

**O-0390**

## Understanding the risk factor for falls affecting ambulatory ability in patients undergoing maintenance hemodialysis

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**【Purpose】** Hemodialysis patients are more likely to develop mineral and bone disorders, ambulatory hemodialysis patients who experience falls have a higher risk of bone fracture than normal person. Recently, hemodialysis patients with sarcopenia and of older age have been increasing. These patients have severely decreased gait velocity and skeletal muscle function. Particularly, we hypothesize that ambulatory ability is strongly associated with fall events. Therefore, the purpose of this study was to reveal the correlation between the incidence of falls and ambulatory ability.

**【Methods】** We prospectively enrolled 123 ambulatory outpatients who were undergoing maintenance hemodialysis thrice a week. We assessed their demographic characteristics, presence of sarcopenia, and ambulatory ability, which is measured on the basis of gait velocity and stride time variability (coefficient of variation), at baseline. The primary outcome measure was the incidence of falls during the follow-up period of 1 year. Cox proportional hazard regression was used to assess the contribution of ambulatory ability to fall incidents.

**【Results】** The subjects had a median age of 69 (25th, 75th percentile, 62, 75) years. Thirty-eight patients (31%) with a median age of 70 (64.3, 76.5) years fell at least once during the follow-up period. On multivariable analysis, the hazard ratio (HR) for falls was 1.11 (95% confidence interval [CI], 1.04-1.19;  $p = 0.003$ ) with 1 increased in stride time variability. After the adjustment of covariables, demographic characteristics, muscle function, it was found to confer a significant risk for falls (HR, 1.09; 95% CI, 1.01-1.18;  $p = 0.03$ ).

**【Discussion】** Stride time variability is more related to fall events in ambulatory hemodialysis patients than gait velocity. To maintain and improve ambulatory ability in patients, carefully and objective assessment of gait movement by using a triaxial accelerometer is needed in addition to properly conducting the gait exercise.