

# Prevalence of Osteoporosis in Patients with Liver Cirrhosis; The Metabolic Effect

AYESHA<sup>1</sup>, ALJASIA KALSOOM<sup>2</sup>, ZUNAIR MUSHTAQ<sup>3</sup>

<sup>1,2</sup>WMO, Department of Medicine, Faisalabad Medical University

<sup>3</sup>Medical officer, Department of Medicine, CMH Medical and Dental College Lahore

Correspondence to: Dr. Ayesha, Email: ayeshawaris14@gmail.com Cell No 03326726702

## ABSTRACT

**Objective:** To determine incidence of osteoporosis in liver cirrhosis patients.

**Method:** Cross-sectional study patients aging 30-70 years were included in the study with liver cirrhosis for one year or more. The data was collected and the patient was labeled positive with osteoporosis when the T-score on DEXA Scan was more than 2.5.

**Results:** Out of 250 patients 152 males and 98 females with mean age of 46.41(±8years) 34% of cases were affected with osteoporosis. It is noted that female patients were affected more with osteoporosis 36 out of 98 in contrast to male patients 49 out of 152 P=0.09 The prevalence of osteoporosis was high in patients with cirrhosis for more than 3 years. Female patients with liver cirrhosis were affected more with osteoporosis and the incidence is high when the disease duration is more than 3 years.

**Conclusion:** The prevalence of osteoporosis in the hepatic cirrhosis patients is almost 1/3rd of the total cirrhotic patients

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## INTRODUCTION

Liver cirrhosis is the end stage of liver damage that is caused by chronic inflammation that lead to hepatic fibrosis. The normal hepatic tissue is distorted and destroyed and is then replaced with fibrotic tissue. And Liver transplant is said to be the only treatment of choice in this irreversible condition. The Etiology of liver cirrhosis may include Alcoholic hepatitis Hep B, Hep C infection, fatty liver and Autoimmune hepatitis. But in Pakistan Hep B and Hep C infections are the most common. The morbidity and mortality of liver cirrhosis is caused when it complicates in the form of GI-Bleeds, Ascites, Osteoporosis and hepatic encephalopathy.

Osteoporosis is characterized by a condition with decreased bone mineral density and patient with hepatic cirrhosis are at higher risk of bone mass loss. That may cause various complications including easy fracture. It is estimated that 25-440/100000 patients of hepatic cirrhosis suffer from osteoporosis, Other factors may include smoking, female gender, decreased sun exposure, Alcohol, Diabetes mellitus and Steroid use, certain mediators are isolated from the blood and they are believed to be involved in hepatic cirrhosis like insulin like growth factors, certain cytokines and fibronectin. Osteoporosis in liver cirrhosis had remained an underrated entity, the advancement in Bone Biology has put light on this morbid complication and opened up ways to different treatment options like calcium, Vit-D, Supplement station and Bisphosphonates.

## MATERIAL AND METHODS

The study was conducted in the department of Medicine Allied Hospital Faisalabad, from Jan-2019 to Jan-2020. This cross-section study was done on 250 patients age ranging from 30-70 years having clinical manifestation of Hepatic cirrhosis (Like Ascites, Decreased Albumin level, increased PT, skrunken liver on usg) were included. Patients with co-morbidity like ESRD, DM and Heart disease were not included. DEXA Scan of the patients was

done. (Dual Energy X\_Rays Absorbometry) and patients were considered yes for osteoporosis with T score less than 2.5. Variables like T-score duration of liver cirrhosis and age were expressed in the form of mean stratification of gender, age and duration of disease was done to control effect modifiers chi-square test was then applied where is taken as P≤0.05.

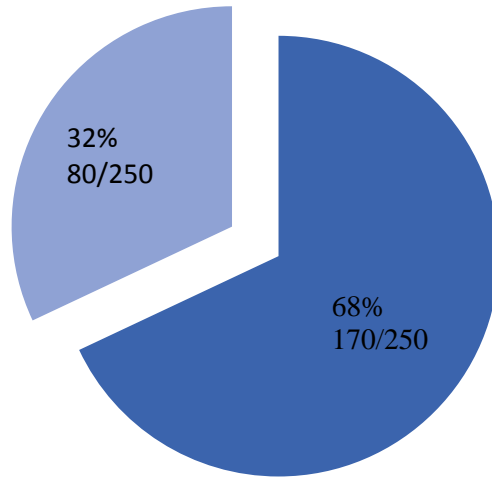
## RESULTS

The study was done on 250 patients out of which were 152 males and 98 females. The age group was 30-70, mean 45.72±6.85 and disease duration more than 3 years, mean 6.79±3.01. Out of 250 patients 177 patients were HCV positive and 73 patients HBV positive. Out of 250 patients, 34% were seen with positive osteoporosis. And ratio among the females is higher and is much higher in age above 60 affecting 44 in contrast to 12 with age less than that. Patients with cirrhosis for more than 3 years suffered 60% more from osteoporosis as compared to those suffering from 1 year.

## RESULTS AND DISCUSSION

Liver cirrhosis is one of the main health concerns in the developing world. This disease cause distortion and destruction of normal hepatic architecture that consequently cause various derangements in the body. One among them is osteoporosis that may lead to osteopenia and causing morbidity and even mortality. 32% patients were seeming positive with osteoporosis in the present study. Previously, the incidence varied from 22-50% depending upon the type of study, site of labeling ranging from vertebra to Tibia. 46% females were osteoporosis positive that is quite high than the males of same age group. The reason may be the endocrine factors. Elderly women are estrogen and progesterone deficient and that may result in decrease Bone mass. Patients with Hepatic cirrhosis for more than 3years were affected 59% as compared to 16% of the patients who had disease for less than 3years (P=0.002)

This study shows a positive co-relation between duration of disease and osteoporosis.



Frequency of Osteoporosis in Liver Cirrhosis Patients

Table 1: Study variables

	Mean	Range
Age	45.72±6.85	30-70
Duration of cirrhosis	6.79±3.01	>3yrs

Table 2: Osteoporosis with Respect to Different Variables (n=250)

Variables		Osteoporosis	Osteoporosis	
			Yes	No
Gender	Male	49/152	103/152	
	Female	36/98	62/98	
Age (Years)	40-53	9	75	
		10%	90%	
	53-65	71	95	
		42.7%	57.2%	
Duration of cirrhosis	< 3 yrs	16.5%	83.5%	
	> 3 yrs	59%	49%	

**CONCLUSION**

one out of three persons with hepatic cirrhosis is suffering from osteoporosis and duration more than 3yrs of disease is strongly associated with it.

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