



OSTEOPOROSIS IN LIVER CIRRHOSIS

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ABSTRACT

Objective; To determine the cases suffering form osteoporosis in cases of liver cirrhosis. **Methods;** This study was done at Medicine department of Sir Ganga Ram Hospital, Lahore during July to December 2017. The cases were selected of either gender and age via non-probability consecutive sampling in this cross sectional study. The diagnosis of liver cirrhosis was made on the basis of signs and symptoms like jaundice, loss of appetite, abdominal distension and on USG as hepatic parenchymal changes with or without splenomegaly lasting for at leasing one year (assessed by medical record). The cases with metabolic disorders, renal failure and on chemotherapy were excluded. Osteoporosis was labeled as yes when the T score was less than 2.5 on DEXA scan. **Results;** In the present study out of 100 cases of liver cirrhosis, 64% were males. The mean age of the cases was 51.67 ± 9.14 years and mean duration of liver cirrhosis was 7.23 ± 1.45 years. Osteoporosis was observed in 30 (30%) of the cases. there was no significant difference of osteoporosis in terms of gender with $p= 0.95$. Osteoporosis was significantly high in cases with age more than 50 years affecting 22 (37.93%) of the cases with $p= 0.04$. this difference was also significant in cases that had liver cirrhosis for more than 3 years and was seen in 26 (36.11%) of the cases with $p= 0.03$ **Conclusion;** Osteoporosis is see in 1/3rd cases of cirrhosis and is significantly high in age more than 50 years and cirrhosis duration more than 3 years.

KEYWORDS: Cirrhosis, T score, Osteoporosis.

INTRODUCTION

Liver has a great role in the metabolic state of the body and in cases of its damage due to hepatitis there are a lot of pathophysiological and clinical changes that occur in the body and can impact in a variety of ways. The number of cirrhotic cases is on the rise and is a serious consideration due to its high degree of cost burden on the health care syste.^[1-2]

There are a number of well documented complications of liver cirrhosis including portal hypertension, hepatic encephalopathy, ascites, hepatorenal syndrome. On the other hand there are some less documented complications which are found in lower numbers and the underlying pathophysiological mechanisms are unclear.^[3-4]

Osteoporosis is one of these uncommon and under rated complications and is defined as the clinical entity associated with decreased bone mineral density and it is reported that the cases with liver cirrhosis suffer from bone loss at much faster rate than the normal cases and it can result in complications like easy fractures. The estimated prevalence for liver-related osteoporosis is between 20-420/100000 of the general population.^[3]

Other risk factors like decreased sun exposure, female gender, smoking history, steroid use, diabetes mellitus, alcoholism etc. also predisposes to osteoporosis.^[4] Furthermore different pathogenic mediators like fibronectin, insulin like growth factor-I, and various cytokines have also been recognized.^[5,6] There are a number of diagnostic tools to label it. Heel ultrasonography is more convenient but dual energy x-ray absorptiometry (DEXA) scan is most commonly used.

OBJECTIVE

To determine the cases suffering form osteoporosis in cases of liver cirrhosis.

MATERIALS AND METHODS

This study was done at Medicine department of Sir Ganga Ram Hospital, Lahore during July to December 2017. The cases were selected of either gender and age via non-probability consecutive sampling in this cross sectional study. The diagnosis of liver cirrhosis was made on the basis of signs and symptoms like jaundice, loss of appetite, abdominal distension and on USG as hepatic parenchymal changes with or without splenomegaly lasting for at leasing one year (assessed by

medical record). The cases with metabolic disorders, renal failure and on chemotherapy were excluded. Osteoporosis was labeled as yes when the T score was less than 2.5 on DEXA scan.

STATISTICAL ANALYSIS

SPSS-23 version was used to assess the data and post stratification Chi-Square test was applied taking P-value ≤ 0.05 as significant.

RESULTS

In the present study out of 100 cases of liver cirrhosis, 64% were males. The mean age of the cases was 51.67 ± 9.14 years and mean duration of liver cirrhosis was 7.23 ± 1.45 years (Table I). Osteoporosis was observed in 30 (30%) of the cases. there was no

significant difference of osteoporosis in terms of gender with $p=0.95$. Osteoporosis was significantly high in cases with age more than 50 years affecting 22 (37.93%) of the cases with $p=0.04$. This difference was also significant in cases that had liver cirrhosis for more than 3 years and was seen in 26 (36.11%) of the cases with $p=0.03$ (table II).

Table I: Demographics.

	Mean \pm SD	Range
Age (years)	51.67 ± 9.14	30-72
Duration of cirrhosis (years)	7.23 ± 1.45	2-13
T score	1.11 ± 0.24	1-4

Table II. Osteoporosis and effect modifiers (n= 100).

	Variables	Osteoporosis		
		Yes	No	
Gender	Males	19 (29.68%)	45 (70.97%)	p= 0.95
	Females	11 (30.55%)	25 (57.90%)	
Age	<50	8 (19.04%)	34 (82.22%)	p= 0.04
	>50	22 (37.93%)	36 (61.29%)	
Duration of cirrhosis	< 3 years	4 (14.28%)	24 (85%)	p= 0.03
	> 3 years	26 (36.11%)	46 (53.33%)	

DISCUSSION

Osteoporosis is a metabolic disorder that leads to weakening of the bones and tendency to fracture with ease and it has been seen that in cases of liver cirrhosis, due to confluence of difference factors, the incidence of osteoporosis has been increased and early detection and intervention can markedly reduce the morbidity in such cases.

In the present study on cases of liver cirrhosis, Osteoporosis was observed in 30 (30%) of the cases. The data was wide variable regarding its prevalence and was seen to be in the range of 20 to 50% of the cases⁹⁻¹⁰ courtesy variation in the inclusion and exclusion criterion and lack of consensus definition and also the variability of the diagnostic tools. Javed M et al, in their study from Pakistan used the same protocols and it was found that osteoporosis was seen in 26% of their cases.¹⁷

Osteoporosis was significantly high in cases with age more than 50 years affecting 22 (37.93%) of the cases with $p=0.04$ and this difference was also significant in cases that had liver cirrhosis for more than 3 years and was seen in 26 (36.11%) of the cases with $p=0.03$.

The data in the past have also revealed the similar types of results and few of the studies did not find any significant association,^[11-12] while the other had significant association.^[7,13]

Sokhi RP et al and Javed et al, in their study revealed that higher age and longer duration of cirrhosis were significantly high with $p < 0.05$.^[7,13] In the latter they used the cut off value of 5 years to divide the groups in terms of duration of liver cirrhosis.

CONCLUSION

Osteoporosis is seen in 1/3rd cases of cirrhosis and is significantly high in age more than 50 years and cirrhosis duration more than 3 years.

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