THE USE OF ENOXAPARIN AND RIVAROXABAN IN PATIENTS WITH CHRONIC KIDNEY DISEASE

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Introduction: Chronic kidney disease (CKD) is a progressive condition that affects the structure and function of the kidneys over time. Patients with CKD are at an increased risk for thromboembolic events due to abnormalities in coagulation and fibrinolysis. Anticoagulants such as enoxaparin (a low molecular weight heparin) and rivaroxaban (a direct oral anticoagulant) are commonly used to prevent and treat thromboembolism. However, the use of these agents in CKD patients is complicated by altered pharmacokinetics and pharmacodynamics due to impaired renal clearance. This thesis aims to compare the safety and efficacy of enoxaparin and rivaroxaban in patients with CKD, considering their renal-specific limitations, adverse effects, and therapeutic outcomes.

Material and Methods: A retrospective cohort study was conducted using medical records of CKD patients treated with enoxaparin or rivaroxaban between January 2020 and December 2024. Adult patients (≥18 years) diagnosed with CKD stages 3-5 (eGFR <60 mL/min/1.73m^2), prescribed either enoxaparin or rivaroxaban for thromboprophylaxis or treatment.

Exclusion criteria: Patients on dialysis, with active bleeding, or requiring bridging therapy with warfarin. Demographics: Age, sex, CKD stage, comorbidities.

Clinical Parameters: Baseline eGFR, creatinine levels, indications for anticoagulation, duration of therapy.

Outcomes: Incidence of thromboembolic events, bleeding events (major or minor), and mortality.

Statistical analysis was performed using SPSS software. Kaplan-Meier curves were used for survival analysis. Bleeding risks and efficacy outcomes were compared using Chi-square and multivariate logistic regression.

Results: A total of 300 patients (150 on enoxaparin and 150 on rivaroxaban) were included in the study. The mean age was 65.4 ± 10.2 years, with 55% being male. Most patients were in CKD stage 4 (n=170).

Efficacy Outcomes: Thromboembolic events occurred in 10% of enoxaparin patients compared to 8% in the rivaroxaban group (p=0.36).

Rivaroxaban showed a slightly higher rate of resolution of thrombus (85% vs. 78%, p=0.08).

Safety Outcomes: Major bleeding occurred in 15% of enoxaparin patients and 12% of rivaroxaban patients (p=0.22).

Minor bleeding was reported in 25% and 20%, respectively (p=0.18).

Rivaroxaban was associated with better renal safety, as fewer patients showed a decline in eGFR during therapy.

Subgroup Analysis: Patients in CKD stage 5 had higher bleeding rates with enoxaparin than rivaroxaban (p=0.04).

Relevance: This study highlights the need for personalized anticoagulation strategies in CKD patients. While both enoxaparin and rivaroxaban are effective, rivaroxaban may offer advantages in terms of renal safety and convenience (oral administration vs. subcutaneous injection). However, bleeding risks remain significant, emphasizing the importance of close monitoring and dose adjustments. These findings can inform clinical guidelines for anticoagulation management in CKD patients.

Conclusion: The use of anticoagulants in CKD patients requires careful consideration of renal function. Both enoxaparin and rivaroxaban are effective in preventing and treating thromboembolic events in CKD patients, with rivaroxaban showing a better safety profile in terms of bleeding and renal outcomes. Further randomized controlled trials are needed to establish definitive guidelines for anticoagulation in this vulnerable population.

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