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Clinical Implication of BP Variability in CKD

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Chronic kidney disease (CKD) patients are highly susceptible to morbidity and mortality resulting from hypertension, which remains one of the primary risk factors for the deterioration of kidney function. Due to the vulnerable nature to blood pressure (BP) fluctuation in patients with impaired kidney function, the prognostic role of BP variability (BPV) in adverse cardiovascular events or mortality has been emerged. BPV includes short-term fluctuations occurring within a 24-hr period and long-term fluctuations occurring over more prolonged time (days, weeks, months, and years). Although the adverse cardiovascular events of hypertension largely depend on absolute BP values, several observational studies showed the adverse effect of increased BPVs on clinical outcomes in patients with CKD. Moreover, current international guidelines emphasize the significance of ambulatory BP monitoring (ABPM) for assessing 24-hr BP levels and stratifying cardiovascular risk in patients with hypertension. In addition to average 24-hr BP values, ABPM provides a variety of useful BP profiles, such as day and nighttime BP patterns, dipping patterns, and variability of BPs. Increased short-term BPV or disrupted diurnal patterns of BP such as isolated nocturnal hypertension apparently harm microvascular structure and contribute to subclinical organ damage including heart, blood vessels, and kidney irrespective of average 24-hr BP levels. However, there is still debate about whether BPVs adds to the prognostic value beyond average 24-hr BP and traditional risk factors for cardiovascular disease in patients with CKD. In addition, despite the clinical significance of BPV has been reported, there is no gold-standard method for its measurement. In this lecture, the relationship between variabilities of BP occurring within short-term as well as long-term period and clinical outcomes in CKD patients will be discussed.