HYPERPHOSPHATEMIA, SECONDARY HYPERPARATHYROIDISM AND CHRONIC KIDNEY DISEASE

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Abstract

Secondary hyperparathyroidism is a well-recognized complication of chronic kidney disease (CKD). It describes a complex alteration of mineral and bone metabolism (bone remodeling is affected). Phosphorus is critical for the modulation of calcium mobilization from bone and regulation of plasma calcium concentration. Research has shown that dysregulation of calcium (Ca) and phosphate (P) metabolism is common in CKD patients and drives vascular calcification. The effects of elevated Ca and P are synergistic, providing a major stimulus for vascular calcification in CKD patients.Research has shown that patients with chronic kidney disease (CKD) who are classified as Stage 3, Stage 4 or Stage 5 are at risk for, or may already have developed secondary hyperparathyroidism. Monitoring mineral metabolism parameters may play a key role for these patients. The association between calcium and phosphorus and parathyroid hormone is observed. Increased concentration of one or both ions may lead to the formation of an insoluble complex that can lead to extraskeletal calcification or cardiac disease. High concentrations of calcium and phosphorus in serum are considered to be major contributors to arterial calcification. Different alterations in the serum level of calcium and phosphate concentrations are important factors implicated in the arterial calcification and heterotopic mineralization in chronic kidney disease. Below, we will present a review approaching the link between hyperphosphatemia, secondary hyperparathyroidism and chronic kidney disease, including different complications in human health (e.g. vascular calcifications and mineral disorders).

Keywords: *Hyperphosphatemia, secondary hyperparathyroidism (SHP), chronic kidney disease (CKD), heterotopic mineralization*