Original Article

Chronic Liver Disease as a Risk Factor for Type 2 Diabetes Mellitus

Chronic Liver Disease - Type 2 Diabetes

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ABSTRACT

Objectives: To determine the chronic liver disease as the risk factor for Type 2 diabetes mellitus.
Study Design: Cross-sectional study
Place and Duration of Study: This study was conducted at the Medicine Department of Indus Medical College Tando Muhammad Khan from May 2016 October 2016.
Materials and Methods: Patients after diagnosis of chronic liver were included. In the selected cases complete clinical examination routine laboratory investigations were carried out. Cases less than 50 years of the age either gender were selected. Patients with history of obesity, smoking, alcohol consumption, diabetic family history and with history other risk factors of the diabetes were excluded from the study to see the frequency of diabetic mellitus development in the patients with chronic liver disease. Complete data regarding age, gender, residential status, socioeconomic status, virological frequency and glycemic status were noted in the proforma.
Results: Mean age of the patients was 42.12+5.33 years. Male were found in the majority 60.81%. HCV was the most common in 81.08% of the patients. Diabetic mellitus was found in 22.97% of the patients, while 77.3% patients were noted without diagnosis of diabetic mellitus. In this study out of 17 diagnosed cases of type 2 diabetes mellitus 11 were HCV infected patients and 2 were HBV infected while 2 cases were with coinfection of HBV and HCV.
Conclusion: We concluded that HCV related chronic livers disease is the frequent risk factor for the development of diabetic mellitus.
Key Words: HBV+HCV, chronic liver disease, diabetic mellitus

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INTRODUCTION

The liver is the major focuses for insulin and its counter administrative hormones, like as glucagon. Chronic liver disease (CLD) is regularly connected with intolerance of the glucose and diabetes. Chronic liver disease is extremely predominant in the general U.S. populace and incorporates 2% of grown-up Americans (5.3 million) infected by HCV and HBV and an expected at least 31% with non-alcoholic fatty liver disease (NAFLD).[1,2] CLD occurrence is linked with big impairment in the glucose homeostasis. Estimately in 80% of the chronic liver disease cases, glucose intolerance had seen, and frank diabetes is occurred in the 30–60%.[3,4] On its etiology chronic liver disease had big impact on glucose metabolism in liver. Currently, it is event for dispute whether type 2 diabetes mellitus in lack of the obesity and the hypertriglyceridemia might be cause for CLD.

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Diabetic mellitus which develops as a complication of cirrhosis of the liver and also known as (hepatogenous diabetes).[5] IR in adipose tissues and muscles and hyperinsulinemia appear to be the pathophysiological bases of diabetes in CLD. Disabled response of the islet β-cells in pancreas and IR in liver is additionally contributory components. NAFLD, cirrhosis due to alcohol, chronic HCV and hemochromatosis are all the more habitually connected to diabetic mellitus.[5] IR expands the disappointment of the treatment response in cases having chronic HCV and improvement of the fibrosis. Diabetic mellitus in the cases with cirrhosis might be subclinical. Hepatogenous diabetes is clinically not quite the same as that of type II diabetic mellitus, since it is less much of the time related with microangiopathy and cases more frequently ill by the cirrhosis complications.[5] Contingent on etiology, the level of hepatic damage and diagnostic criteria, the revealed occurrence of intolerance of the glucose changes from 60 to 80% and that of diabetes from 20 and 60%.[6,7] It is realized that from the early phases of CLD, IR and intolerance of glucose might be found in the greater part of these cases.[8] Diabetes shows clinically as the liver capacity break down, in this way hepatogenous diabetes can be considered as a marker of cutting advanced hepatic disease.[9] Pathological mechanism causing diabetic mellitus in cases having HCV infection are as yet not surely knew, though both IR and impeded insulin discharge have been considered

to assume a vital part in the improvement of DM.[10] Type II diabetic mellitus the complex, multisystem illness with the pathophysiologically, previous studies reported multiple risk factor for diabetic mellitus progress in CLD cases.[10] Therefor this study conducted to evaluate the frequency of DM in patients having only chronic liver disease.

MATERIALS AND METHODS

This was a cross-sectional study and carried out ant medicine department of Indus medical college Tando Muhammad khan. Study duration was 6 month from May 2016 October 2016. All the patients after diagnosis of chronic liver were included. In the selected cases complete clinical examination routine laboratory investigations were carried out. All the cases less than 50 years of the age either gender or only with virological (HCV and HBV) etiology for chronic liver disease were select6ed. Patients with history Patients with history of obesity, smoking, alcohol consumption, diabetic family history and with history other risk factors of the diabetes were excluded from the study to see the frequency of diabetic mellitus development in the patients with chronic liver disease. All the patients with history of previous antiviral therapy, liver mass and pregnant women were also excluded. Only those patients were selected agree to participate in the study. In all the selected cases complete glycemic status was work out. Complete data regarding age, gender, residential status, socioeconomic status, virological frequency and frequency of type 2 diabetic mellitus were noted in the proforma. All the data was entered in SPSS version 20. for the purpose of analysis, simple frequency percentage were calculated for the qualitative variables, while mean and standard deviation were calculated for the quantitative variables like age etc.

RESULTS

In the present series patient's mean age was 42.12+5.33 years Table:1.

Male gender was commonest 60.81% as compare to female 39.19%. FIG:1.

According to the virological infection HCV was the most common 81.08% of the patients, hepatitis was found in 10.81% pf the cases while 5.40% patients were with history of HCV+HBV viral infection. FIG:2.

Patients of the rural areas were found in the majority 56.75% while remaining 53.25% patients were form urban areas.FIG;3

In this study mostly patients were poor 63.51%, middle class patients were 29.79% and upper patients were only 5 out of all. Table:2.

Diabetic mellitus was found in 22.97% of the patients, while 77.3% patients were noted without diagnosis of diabetic mellitus FIG:3.

In this study out of 17 diagnosed cases of type II diabetic mellitus 11 were HCV infected patients and 2 were HBV infected while 2 cases were with coinfection of HBV and HCV. Table:3.

Table No.1: Age distribution of study population n=74

Age (mean+SD)	42.12+5.33 years

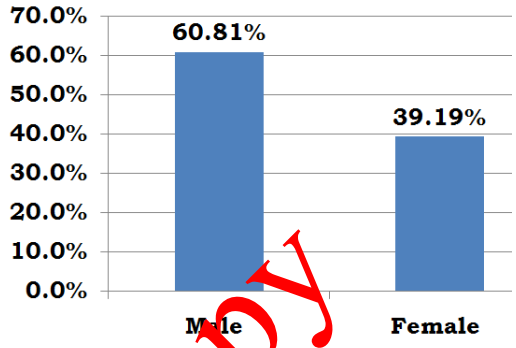

Figure No.1: Gender of the patients n=74

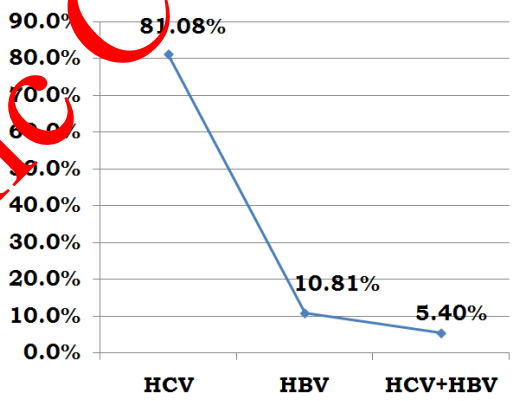

Figure No.2: Patients distribution according to HBV and HCV n=74

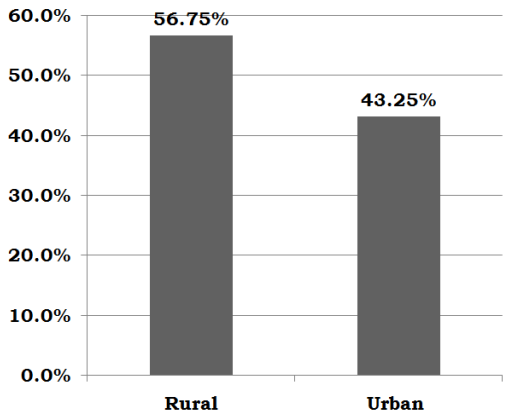

Figure No.3: Patients distribution according to residential status n=74

Table No.2: Socioeconomic status of the patients N=74

Socioeconomic status	Frequency(%)
Poor	47(63.51%)
Middle	22(29.79%)
Upper	05(6.75%)

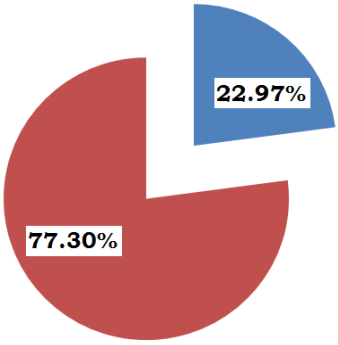

Figure No.4: Frequency of diabetic mellitus n=74

Table No.3: Diabetic mellitus according to HCV and HBV infection N=74

Diabetic mellitus	HCV	HBV	HCV+HBV
Positive n=17	11	02	02
Negative n=57	48	07	02

DISCUSSION

Incidence of type 2 DM in HCV positive cases was found to be 34.4% as compared to 6% in HCV negative patients in previous studies.[11,12] As previous studies showed that patients with HCV compared with normal population are at raised risk of Diabetes Mellitus type 2 development and thus resulting in improved risk of the chronic and acute complication of diabetes mellitus that can result in severe morbidity.[13,14] In this study diabetic mellitus was found in 22.97% of the patients. In a study carried out at USA, showed the incidence of the Type 2 DM associated to HCV hepatitis C virus infection from 21 to 23%.[15] Pakistani population based study showed frequency of type 2 DM in HCV cirrhotic patients was 31.25%.[16] These studies showed prevalence slightly high from our study, this may because we had excluded patients other risk factors of diabetes as obesity and specially cases had family history of diabetic mellitus. Because type II diabetic mellitus is the multisystem disease complex, that includes the insulin secretion defect, raised glucose production in liver, and resistance in insulin action, all of these contribute to create of overt hyperglycemia, additionally over weight, old age and the genetically factor like as family history of the all might be the contribute to creations of Type II Diabetic Mellitus, therefore these all factor making it very difficult to assess pathological role of the HCV in improvement of diabetic mellitus type II.[10]

In this study mean age of the patients was 42.12+5.33 years, and male were found in the majority 60.81% as compare to female 39.19%. Similarly Saleem Set al[17] reported that 53.01% patients were male and 46.99% were female and their mean age was 42.71±14.29 years. On other hand Suleria SB et al[18] reported that patients mean age was 53.43±4.12 years. These compared studies showed mean age greater than our study this may because, in this study patients were less than 50 years, while in these studies maximum range of the age was high as compare to our study.

According to the virological infection HCV was the most common 81.08% of the patients, hepatitis was found in 10.81% pf the cases while 5.40% patients were with history of HCV+HBV viral infection. Comparable findings were reported by Almani SA et al[19] as; majority of cases 52% had history of HCV infection, 16% had HBV infection and 16% were with coinfection of HBV and HCV. On other hand Farooqui, et al[20] demonstrated that HCV was found in 59% patients, HBsAg in 32%, and both were found in the only 03% of the patients.

In this series patients of the rural areas were found in the majority 56.75% while remaining 53.25% patients were form urban areas, and mostly patients were poor 63.51% following by middle class patients were 29.79% and upper patients were only 5 out of all. Similarly in a Pakistani study reported those 45% patients with hepatitis B and C were 45% among urban and 55% were from rural areas.[21]

In this study out of 17 diagnosed cases of type II diabetic mellitus 11 were HCV infected patients and 2 were HBV infected while 2 cases were with coinfection of HBV and HCV. Memon MS et al[22] mentioned that diabetic mellitus incidence was 31.5% from 361 HCV seropositive cases. On other hand White et al.[23] reported that high risk of diabetes in HCV infected patients. While a current data also stated that 3 times higher incidence diabetes in cases having HCV infection.[24] As well as, data of the previous studies and from our study show the association between HCV infection and diabetes type 2.[22]

CONCLUSION

We concluded that HCV related chronic livers disease is the frequent risk factor for the development of diabetic mellitus. Patients when diagnosed with hepatitis specially HCV they should treat their hepatitis C infection as soon as possible to prevent the development of complication especially diabetic mellitus.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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