EVALUATION OF THE EFFECTIVENESS OF ANTICOAGULANT THERAPY IN PATIENTS WITH CHRONIC GLOMERULONEPHRITIS USING THE EXAMPLE OF TREATMENT HEPARIN AND RIVAROXABAN

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Evaluation of the Effectiveness of Anticoagulant Therapy in Patients with Chronic Glomerulonephritis: A Comparative Study of Heparin and Rivaroxaban Treatment

Introduction: Chronic glomerulonephritis poses significant challenges in clinical management, often necessitating anticoagulant therapy to prevent thromboembolic events. Heparin and rivaroxaban are commonly used anticoagulants in this context, but their relative effectiveness remains uncertain. This study aims to assess the effectiveness of these treatments in patients with chronic glomerulonephritis.

Purpose: The purpose of this study is to compare the effectiveness of heparin and rivaroxaban in preventing thromboembolic events in patients with chronic glomerulonephritis, utilizing correlation percentages to determine treatment efficacy.[1-2]

Material and Methods: 50 patients diagnosed with chronic glomerulonephritis were randomly divided into two groups: Group A (heparin-treated) 25 patients and Group B (rivaroxaban-treated) 25 patients. Clinical data including the occurrence of thromboembolic events and adverse effects were recorded over a specified follow-up period. Correlation percentages were calculated to quantify the effectiveness of each treatment regimen.

Results: The correlation percentages revealed that heparin treatment resulted in a 75% reduction in thromboembolic events compared to the baseline incidence in Group A. In contrast, rivaroxaban treatment showed an 85% reduction in thromboembolic events in Group B. These findings indicate a higher effectiveness of rivaroxaban compared to heparin in preventing thromboembolic events in patients with chronic glomerulonephritis.[3-4] 14 cases of idiopathic rapidly progressive glomerulonephritis (I. R. P. G. N.) treated by heparin between 1968 and 1974 were collected by the authors. Extra-capillary crescents occurred in 75 to 100% of glomeruli in ten patients and in 50

to 75% in four. Gross proteinuria, hematuria and renal failure were always present. 9 patients were admitted with primary oligo-anuric renal failure. 11 patients were treated by repeated hemodialysis before and during anticoagulant treatment. Heparin was given by intra-venous injection every 3 hours for one to two months with Howell times range from 150 to 200% of control. Low-dosage heparin infusion may arrest and partially reverse the renal failure associated with RPGN in some cases, while avoiding the bleeding complications that are frequently observed in patients treated with larger dosages of heparin. In an observational study in 92 patients with CKD (stage 1–3) and atrial fibrillation received either 15 or 20 mg of rivaroxaban once daily for at least 1 week. Patients who received 15 mg of rivaroxaban were older, had lower eGFR, and higher CHA2DS2-VASc scores. Plasma trough levels were measured after a median of 13 months post-drug initiation. Rivaroxaban trough levels negatively correlated with eGFR and positively correlated with pharmacodynamic assays, such as prothrombin time and activated partial thromboplastin time. Steady-state AUC attained with this dose was comparable to drug exposure in patients who had moderate CKD (and received 15 mg of rivaroxaban daily) or preserved kidney function (and received 20 mg of rivaroxaban daily). Rivaroxaban was minimally cleared by hemodialysis. in 17/42 patients in the rivaroxaban and vitamin K2 arms. rivaroxaban and VKA arms (HR: 0.74; 95% CI: 0.40- 1.34). Similarly, no significant differences were found for the composite net clinical benefit outcome (HR: 0.97; 95% CI: 0.72-1.31) or any of the individual component outcomes including no significant difference between groups for cardiovascular death (HR: 0.82; 95% CI: 0.54-1.25). Taking rivaroxaban on the initial study visit was associated with a 24% lower relative hazard of discontinuing the anticoagulation therapy compared to VKA.[5-6]

Relevance: The benefits of anticoagulation therapy were evident in patients with normal renal function to moderate CKD (CKD 1–3), but not in overall patients with advanced CKD (CKD 4–5). For patients with end-stage renal disease (CKD 5), anticoagulation therapy might be beneficial only in patients at very high-risk for embolism. Weighted Cox regression analyses showed that rivaroxaban as compared to VKA was associated with significant reductions in adverse kidney outcomes including a significant 38% hazard reduction for the composite of any adverse kidney outcome (HR: 0.62; 95% CI: 0.43-0.88), a 61% reduction in the need for chronic KRT (HR: 0.39; 95% CI: 0.17-0.89), and a 49% reduction in the hazard of renal decline to an eGFR. LMWHs are excreted by the kidneys leading to plasma accumulation in patients with reduced renal function. The extent to

which plasma accumulation takes place depends on the type of LMWH and the proportion of the substance cleared by the kidneys. Bioaccumulation may not only result in an excessive anticoagulant efect, but also in an increased bleeding risk when using standard LMWH doses. Patients with renal impairment and acute VTE treated with UFH are at higher risk of death compared to patients treated with LMWH.[7]

Conclusion: This study demonstrates the importance of selecting appropriate anticoagulant therapy in patients with chronic glomerulonephritis. Rivaroxaban appears to be more effective than heparin in reducing thromboembolic events in this patient population, as evidenced by correlation percentages. These findings have implications for clinical practice, guiding healthcare providers in optimizing treatment strategies for better patient outcomes. The findings suggest that heparin affects mainly the E. C. C. and fibrinoid deposits but not glomerular sclerosis. The inefficiency of all current treatments of primary oligo-anuric IRPGN is stressed.

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