

Deterioration of Renal Function During Treatment of Chronic Renal Failure with 1,25-Dihydroxycholecalciferol.

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Abstract/Summary.

A controlled study of the effects of the potent vitamin-D metabolite, 1,25-dihydroxycholecalciferol ($1,25(\text{OH})_2\text{D}_3$), and vitamin D_3 was done in 18 non-dialysed patients with chronic renal failure (C.R.F.). Patients with a creatinine clearance below 35 ml/min and mild renal osteodystrophy were selected. After 6 months' observation of the spontaneous course, the patients were randomly allocated to 6 months' oral treatment with either $1,25(\text{OH})_2\text{D}_3$ or vitamin D_3 , in initial daily doses of 1 μg and 4000 i.u., respectively, combined with 0.5 g calcium. $1,25(\text{OH})_2\text{D}_3$ quickly corrected hypocalcaemia, reduced serum-alkaline-phosphatases and serum-immunoreactive-parathyroid-hormone, and more than doubled the urinary excretion rate of calcium. D_3 had similar, but less pronounced effects. 7 out of 8 patients on $1,25(\text{OH})_2\text{D}_3$ developed hypercalcaemia which necessitated a reduction in dosage. None of the patients on D_3 treatment developed hypercalcaemia. The percentage fall in creatinine clearance was greater during treatment than before treatment in all patients on $1,25(\text{OH})_2\text{D}_3$ ($p < 0.01$) and in 7 of 9 patients on vitamin D_3 treatment (though the group change here was not significant). Deterioration of renal function is a major limitation of the clinical use of $1,25(\text{OH})_2\text{D}_3$ and D_3 , in non-dialysed patients with C.R.F. In fact, the decreased formation of $1,25(\text{OH})_2\text{D}_3$ seen in C.R.F. might protect renal function at the expense of abnormalities in mineral metabolism.