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Commentary

Relation Between Low Bone Mineral Density (BMD) and Cardiovascular Disease

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DESCRIPTION

The incidence and prevalence of nephrolithiasis are both increasing, which is a challenge for global health care. As a symptom of this systemic condition, previous cross-sectional investigations showed a high frequency of reduced Bone Mineral Density (BMD) in renal Stone Formers (SFs). Both sexes were susceptible to fractures, and cancellous rather than cortical bone was more frequently afflicted. The cumulative incidence of fractures increased with time, reaching 45% in women and 30% in men. Other population-based research has also found a higher fracture risk linked to a history of kidney stones. As opposed to people with a history of a single stone incident, the risk of developing low BMD in SFs appears to depend on the activity of the underlying kidney stone disease and is higher in recurrent SFs. Hypercalciuria has long been thought to be a metabolic characteristic linked to BMD in SFs, but earlier research had mixed findings, and lower BMD was also observed in SFs without hypercalciuria.

All skeletal locations are impacted by bone mineral loss in SFs. According to a thorough examination in SFs, 40% of patients have reduced BMD at the vertebral spine, 31% at the femoral neck, and 65% at the radiuse vertebral spine, 31% at the femoral neck, and 65% at the radius. Reduced bone production was suggested as the main flaw by investigations on bone histomorphometry, although the underlying mechanisms and links between bone deficiencies and kidney stones are still not fully understood. Expert panels highly advise using BMD values as a proxy for fracture risk in SFs in light of these findings and the fact that bone fractures significantly increase the risk of morbidity and mortality in patients who sustain them. However, due to the high prevalence of nephrolithiasis, the lack of well-defined screening methods, and the expense of BMD measurements, BMD measurements are not frequently carried out during the metabolic work-up of SF.

Low Bone Mineral Density (BMD) is a widespread public health issue that is particularly prevalent in older and postmenopausal women and is linked to fracture, disability, and mortality. Epidemiological studies have shown for many years that there is a negative correlation between BMD and mortality, Cardiovascular Disease (CVD), and vascular calcification in the general population. Furthermore, a growing body of research has established a genetic and epidemiological connection between atherosclerotic CVD outcomes and low BMD.

BMD is lower in those with CKD than in the general population, and it tends to fall as renal function deteriorates. The Kidney Disease: Improving Global Outcomes (KDIGO) guideline from 2009 does not advocate routine BMD measurement since BMD was not seen as a significant determinant of bone health in the majority of CKD patients. BMD can vary depending on the kind of CKD-Mineral and Bone Disorder (MBD), which is a complicated bone disease brought on by aberrant mineral metabolism and uremic milieu. In recent observational studies, it was found that low BMD may be a risk factor for fracture in patients with predialysis and dialysis-dependent CKD. Patients with CKD had a higher risk of fracture than the general population. As a result, the 2017 revision of the KDIGO guidelines for the management of CKD-MBD recommends evaluating BMD to determine fracture risk. Nevertheless, despite the rising correlation between CVD and low BMD in the general population, the relationship between BMD and CVD is equivocal in individuals with CKD. Therefore, it is obvious that more knowledge of the risk factors for nephrolithiasis connected to low BMD in SFs is required. Understanding these variables would enable a customized diagnostic process and aid SF therapy choices.

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