

Association of Age and BP Variability with Long-term Mortality in Hemodialysis Patients

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Background: Blood pressure (BP) variability is known as a poor prognostic factor for cardiovascular disease and mortality. This study assessed the prognostic significance of BP variability in association with increasing age in hemodialysis patients.

Methods: We retrospectively analyzed 2,395 patients on hemodialysis at chonnam national university hospital between January 2000 and December 2012. Blood pressure data were collected three times in each hemodialysis session at start and finish times and highest and lowest points over the first month of dialysis initiation. Interdialytic and intradialytic BP variations over 20 mm Hg were defined as BP variability.

Results: In younger patient (age <50, n=584), Kaplan-Meier survival curves for 5-year cumulative mortality showed significant higher mortality in patients with higher intradialytic systolic and diastolic BP, interdialytic diastolic BP variability (log-rank p=0.018, 0.036 and 0.009). Cox proportional analysis revealed that 5-year mortality was associated with interdialytic diastolic BP variability (HR, 2.423 CI, 1.055-5.566) and diabetes (HR, 4.641 CI, 1.975-10.904). On the other hand, in older patient groups, 5-year mortality has no significant association between intradialytic systolic and diastolic BP, interdialytic systolic and diastolic BP variability by Cox proportional analysis (p=0.923, 0.389, 0.486 and 0.837 in 50≤ age <70 group, n=1142, p=0.622, 0.391, 0.999 and 0.498 in 70≤ age group, n=671). Furthermore, the clinical risk factors affected on interdialytic BP variability in all aged group (n=2,394) were diabetes mellitus (HR, 1.259 CI, 1.010-1.568), hypertension (HR, 1.302 CI, 1.016-1.669), use of angiotensin receptor blocker (HR, 0.692 CI, 0.558-0.858), calcium channel blocker (HR, 0.635 CI, 0.514-0.784), β-blocker (HR, 0.755 CI, 0.607-0.939) by multivariable logistic regression analysis.

Conclusions: For younger patients group, the mortality was significantly higher as blood pressure variation increased. The association of BP variability with long-term mortality was weaker with increasing age, indicating that the prognostic significance of BP variability in hemodialysis patients is age dependent.

Key Words: Age, Blood pressure variability, Dialysis