Conversion of calcitriol to 1-α-hydroxy vitamin D3 in the treatment of peritoneal dialysis patients with renal osteodystrophy

Cheuk-Chun SZETO, Kai-Ming CHOW, Alan Ka-Lun WU, Teresa Yuk-Hwa WONG, Angela Yee-Moon WANG, Philip Kam-Tao LI, Siu-Fai LUI, Chi-Bon LEUNG
Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Prince of Wales Hospital, Hong Kong

Objective: Calcitriol and 1-α-hydroxy vitamin D3 can be regarded as equivalent compounds in terms of their biochemical activity, because the latter can be rapidly converted to the former in the liver. This study aimed to examine whether calcitriol and 1-α-hydroxy vitamin D3 could be used interchangeably on a weight-to-weight basis in treating secondary hyperparathyroidism.

Methods: We enrolled 24 (11 men and 13 women) peritoneal dialysis patients with serum intact parathyroid hormone levels greater than 10 pmol/L, who were stable on calcitriol. The mean age was 51.9 ± 12.5 years. Patients were observed for 8 weeks, and then calcitriol was changed to 1-α-hydroxy vitamin D3 on a weight-to-weight basis. Patients were followed-up for a further 16 weeks. Twenty patients had intermittent pulse therapy; four had regular daily therapy. The average dosage of calcitriol before conversion was 0.3 ± 0.11 μg/d, or 1 μg twice weekly. The duration of dialysis was 23.5 ± 16.7 months.

Results: Serum calcium, phosphate, and alkaline phosphatase levels remained stable after conversion. Median serum intact parathyroid hormone levels before and after conversion were 54.6 and 49.4 pmol/L, respectively (p=0.414 by Friedman's test). Two patients had mild asymptomatic hypercalcemia after conversion. Serum calcium level returned to normal within a few days after the dosage of calcium supplement and 1-α-hydroxy vitamin D3 has been reduced.

Conclusions: We conclude that calcitriol and 1-α-hydroxy vitamin D3 have equivalent efficacy in treating secondary hyperparathyroidism. (Hong Kong J Nephrol 2001;3(2):74-78)

Key words: Hyperparathyroidism, Peritoneal dialysis, Renal dialysis/adverse effects, Renal osteodystrophy