

### 36. MINERAL BONE DISORDERS IN CHRONIC KIDNEY DISEASE

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**Introduction.** Chronic kidney disease is a global health problem that affects 8-16% of the general population and with the decline in kidney function increases the risk of developing disorders of bone and mineral metabolism.

**Aim of study.** Assessment of changes in mineral metabolism in chronic kidney disease up to hemodialysis.

**Methods and materials.** There were selected and analyzed the articles from the PubMed, HINARI and Scopus database according to the keywords „chronic kidney disease”, „mineral bone disorders”.

**Results.** Hypocalcaemia is common in patients with CKD and leads to increased PTH secretion and abnormal bone remodeling. The total serum calcium concentration decreases as a result of phosphate retention, a decrease in the concentration of 1.25 (OH) (calcitriol) and resistance to the calcium actions of PTH on the bone during the progression of CKD. Calcium usually remains normal until stage IV of BRC. Phosphate retention begins early in CKD and plays an important role in the development of secondary hyperparathyroidism by inducing hypocalcemia. Usually, serum phosphate levels are not elevated in the early stages of CKD due to a decrease in renal phosphate reabsorption in the proximal tubules due to elevated levels of PTH and fibroblast growth factor (FGF) -23. Serum phosphorus usually remains normal until stage IV of CKD. In advanced CKD, hyperphosphatemia stimulates the synthesis and secretion of PTH and FGF-23. PTH usually remains normal until stage III of CKD. As glomerular filtration decreases, the prevalence of secondary hyperparathyroidism increases. The causes of the increase in PTH are: phosphate retention, decreased ionic calcium, decreased calcitriol levels, increased FGF-23 levels. A serum level of 25 (OH) D (calcidiol) <30 nmol / L indicates vitamin D deficiency, which is common in patients with CKD. It has been observed that calcitriol levels begin to decline from CKD stage III. It has been observed that the decrease in calcitriol levels occurred earlier than the increase in PTH levels. The main cause for the reduction in calcitriol levels is an increase in the concentration of FGF-23.

**Conclusion.** Changes in mineral and humoral metabolism are observed even in the early stages of chronic kidney disease. Early diagnosis of mineral and bone metabolism disorders helps prevent bone fractures.