Practical Uses of Anticoagulants

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Anticoagulants are the key treatment and prevention of intravenous clots (venous thromboembolism: VTE) and intra-cardiac clots (Atrial fibrillation or valvular heart diseases). Low molecular weight heparins (LMWHs) are the most commonly used parenteral drugs as they are subcutaneously administered in outpatients without monitoring. The common indications include acute thrombosis, cancer-associated VTE, pregnancy, and perioperative bridging. Therapeutic doses must be adjusted by body weight and calculated with creatinine clearance. Anti-Xa monitoring may be required in cases with renal failure, morbid obesity, or pregnancy with prosthetic heart valve. In patients with hypotension, severe renal impairment or preferring short action, intravenous unfractionated heparin adjusted by APTT or ACT can be used. However, dose adjustments are sometimes difficult in real practice.

Heparin-induced thrombocytopenia (HIT) is a rare but potentially fatal heparin side effect that must be recognized. Warfarin is the most widely used oral drug with several limitations, including slow onset, slow offset, frequent blood tests, numerous food/drug interactions, and teratogenicity. Nonetheless, warfarin is still the drug of choice for patients with valvular heart disease and cases with end-stage renal failure. Genetic testing plus clinical factors can predict the optimal warfarin dose. Yet, clinical outcomes are not much improved when compared with current strategy of trials and errors. Direct oral anticoagulants (DOACs) target either thrombin (Dabigatran) or factor Xa (Rivaroxaban, Apixaban, and Edoxaban). They can overcome almost all warfarin limitations, except for a few drug interactions and a contraindication in pregnancy. DOACs are not recommended in severe renal or liver impairment. All DOACs are at least as effective and as safe as warfarin with lower rates of intracranial bleeding. Additionally, the efficacy of a DOAC on cancer-associated VTE is promising. The major limitations of DOACs are their higher costs compared with warfarin, and the absence of specific antidote for Anti-Xa drugs.

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