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Research Article

Frequency of Osteoporosis in Liver Cirrhosis

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ABSTRACT;

Objective; To determine the frequency of osteoporosis in liver cirrhosis.
Methodology; This was a cross sectional study and was done at Department of Medicine, Sheikh Zayed hospital, Lahore during February 2016 to September 2016. The cases of either gender having liver cirrhosis due to either hepatitis B or C diagnosed on clinical and laboratory data were selected between the age of 40-70 years. Osteoporosis was defined as yes in cases that had T score < 2.5 on DEXA Scan.
Results; In the present study there were total 50 cases of liver cirrhosis, comprising 32 (64%) males and 18 (68%) females with mean age of 46.62±7.54 years. Osteoporosis was seen in 14 (28%) of the cases. Osteoporosis was seen more in males affecting 10 (31.25%) with p= 0.68.
This was significantly high in age group 56 to 70 years affecting 12 (33.33%) cases with p= 0.02.
There was no significant difference in terms of duration of cirrhosis with p= 0.95.
Conclusion; Osteoporosis is an under rated complication and is seen in almost every 4th case of liver cirrhosis. This is significantly associated with higher age group.

Keywords; Cirrhosis, T score, DEXA Scan

INTRODUCTION;

Liver cirrhosis is the end result of on going liver damage with ultimate fibrosis. The salient features of this include inflammation, regeneration and fibrosis. It is an irreversible and fatal entity that can pose a great health burden in the form of increasing morbidity and even mortality. Its prevalence is widely variable globally and has a high burden in developing countries like Pakistan. It can lead to various complications including ascites, encephalopathy, hepato renal syndrome, variceal hemorrhages and osteoporosis.[2] Osteoporosis is not a well studied and under rated complication which is recently being extensively studied and has shown variable association with liver cirrhosis. It is defined as decreased bone mineral density. It is studied that the cases of liver cirrhosis has increased tendency for bone resorption and even at a higher rate as compared to non cirrhotic patients. Its incidence ranges from 20 to 420 per 100000 in general population.[3] The other potential predictors for development of osteoporosis in such cases is female gender, smoking habits, decreased day light exposure, and co morbid conditions like alcoholism and diabetes mellitus.[4] Furthermore different pathogenic mediators like fibronectin, insulin like growth factor-I, and various cytokines have also been recognized. The etio-pathogenesis of sole liver cirrhosis for development of osteoporosis is still unclear.[5-6] Different methods have been devised to

score for bone mineral density, out of which Dual Energy X-Ray Absorptiometry (DEXA) scan is most commonly used. Javed M et al in their study found osteoporosis in 26% of cases while in similar study done by Cijevschi C et al found this in 38% of cases.[7-8]

MATERIALS AND METHODS

This was a cross sectional study and was done at Department of Medicine, Sheikh Zayed hospital, Lahore during February 2016 to September 2016. The cases of either gender having liver cirrhosis due to either hepatitis B or C diagnosed on clinical and laboratory data were selected between the age of 40-70 years. Osteoporosis was defined as yes in cases that had T score < 2.5 on DEXA Scan.

STATISTICAL ANALYSIS:

The data was entered and analyzed by using SPSS version 21. Mean ± SD (Standard Deviation) were calculated for quantitative data while frequencies and percentages for qualitative data. Effect modifiers were controlled and post stratification chi-Square test was applied taking Pvalue≤ 0.05 as significant.

RESULTS;

In the present study there were total 50 cases of liver cirrhosis, comprising 32 (64%) males and 18 (68%) females with mean age of 46.62±7.54 years. Osteoporosis was seen in 14 (28%) of the cases (table 01). Osteoporosis was seen more in males affecting 10 (31.25%) with p= 0.68. This was significantly high in age group 56 to 70 years affecting 12 (33.33%) cases with p= 0.02. There was no significant difference in terms of duration of cirrhosis with p= 0.95 as shown in table 02.

Table No. 01. Study demographics

	Mean	Range
Age	46.62±7.54	40-70 years
Duration of cirrhosis	7.03±1.78	1-20 Years
T score	1.12±0.41	1-4

Table No. 02. Osteoporosis with regard to confounders

	Variables	Osteoporosis		
		Yes	No	
Gender	Male	10 (31.25%)	22 (68.75%)	
	Female	04 (25%)	14 (75%)	p= 0.68
Age groups	40-55	02 (14.28%)	12 (85.72%)	
	56-70	12 (33.33%)	24 (66.67%)	p= 0.02
Duration of liver cirrhosis	< 5 years	04 (28.57%)	10 (71.43%)	
	> 5 years	10 (27.77%)	26 (72.23%)	p= 0.95

DISCUSSION;

Liver cirrhosis is a syndrome of complications that can present in various ways and increase the morbidity in such cases. There are multiple underlying damages going on in cirrhotic cases on one hand and on the other co morbid conditions and other factors like decreased oral intake, lack of mobility and decreased sun exposure are the other features leading to development of osteoporosis. In the present study, Osteoporosis in cases of liver cirrhosis was seen in 14 (28%) of the cases. These results were near to the findings of the previous studies as well where they revealed its prevalence ranging from 20 to 50% in cases with liver cirrhosis.[9-10] The reason for this variability among different studies can be explained by the lack of consensus guidelines for labelling it; because different studies used different cut off values and even different sites of bone label osteoporosis i.e. vertebrae and heel as most commonly used bone.

The study protocol of our and by Javed M et al were almost the same and it was seen that the

detection of osteoporosis with a T score of < 2.5 was observed in 26% of the cases in their study.[7] This was significantly high in age group 56 to 70 years affecting 12 (33.33%) cases with p= 0.02. There were no such cut off guidelines to label this, however the previous studies have shown that the increasing age has shown its significant association with osteoporosis.[11-12] This can be explained by the factor that higher the age and longer might be the duration of disease. Furthermore, the higher age is another risk factor for the development of osteoporosis due to multiple factors.

CONCLUSION;

Osteoporosis is an under rated complication and is seen in almost every 4th case of liver cirrhosis.
This is significantly associated with higher age group.

REFERENCES;

1. Runyon BA. A primer on detecting cirrhosis and caring for these patients without causing harm. Int J Hepatol. 2011;2011(1):801-83.
2. Mumtaz K, Ahmed US, Abid S. Precipitating factors and the outcome of hepatic encephalopathy in liver cirrhosis. J Coll Physicians Surg Pak. 2010;20(8):514-18.
3. NakchbandiIA. Osteoporosis and fractures in liver disease: relevance, pathogenesis and therapeutic implications. World J Gastroenterol. 2014;20(28):9427–38.
4. Jakobsen A, Laurberg P, Vestergaard P, Andersen S. Clinical risk factors for osteoporosis are common among elderly people in Nuuk, Greenland. Int J Circumpolar Health. 2013;72(8):01-07.
5. Yadav, A, CareyEJ. Osteoporosis in chronic liver disease. NutrClinPract. 2013;28:12-14.
6. Kaemmerer D, Schmidt B, Lehmann G, Wolf G, Settmacher U, Hommann M. Treatment of bone loss in patients with chronic liver disease awaiting liver transplantation. Transplant Res. 2012;1(1):01-07.
7. Javed M,Saeed A,Khan IM,Hameed K,Rehman S,Khattak AK, et al. Frequency of osteoporosis in patients with cirrhosis due to hepatitis B and hepatitis C: a study of 100 cases. J Ayub Med Coll Abbottabad.2009;21(3):51-3.
8. Cijevschi C, Mihai C, Zbranca E, Gogalniceanu P. Osteoporosis in liver cirrhosis. Raomanian J Gastroenterol. 2005;14(4):337-41.
9. Gallego-Rojo FJ, Gonzalez-Calvin JL, Munoz-Torres M. Bone mineral density, serum insulin like growth factor I, and bone turnover markers in viral cirrhosis. Hepatology 1998;28:695–9.
10. Sokhi RP, Anantharaju A, Kondaveeti R, Creech SD, Islam KK, Van Thiel DH. Bone mineral density among cirrhotic patients awaiting liver transplantation. Liver Transpl 2004;10:648–53.
11. Schiefke I, Fach A, Wiedmann M, Aretin AV, Schenker E, Borte G, *et al*. Reduced bone mineral density and altered bone turnover markers in patients with non-cirrhotic chronic hepatitis B or C infection. World J Gastroenterol 2005;11:1843–7.
12. Isoniemi H, Appleberg J, Nilsson CG. Transdermal estrogen therapy protects postomenopausal liver transplant women from osteoporosis. A 2-year follow-up study.J Hepatol. 2001;34(2):299-305.