

Arterial Calcification is Associated only with Adynamic Bone Disease

Abstract:

Hypoparathyroidism Potentiates Cardiovascular Complications through Disturbed Calcium Metabolism: Possible Risk of Vitamin D₃ Analog Administration in Dialysis Patients with End-Stage Renal Disease

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Background/Aim: Progressive cardiovascular calcification in dialysis patients with end-stage renal disease (ESRD) is a serious complication; however, the precise mechanism remains uncertain. We tested whether metabolic calcium abnormalities and hypoparathyroidism might have a correlation with cardiovascular complications in ESRD patients.

Method: A series of 48 ESRD patients with cardiovascular diseases and/or congestive heart failure, aged 36-82 (61 ± 12) years, 23 male and 25 female, were enrolled in this study. Serum total calcium (Ca, mmol/l), inorganic phosphate (mmol/l), and intact parathyroid hormone (iPTH, pg/ml) levels were determined in all cases.

Results: Organic heart disease was confirmed in 28 patients (58.3%), including 15 with coronary artery disease: 8 with aortic aneurysm, 8 with stenotic valvular heart disease, 9 with excessive mitral annular calcification, 3 with dialysis cardiomyopathy, and 7 with obstructive arterial disease. Serum iPTH measurement revealed hypoparathyroidism (iPTH <60) in 20 of 48 (41.7%) and hyperthyroidism (iPTH > 200) in 13 of 28 (27.1%) subjects). The 20 patients with low iPTH had a higher prevalence of valvular heart disease, a higher total Ca level corrected for serum albumin (2.70 ± 0.30 in low iPTH vs. 2.47 ± 0.30 in normal iPTH, 2.35 ± 0.20 in high iPTH, $p = 0.003$) and a higher tendency of vitamin D₃ analog use (65% in low iPTH vs 33% in normal iPTH and 46% in high iPTH, $p = 0.0001$). Multiple logistic regression analysis revealed diabetes and hypoparathyroidism (iPTH <60) as risk factors for cardiovascular complications in ESRD.

Conclusion: These results suggest that hypercalcemia and hypoparathyroidism in conjunction with Vitamin D₃ use might play an important role in cardiovascular complications of chronic dialysis patients.

Reference for the above abstract:

Tsuchihashi K, Tazkizawa H, Torii T, Ikeda R, Nakahara N, Yuda S, Kobayashi N, Nakata T, Ura N, Shimamoto K. Hypoparathyroidism Potentiates Cardiovascular Complications through Disturbed Calcium Metabolism: Possible Risk of Vitamin D₃ Analog Administration in Dialysis Patients with End-Stage Renal Disease. *Nephron* 2000; 84:13-20.