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Relationship of Short-term and Long-term Blood Pressure Variability with Death and Cardiovascular Events in Peritoneal Dialysis Patients

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Objectives: Blood pressure (BP) variability is associated with increased cardiovascular risk, not only in hypertensive patients but also in patients with chronic kidney disease. However, little is known about this association in peritoneal dialysis (PD) patients. This study aims to investigate the relationship of short-term (within 24-hour) and long-term (visit to visit) BP variability with death and cardiovascular events in patients on PD.

Methods: A total of fifty two prevalent PD patients were enrolled and underwent 24-hour ambulatory BP monitoring. Short-term BP variability was assessed with the weighted standard deviation (w-SD) of 24-hour ambulatory systolic BP monitoring and long-term BP variability was assessed with the SD of systolic BP across clinic visits. We assessed the associations of short-term systolic BP variability and long-term systolic BP variability with a composite outcome of death and cardiovascular events.

Results: The average short-term systolic BP variability was 13.3±2.9 mmHg, and average long-term systolic BP variability was 20.6±5.9 mmHg. In unadjusted Cox regression analyses, higher short-term systolic BP variability was significantly associated with increased risk of death and cardiovascular events (HR, 1.437; 95% CI, 1.146-1.801; *P*=0.002). The significant association of short-term systolic BP variability with the composite outcome was also maintained, in adjusted multiple Cox regression model (HR, 1.342; 95% CI, 1.025-1.756; *P*=0.033). However, long-term systolic BP variability was not related to the composite outcome in both the unadjusted (HR, 1.067; 95% CI, 0.958-1.188; *P*=0.239) and adjusted (HR, 1.083; 95% CI, 0.955-1.229; *P*=0.214) models.

Conclusions: In patients on PD, increased short-term systolic BP variability is related to higher risk of death and cardiovascular events, whereas long-term systolic BP variability is not.