Effects of new oral anticoagulants on renal outcomes comparing warfarin in patients with non-valvular AF: Propensity score matching

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Introduction: Oral anticoagulation are indicated to prevent stroke in patients with non-valvular AF (Atrial fibrillation). However, traditional anticoagulants, warfarin may deteriorate renal function. Recent studies have showed that Non-vitamin K antagonists oral anticoagulants (NOACs) may protect renal function in comparison to warfarin. There has been limited data in real world practice for renal outcomes with OACs (Oral anti-coagulants). We investigated impact of Oral anticoagulants OACs on renal function in patients with AF.

Methods: A total of 1,810 consecutive non-valvular AF patients with OACs were enrolled between 2011 and 2017. Patients with eGFR (glomerular filtration rate) less than 50% were entered into study population and divided into warfarin group (n=758), rivaroxaban group (n=589) and dabigatran group (n=711). After propensity score matching, baseline characteristics were similar among 3 groups (Warfarin, n=473; Rivaroxyban, n=473; Dabigatran, n=473). Renal function was estimated by CKD-EPI equation, eGFR was compared between baseline and 1-year follow-up.

Result: Renal function was preserved in Rivaroxaban (-0.467 ± 14.2, p=0.476) and Dabigatran group (13.5 ± 17.3, p<0.001) during follow-up. However, renal function in warfarin group was significantly decreased during follow-up (-2.88 ± 19.6, p=0.001). Ratio of patients with deterioration of eGFR more than 30% was significantly higher in warfarin group compared to Rivaroxaban (9.1% vs. 4.0%, OR=2.39, 95% Confidence interval [CI] : 1.37 to 4.16, p=0.002) and Dabigatran group (9.1 % vs. 3.0%, OR=3.05, 95% CI : 1.64 to 5.68, p<0.001). Patients with warfarin and deterioration of eGFR more than 30% had significantly higher incidence of bleeding complication inclucing major and minor bleeding, compared to patients with warfarin and preserved renal function. However, there was no difference in the risk of stroke/systemic embolism. Multi-variate regression analysis demonstrated that old age was an independent risk factor of deterioration of renal function in Rivaroxaban and Dabigatran groups.

Conclusion: In AF patients with moderate renal dysfunction, rivaroxaban and dabigatran did not affect on renal function. However, warfarin significantly worsened renal function during one-year follow-up. Identification causal relationship between OACs and renal function are needed in future clinical trials.