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Dialysis Adequacy and Incident Atrial Fibrillation in Hemodialysis Patients

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Objectives: Atrial fibrillation (AF) can lead to stroke, heart failure, and mortality, and has a greater prevalence in dialysis patients than in the general population. Several studies have proposed that uremic toxins might promote AF development. However, the association between dialysis adequacy and incident AF has not been well established.

Methods: In this retrospective study, we analyzed 27,475 patients receiving maintenance hemodialysis, included in the Periodic Hemodialysis Quality Assessment by Health Insurance Review & Assessment Service (HIRA). The main exposure was single pooled Kt/V and the primary outcome was the development of AF.

Results: During a median follow-up of 4.8 years, incident AF occurred in a total of 4,229 (15.4%) patients. Participants with higher single pooled Kt/V tended to have lower AF incidence. In survival analysis, there was a graded association between the risk of incident AF and single-pool Kt/V quartiles: subdistribution hazard ratios and 95% confidence intervals (CI) for the second, third, and the highest quartile compared with the lowest quartile were 0.90 (95% CI, 0.83-0.98), 0.85 (95% CI, 0.78-0.93), and 0.80 (95% CI, 0.73-0.89), respectively. When treating single-pool Kt/V as a continuous variable, a similar association was found. In addition, the risk of incident AF in the highest quartile of urea reduction ratio was 0.83-fold (95% CI, 0.76-0.91) lower than in the lowest quartile. Sensitivity analyses showed consistent results. This association was more pronounced in men.

Conclusions: As the part of the Joint Project on Quality Assessment Research by HIRA, this nationwide cohort study showed that lowering uremic toxin burden through increased dialysis clearance could be associated with a lower AF development risk in patients receiving maintenance hemodialysis.

Table 1. Incidence rates of atrial fibrillation according to quartile of spKt/V