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Renal function worsening in factor-xa inhibitors vs phenprocoumon in patients with non-valvular atrial fibrillation and renal disease - insights from the RELOADED study

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Funding Acknowledgement: The study was funded by Bayer AG

Background: Data on the effectiveness and safety of Factor-Xa non-vitamin-K oral anticoagulants in patients with non-valvular atrial fibrillation (NVAF) and renal disease is scarce. Among others, our study aimed to investigate the risk of renal function worsening in new users of NOACs vs. phenprocoumon with renal disease.

Methods: We conducted a new user cohort study (one year washout period) in patients with NVAF overall and additionally with renal disease defined by either an extended list of ICD-10 codes (definition 1) or chronic kidney disease (CKD) stages 3 or 4 (definition 2). German claims data between January 1st, 2013 and June 30th, 2017 were utilized and a multiple Cox-regression was performed to calculate confounder-adjusted hazard ratios (HRs) for the risk of end stage renal disease (ESRD)/dialysis and acute kidney injury in new users of NOACs (rivaroxaban, apixaban and edoxaban) vs. new users of phenprocoumon.

Results: In the overall population 22,339 patients initiating rivaroxaban, 16,201 patients initiating apixaban, 2,828 patients initiating edoxaban and 23,552 patients initiating phenprocoumon were included. NOAC patients with renal disease (definition 1) initiating reduced doses comprised 2,121 initiators of rivaroxaban, 2,507 of apixaban and 292 of edoxaban. 7,289 patients of phenprocoumon were identified. Patients with CKD (definition 2) initiating reduced doses of Factor-Xa inhibitors comprised 1,216 initiators of rivaroxaban, 1,522 of apixaban, 166 of edoxaban and 3,513 of phenprocoumon. In the confounder-adjusted analysis, a beneficial effect for both, rivaroxaban and apixaban over phenprocoumon was seen for the risk of ESRD/dialysis for all populations (overall, renal definition 1 and renal definition 2). In addition, in the CKD population we found a statistically significant risk reduction related to acute kidney injury only for rivaroxaban initiators (44%). There was not sufficient data to conduct the analyses for edoxaban.

Conclusion: This is the first observational retrospective database study evaluating the effect of renal function worsening in Germany. Results indicate a beneficial effect for both, reduced doses of rivaroxaban and apixaban related to renal function worsening over time when compared to phenprocoumon. This effect was more pronounced for the risk reduction with rivaroxaban related to ESRD /dialysis and specifically also related to a significant risk reduction for AKI.

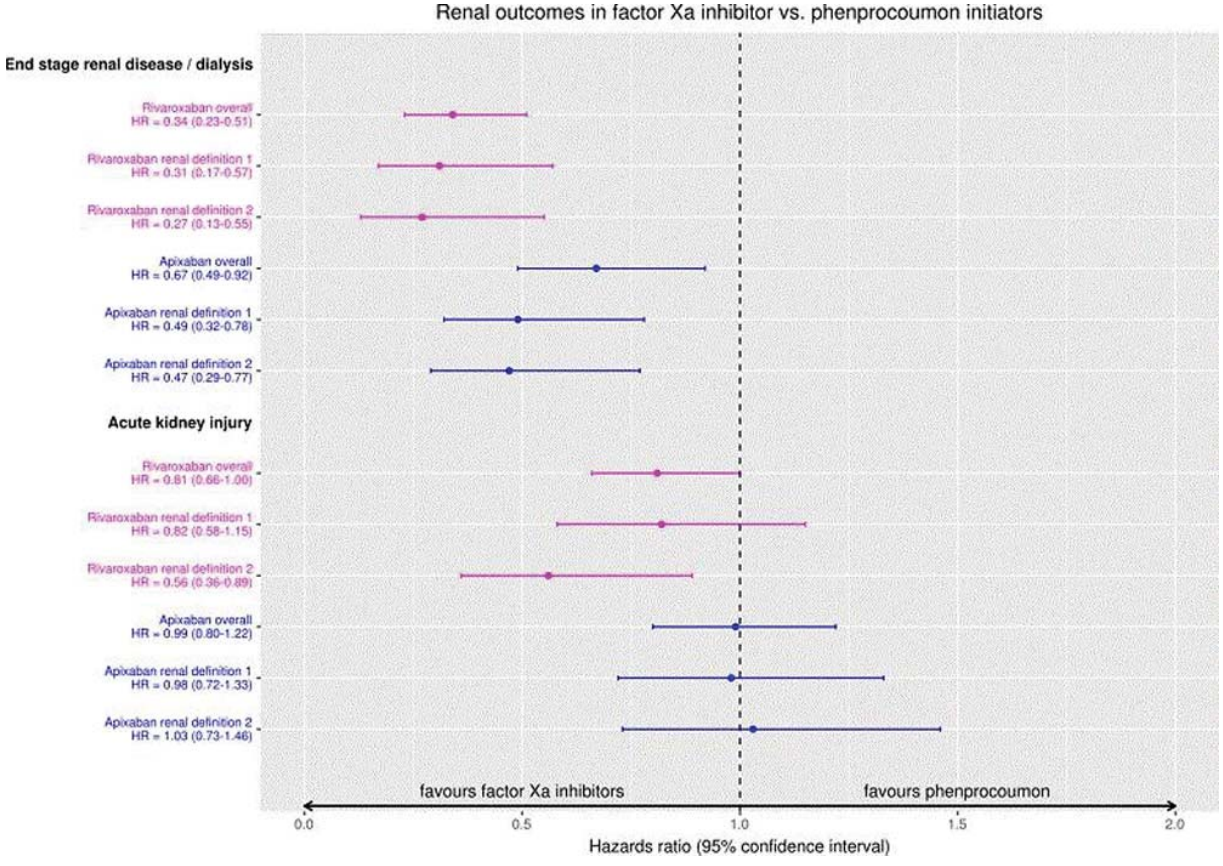

Figure 1