

Long-Term Effect of Dialysis Therapy for Osteoporosis and Extra-Osseous Calcification in Chronic Renal Failure

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Abstract : Introduction: Chronic kidney disease presents significant changes in mineral and bone metabolism, referred to as CKD-MBD. These changes lead to decreased bone mass, heightened bone fragility, fractures, and increased vascular and valvular calcification, ultimately impacting cardiovascular outcomes. Key contributors to these complications in dialysis patients include calcium, phosphate, parathyroid hormone (PTH), fibroblast growth factor 23 (FGF23), and the vitamin D hormonal system. Methods: In our outpatient dialysis clinic, we monitor the long-term effects of vascular calcifications by calculating the volume of calcified areas in the abdominal aorta based on CT scan data. The results revealed a progressive nature of vascular calcification. To extend our study, we measured the volume of calcification in bones (vertebrae and femur) corresponding to Hounsfield units of 200 and 300. The study aims to investigate changes in osteoporosis during a 5-year follow-up period and its relationship with extraosseous calcification. Results and Considerations: While extraosseous calcification demonstrated a generally progressive nature, often resistant to medical treatment, the degree of osteoporotic change varied among patients. The majority exhibited continuous osteoporotic changes, while some showed improvement or minimal changes in bone calcification. Variations in the distribution and magnitude of osteoporotic changes were observed between groups based on the timing of hemodialysis initiation during the study. The former group tended to display more osteoporotic changes, possibly attributed to differences in medication between the groups. Other contributing factors may include the patient's age, duration of dialysis, or causes of renal disease. In conclusion, we emphasize the importance of carefully monitoring calcium and phosphate levels and maintaining adequate dialysis therapy to prevent osteoporosis in dialysis patients.

Keywords : CKD-MBD, dialysis, calcification, kidney

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