, the catastrophic consequences of bleeding into a joint containing an implant, and a prohibitive risk of VTE. The benefit of routine thromboprophylaxis in reducing VTE is incontrovertible and its avoidance may be medico-legally indefensible in view of the strength and quality of evidence of benefit and the grade of the ACCP guidelines. Guidelines and pharmacokinetic models are in place to facilitate appropriate choice and use of agents so as to provide an adequate phase of normal coagulation in the acute perioperative period (around eight hours). This is in order to allow adequate primary haemostasis, followed by effective prophylactic anticoagulation for an appropriate duration (up to five to six weeks) in order to substantially reduce the risk of VTE. These models initially described by Dr Rosencher also allow the safe use of neuraxial anaesthesia and analgesia in many of these patients. It should be mentioned that not all bleeding in these patients relates to the anticoagulant drug. It is most useful to have access to a specific assay in such situations in order to demonstrate this fact to surgical colleagues.

Guidelines do not guarantee safety in all cases. Each patient must be viewed individually and his or her bleeding and clotting risk assessed, largely by means of a good history of individual and family bleeding disorders, co-morbidity - especially renal or liver dysfunction, and recent use of drugs impacting coagulation - notably aspirin and NSAIDs. If necessary, haematological special investigations may be required, but it is important to note that platelet count and bleeding time do not adequately define bleeding risk in patients receiving...
these agents. Pharmacokinetic parameters may vary by as much as 100% between healthy young controls and elderly, renally impaired patients. It is advisable to err on the side of caution when initiating anticoagulant prophylaxis in the latter group, titrating the choice of drug, dose, initiation time and intervals from neuraxial procedures to initial and subsequent doses of agent, to the expected, longer half-lives, reduced clearance and potential for accumulation. Particular caution should be employed with epidural catheters, as this is the intervention substantially associated with the highest incidence of catastrophic epidural-spinal haematomas. The use of prophylaxis remains non-negotiable in this group, as their risk of VTE is as high as any other.

At the other end of the spectrum is the obese patient, where VTE risk is higher, if anything, and adequate thromboprophylaxis may not be achieved with conventional doses of anticoagulation. In these patients, more potent agents should be employed and/or anticoagulant activity monitored to ensure adequate thromboprophylactic efficacy. It is vital to stress that aspirin is not an adequate agent for VTE thromboprophylaxis.