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CHOLECALCIFEROL SUPPLEMENTATION IMPROVES SECONDARY HYPERPARATHYROIDISM CONTROL IN HEMODIALYSIS PATIENTS

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INTRODUCTION AND AIMS: Vitamin D deficiency is common among hemodialysis (HD) patients, and is an important component in the pathogenesis of secondary hyperparathyroidism (SHPT). Despite this, many of the studies available so far on the role of vitamin D supplementation in the treatment of do not show clear changes in PTH levels after vitamin D supplementation in HD patients. This could be due to several facts, especially the duration of supplementation. In fact, almost all of these studies lasted less than 36 weeks. We herein report our experience on the impact of cholecalciferol supplementation on PTH levels in a group of HD patients.

METHODS: For this purpose 99 HD patients were treated with cholecalciferol at a dose of 25,000 IU p.o. weekly for 12 months. All patients had a SHPT condition defined as PTH levels $>$ 300 pg / ml or PTH levels in optimal range but during therapy with cinacalcet or paricalcitol. At the end of follow-up, only 59 of the 99 patients had actually taken vitamin D supplementation, so that two groups were formed. Group A included patients treated with cholecalciferol (n=59), while group B (n=40) included no treated patients. Serum calcium, phosphorous, hemoglobin, and therapy with phosphate binders, cinacalcet, paricalcitol, and erythropoietin were assessed each month, while total alkaline phosphatase, vitamin D, and PTH levels were evaluated every 3 months.

RESULTS: At baseline, 8 patients had a severe vitamin D deficiency ($<$5 ng/ml), 73 mild vitamin D deficiency (5-15 ng/ml), and 18 vitamin D insufficiency (16-30 ng/ml). Parathormone levels were negatively correlated with vitamin D levels (r=-.178; P $<$ 0.001). At F-U in the group A there was a significant reduction in PTH levels, from 462 $\pm$ 327 to 351 $\pm$ 282 pg/ml (P$<$0.05), and a significant increase in vitamin D levels, from 9.8 $\pm$ 5.1 to 33.5 $\pm$ 12.1 ng/ml (P$<$0.001), while sCa, sPO4 and t-ALP levels did not change. In this group the mean doses of paricalcitol were significantly reduced, from 9.2 $\pm$ 2.9 (n=41) to 6.5 $\pm$ 3.8 µg/w (n=40) (P$<$0.001), while no significant changes were recorded in the mean doses of cinacalcet and phosphate binders. Moreover, in the group A there was a significant increased of Hb levels, from 11.5 $\pm$ 1.2 to 12.2 $\pm$ 1.1 gr/dl (P$<$ 0.05), without modification of erythropoietin dosage. In the group B PTH and vitamin levels at F-U did no change, 507 $\pm$ 398 vs 508 $\pm$ 440 pg/ml (P=NS), and 12.1 $\pm$ 6.5 vs 10.2 $\pm$ 5.0 ng/ml (P=NS), respectively. In this group mean doses of cinacalcet increased significantly, from 23 $\pm$ 17 (n=14) to 44 $\pm$ 17 (n=14) mg/d (P$<$0.01), while paricalcitol doses increased, but not significantly, from 8.3 $\pm$ 3.5 (n=32) to 9.7 $\pm$ 5.0 (n=31) µg/w, no changes were recorded in phosphate binders and erythropoietin doses.

CONCLUSIONS: Vitamin D deficiency in hemodialysis patients is very frequent and its correction is associated with a better control of SHPT, a reduction of paricalcitol doses and a better control of anemia.