

Improvement of mineral and bone metabolism markers is associated with better survival in haemodialysis patients: The COSMOS study

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Background Abnormalities in serum phosphorus, calcium and parathyroid hormone (PTH) have been associated with poor survival in haemodialysis patients. This COSMOS (Current management Of Secondary hyperparathyroidism: a Multicentre Observational Study) analysis assesses the association of high and low serum phosphorus, calcium and PTH with a relative risk of mortality. Furthermore, the impact of changes in these parameters on the relative risk of mortality throughout the 3-year follow-up has been investigated. Methods COSMOS is a 3-year, multicentre, open-cohort, prospective study carried out in 6797 adult chronic haemodialysis patients randomly selected from 20 European countries. Results Using Cox proportional hazard regression models and

penalized splines analysis, it was found that both high and low serum phosphorus, calcium and PTH were associated with a higher risk of mortality. The serum values associated with the minimum relative risk of mortality were 4.4 mg/dL for serum phosphorus, 8.8 mg/dL for serum calcium and 398 pg/mL for serum PTH. The lowest mortality risk ranges obtained using as base the previous values were 3.6-5.2 mg/dL for serum phosphorus, 7.9-9.5 mg/dL for serum calcium and 168-674 pg/mL for serum PTH. Decreases in serum phosphorus and calcium and increases in serum PTH in patients with baseline values of >5.2 mg/dL (phosphorus), >9.5 mg/dL (calcium) and <168 pg/mL (PTH), respectively, were associated with improved survival. Conclusions COSMOS provides evidence of the association of serum phosphorus, calcium and PTH and mortality, and suggests survival benefits of controlling chronic kidney disease-mineral and bone disorder biochemical parameters in CKD5D patients. © 2015 The Author.

Calcium

chronic kidney disease

CKD-MBD

cosmos

hemodialysis

phosphorous

PTH

survival

calcium

parathyroid hormone

phosphate

biological marker

calcium

parathyroid hormone

phosphorus

adult
Article
bone metabolism
bone mineral
disease association
female
hemodialysis
human
major clinical study
male
mortality
phosphate blood level
priority journal
prospective study
risk factor
survival
blood
bone
clinical trial
controlled study
epidemiology
Europe
follow up
metabolism
middle aged
mortality

multicenter study

prognosis

proportional hazards model

randomized controlled trial

Renal Insufficiency, Chronic

renal replacement therapy

secondary hyperparathyroidism

survival rate

Adult

Biomarkers

Bone and Bones

Calcium

Europe

Female

Follow-Up Studies

Humans

Hyperparathyroidism, Secondary

Male

Middle Aged

Parathyroid Hormone

Phosphorus

Prognosis

Proportional Hazards Models

Prospective Studies

Renal Dialysis

Renal Insufficiency, Chronic

Survival Rate