LIMITATION BY HYPERPHOSPHATAEMIA OF THE
‘PROPHYLACTIC’ USE OF VITAMIN D METABOLITES
IN THE TREATMENT OF OSTEITIS FIBROSA IN
PATIENTS ON CHRONIC HAEMODIALYSIS

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Prophylactic administration of vitamin D metabolites to treat residual histological
changes of renal osteodystrophy in patients on chronic haemodialysis is still
controversial when the patients are optimally treated with three dialyses a week,
a dialysate calcium of 7.0mg/dl and good plasma (p) calcium (Ca) phosphate (P)
homeostasis with oral Ca CO₃ supplement, and Al (OH)₃.

Patients and Methods

To answer this question we treated 19 such patients who had been on chronic
haemodialysis for 19–66 months, with or without minor radiological bone
changes, with an association of 25 dihydroxycholecalciferol (25 HCC) and
1 α HCC at an initial dosage of respectively 50 and 1μg/day for one year. Subsequently
this dosage was reduced and that of Al (OH)₃ increased in order to
keep pCa between 9.5 and 10.5mg/dl and pP below 6.0 mg/dl. A bone biopsy
was performed before and after 6 and 12 months of treatment, together with
determination of plasma PTH, 25 HCC and alkaline phosphatase (Alk Pase).

Results

Before treatment no patients had histological evidence of osteomalacia since
their osteoid thickness index was normal or low, but 14/19 had osteitis fibrosa
with increased active resorption surfaces (ARS). Their Alk Pase was normal in
17/19, their p25 HCC was low in 2/3 of them and their pPTH increased in 18/19.
A significant positive correlation was found between initial PTH and ARS.

During treatment ARS improved in six cases, worsened in seven cases and
remained unchanged in six (three of which were initially normal). Comparison of
the worsened group with the improved one showed higher concentrations of pPO₄ and pPTH in the former group. Figure 1 shows that the changes in ARS (D ARS) are positively correlated with the changes in pP(DP) and pPTH (D PTD).

![Graphs showing correlation between ARS and pP(DP), ARS and pPTH.](image)

Figure 1. Limitation by hyperphosphataemia of the prophylactic use of vitamin D metabolites

**Conclusions**

1. Optimal dialysis conditions without vitamin D supplements adequately prevent osteomalacia but not osteitis fibrosa, in spite of low P 25 HCC in 2/3 of the cases.
2. D derivatives may worsen the hyperparathyroidism of haemodialysed patients if the control of their pP is inadequate.