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Comparative Safety and Effectiveness of Apixaban Versus Warfarin for Treating Venous Thromboembolism in End-Stage Renal Disease: A Meta-Analysis

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Objectives : Patients with end-stage renal disease (ESRD) face heightened risks of venous thromboembolism (VTE), yet managing anticoagulation in this group is complicated by altered pharmacokinetics and elevated bleeding risk. While warfarin has long been used, apixaban—a direct oral anticoagulant (DOAC)—has emerged as a potential alternative. This meta-analysis explores the comparative safety and efficacy of apixaban and warfarin in ESRD patients receiving treatment for VTE.
Methods : A systematic search was performed across five databases—PubMed, Scopus, Web of Science, Embase, and Cochrane—covering literature up to November 2025. Included studies directly compared apixaban and warfarin in adult ESRD populations (either on dialysis or with stage 5 chronic kidney disease). The primary outcomes were VTE recurrence, all-cause mortality, major bleeding, and clinically relevant non-major bleeding (CRNMB).
Results : Five studies qualified for inclusion. No significant difference was observed in VTE recurrence between apixaban and warfarin (Risk Ratio [RR]: 0.65; 95% Confidence Interval [CI]: 0.35–1.20; P = 0.17; I^2 = 84%). All-cause mortality also showed no significant difference (RR: 0.99; 95% CI: 0.91–1.07; P = 0.74; I^2 = 0%). Importantly, apixaban was associated with a significantly lower risk of major bleeding (RR: 0.68; 95% CI: 0.56–0.82; P < 0.0001; I^2 = 36%). CRNMB rates did not differ significantly (RR: 1.14; 95% CI: 0.48–2.68; P = 0.76; I^2 = 64%).
Conclusions : Among ESRD patients treated for VTE, apixaban offers a favorable safety profile compared to warfarin, particularly by reducing major bleeding events. These findings support the consideration of apixaban as a viable and potentially safer alternative to traditional warfarin therapy, without compromising therapeutic efficacy.