

Recent Advances in the Treatment and Prevention of Venous Thromboembolism

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Summary

Acute venous thromboembolism (VTE) poses a significant burden on health and survival. Its severity ranges from asymptomatic, incidentally discovered subsegmental thrombi, to massive, pressor-dependent pulmonary embolism (PE) complicated by cardiogenic shock and multisystem organ failure. Rapid and accurate risk stratification is therefore of paramount importance to ensure the highest quality of care. Luckily, management of acute VTE has advanced considerably in the past years. To help determine the optimal management strategy for normotensive patients with intermediate-risk PE, the Pulmonary Embolism Thrombolysis (PEITHO) study enrolled 1006 patients with evidence of right ventricular dysfunction (by echocardiography or computed tomography) plus a positive troponin test. Patients were randomised to thrombolytic treatment with tenecteplase versus placebo, and the effects on clinical end points (death or haemodynamic collapse) assessed at 7 and 30 days. The study showed that this patient group indeed carries an elevated (intermediate) risk of early death or hemodynamic decompensation/collapse and may thus be in need of primary revascularization treatment. For patients at high risk of bleeding under systemic full-dose thrombolysis, the results of a randomised trial have suggested that ultrasound-enhanced low-dose catheter-delivered thrombolysis may be an alternative option. While optimisation of treatment with vitamin K antagonists incorporating pharmacogenetic testing is being pursued, new oral anticoagulants are entering the field of VTE treatment and secondary prophylaxis. Following the successful use of rivaroxaban as single oral drug therapy in the EINSTEIN-DVT and -PE trials, the approval of this drug has recently been extended to cover deep vein thrombosis and PE. The apixaban (AMPLIFY) and edoxaban (HOKUSAI) trials also showed a favorable efficacy and, particularly, safety profile. In parallel, the AMPLIFY-EXT trial demonstrated that both the therapeutic (5 mg twice daily) and the prophylactic dose (2.5 mg twice daily) of apixaban are effective and safe for extended secondary prophylaxis after VTE. Extended secondary prophylaxis with the oral direct thrombin inhibitor dabigatran was also successfully tested in the RESONATE and REMEDY trials. For the (few) patients who are unable to tolerate any form of anticoagulation, low-dose aspirin may be a safe albeit moderately efficacious option for extended VTE prophylaxis, as suggested by two recent investigator-initiated trials.