High concentrations of phosphate are associated with retinopathy and death

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A common side effect of chronic kidney disease (CKD) is a disturbed mineral balance. Uremic patients excrete only a reduced amount of phosphate, this is the reason why the serum phosphate levels increase. An early marker of the phosphate retention is FGF23, its serum levels are usually elevated before the serum phosphate levels begin to rise [1].

A newly published study [2] in Nephrology Dialysis Transplantation (NDT) showed that among individuals with moderate to severe CKD, higher serum phosphate (but not FGF23!) was independently associated with more severe retinopathy and microvascular retinal venous dilatation. This may have a clinical implication, as retinopathy is a leading cause of vision loss in patients with diabetes, of whom many suffer from a reduced kidney function.

“So far, the associations of phosphate with the ocular vasculature had not been studied in detail”, explains Prof. Carmine Zoccali, NDT Editor-in-Chief. “Therefore the study is very innovative and important – although the results are not that surprising”. Why is that? “It is known that the disturbed mineral metabolism, especially high phosphate, high parathyroid hormone (PTH), but also very high and very low calcium levels are associated with vascular disease and mortality in CKD patients. It would be surprising, if the vessels in the eyes were not affected”.

The COSMOS study [3], a 3-year, multicentre, open-cohort, prospective study carried out in 6,797 adult haemodialysis patients, has now provided further evidence of the association of serum phosphorus, calcium and PTH and mortality. It even suggests that controlling these biochemical parameters might result in a survival benefit. The study has been published in the latest issue of NDT, too.

[1] Oliveira RB et al. CJASN 2010; 5 (2) 286-91

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