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Fracture Site and Incidence According to Kidney Replacement Therapy

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Objectives: Despite the increasing prevalence of chronic kidney disease, few epidemiologic studies have investigated fractures in patients with end-stage kidney disease (ESKD). The aim of this study is to explore the epidemiology of ESKD, including the fracture incidence and risk factors.

Methods: We performed a retrospective analysis of 52,777 patients dependent on kidney replacement therapy (KRT) from 2008 to 2017, utilizing data from Korean Health Insurance Review and Assessment Service (HIRA) database. The incidence rate (IR) and the time to first fracture event were analyzed. The predictors of fractures were identified via Cox proportional-hazards regression model.

Results: Fractures were sustained by 8,995 of 52,777 patients with ESKD (17.04%). The overall IR of fractures in all patients with ESKD was 53.7 per 1,000 person-years, and 57.4, 25.2, and 38.5 per 1,000 person-years for the hemodialysis (HD), kidney transplant (KT), and peritoneal dialysis (PD) groups, respectively. Patients on HD showed the highest frequency of fractures involving every fracture site. In the multivariable Cox proportional-hazards model, we found that HD and PD increased the risk of fractures. Diabetes mellitus, cerebrovascular disease, chronic lung and liver disease were the other predictors of fracture. Furthermore, the use of steroids, anti-osteoporosis medications, and some classes of psychotropics and opioids was associated with an elevated risk.

Conclusions: The overall IR of fractures in patients with ESKD was higher than in general population, with an average time of occurrence about 2.5 to 3 years after KRT initiation. Whether the modality of KRT and comorbidities are related to fracture is still disputed, but our findings suggest that patients on HD, and a diagnosis of diabetes mellitus, cerebrovascular disease, chronic lung and liver disease were associated with higher risk of fractures. Thus, the predictors of fractures in patients with ESKD require further investigation.