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Effect of vitamin D levels and osteoporosis on survival in patients with chronic liver disease awaiting liver transplantation

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INTRODUCTION: Chronic liver disease is a risk factor for osteoporosis, osteopenia and bone fractures. In this study, osteoporosis prevalence, risk factors, vitamin D deficiency and effects on survival were investigated in 218 chronic liver disease Turkish patients awaiting liver transplantation retrospectively.

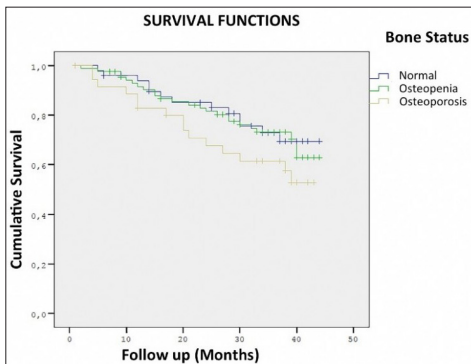
METHODS: Risk factors for osteoporosis (gender, age, BMI, etiology, smoking, alcohol use), serum bilirubin, albumin, 25-hydroxy (OH)D, parathyroid hormone levels, bone mineral density (BMD) with DEXA, MELD and Child Pugh(CP) scores were recorded. Effects of vitamin D levels and BMD on survival were evaluated.

RESULTS: 147 (67.4%) patients were female (mean age, 50.4±11.7). Data of the BMD were established in 218 patients and 25-OH D levels in 122 patients. Mean serum 25-OH D level was 14.26±9.44 ng/ml. Osteoporosis was identified in 42 (19.3%) and osteopenia in 115 (52.8%) patients according to BMD (table 1). No statistically difference was found including risk factors, etiology, BMI, CP classification, MELD, albumin, total bilirubin, Ca, PTH between osteoporotic and non-osteoporotic patients. Patients were followed-up for median 30.07±11.83 months after BMD measurement. 54 (24.8%) died during the follow-up period, non of them related bone fracture. There is no statistically difference on survival between osteoporosis group (32.2±2.3 months) and non-osteoporosis group (37.2±1.7 months; p=0.26) (figure1) or between deficiency of vitamin D groups (table 2).

CONCLUSION: The prevalence of osteoporosis and osteopenia were consistent with the prevalence of osteoporosis reported 12-55% in the literature. Although we didn't identify any factors that statistically influence the relationship between survival and osteoporosis, cirrhotic patients should be screened for osteoporosis and vitamin D deficiency and treated appropriately.

Keywords: Osteoporosis, hepatic osteopathy, chronic liver disease, liver transplantation waiting list, survival.

Figure 1. Survival according to osteoporosis



	N (%)	T scores Median (range)
Lumbar spine L1-L4		
Osteoporosis	34(15.6)	-1.20 [(-5.8)-(3.6)]
Osteopenia	96(44)	
Normal	88(40.4)	
Femoral neck		
Osteoporosis	19(8.7)	-0.9[(-4.5)-(2.4)]
Osteopenia	86(39.4)	
Normal	113(51.8)	
Total Femur		
Osteoporosis	15(6.9)	-0.6 [(-7.7)-(2.5)]
Osteopenia	72(33)	
Normal	131(60.1)	
Either Lumbar spine or Femoral neck		
Osteoporosis	42(19.3)	
Osteopenia	115 (52.8)	
Normal	61 (28)	

25-OH D 3	1-year (%)	3-year (%)	Mean survival (months)	p-value
≤10	85.7	62.8	34.4±2.0	0.308
>10-≤20	90.9	77.8	36.2±2.1	
>20	100	84.6	39.1±1.6	