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## **CIRRHOSIS AMELIORATES RENAL OSTEODYSTROPHY (ROD) IN PATIENTS ON REGULAR HEMODIALYSIS (RHD)**

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Cirrhosis (Cir) is often associated with chronic renal failure (CRF) in Egyptian patients on RHD. This is largely attributed to hepatosplenic schistosomiasis and concomitant Hepatitis C viral infection. Since the liver has a major role in vitamin D<sub>3</sub> activation, we designed this study to envisage the impact of Cir on ROD. It included 130 consecutive age- and gender-matched subjects in 4 categories. **Group I:** 39 patients (34 M, 5 F; mean age 48.8 Y) with cirrhosis normal renal function; **Group II:** 37 patients (30 M, 7 F; mean age 49.0 Y) with CRF and normal liver function, on RHD for a mean duration of  $6 \pm 3.9$  years; **Group III:** 41 patients (30 M, 11 F; mean age 50.7 Y) with CRF and concomitant Cir, stable on RHD for a mean duration of  $7.0 \pm 4.0$  years and **Group IV:** 16 normal volunteers (13 M, 3 F; mean age 46.3 Y). The prevalence of diabetes as well as previous infection with schistosomiasis was similar in all patient groups and that of HCV infection was alike in groups I and III. In all subjects, conventional parameters of liver and renal function were tested; in addition to measurement of serum total protein, albumin, calcium, phosphate, total and bone-specific alkaline phosphatase (B-ALP), parathormone (PTH), 5-hydroxycholecalciferol (5HD), 1,25-dihydroxycholecalciferol (1,25HD), Cross Laps (CXL) as a marker of bone resorption and aminoterminal propeptide of type I procollagen (PINP) as a measure of bone formation. Bone mineral density (BMD) was measured by either Dual Energy X-ray Absorptiometry (DEXA) or Computerized Tomography (CT). Group II patients displayed the typical CRF profile comprising hypocalcemia, hyperphosphatemia, increased total and bone-specific alkaline phosphatases, high PTH and 25HD, low 1,25HD, increased PINP as well as CXL and generally decreased BMD. Cirrhosis (Group III) significantly ( $p$  value at least  $<0.5$ ) modified this profile in several aspects: It checked hypocalcemia (mean 8.8 vs. 7.9 mg/dl in Groups II and III respectively), hyperphosphatemia (5.15 vs. 4.9 mg/dl) and the elevation of B-ALP (62 vs. 30.5  $\mu$ g/l) and PTH (89 vs. 78 pg/ml). It lowered the serum level of 25HD (18.7 vs. 13.7 ng/ml), augmented the deficiency of 1,25 HD (13.4 vs. 8.0 pg/ml), did not appreciably affect the increase in bone formation (PINP 77.9 vs. 75.5 ng/ml) but ameliorated its excessive resorption (CXL 21,860 vs. 30,328 pmol/l) noticed in Group II. This was associated with amelioration of the dialysis-associated osteopenia (70 % vs. 33.5 %) and increased incidence of osteosclerosis (30 % vs. 61%), as judged measured by bone mineral density. **Conclusion:** Our data indicate that cirrhosis ameliorates ROD through decreased bone resorption. This is associated with better tolerance to 1,25HD deficiency, which initiates the cascade of hypocalcemia, hyperparathyroidism and increased bone resorption in CRF. Such tolerance may reflect upregulation of vitamin D receptors (VDR) as a consequence of the humoral perturbation supervening in cirrhosis, involving IGF-1, estrogens or other vitamin D metabolites as 24,25 HD.