DIABETES MELLITUS;
PREVALENCE IN PATIENTS OF CHRONIC HEPATITIS C

ORIGINAL
PROF-1855

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ABSTRACT... Objective: To determine the prevalence of Diabetes mellitus in patients of hepatitis C virus infection. **Design:** Prospective and observational study. **Setting:** Medical Wards at Combined Military Hospital Jhelum. **Period:** 1st November 2009 to 31st October 2010. **Method:** 100 cases of HCV positive on Elisa method were inducted. All cases were segregated into different states of liver disorders and were screened for Blood Sugar level, for one year. So as to observe the frequency of Diabetes Mellitus among HCV positive patients. Diabetes mellitus was considered to be present if patients were already on diabetes treatment or fasting or random blood sugar indicated diabetes mellitus according to standard criteria. **Results:** One hundred patients were studied. Fifty five (55 %) were males and forty five (45 %) were females. The ages ranged from 15 to 71 years (Mean 44.24). Out of these 100 patients, total of 28 (28%) had diabetes mellitus. Out of 100 patients, 82 patients had chronic hepatitis C virus infection without cirrhosis and 22 (26.4 %) of these had diabetes. Twenty two patients with chronic hepatitis C, who had diabetes mellitus, twenty (90.9 %) were non-insulin dependent diabetics and two (9.1 %) were insulin dependent. Total of 18 patients had cirrhosis and out of these 6 patients (33.33 %) had diabetes mellitus. Six patients with cirrhosis all had non-insulin dependent diabetes mellitus. **Conclusions:** Patient with chronic hepatitis C virus infection and cirrhosis secondary to hepatitis C virus infection have strong association with diabetes mellitus and great majority of them are non-insulin dependent diabetics.

Key words: Diabetes Mellitus, Hepatitis, Cirrhosis.

INTRODUCTION

Hepatitis C virus (HCV) infection is a frequent cause of acute and chronic hepatitis and leads to the development of cirrhosis and hepatocellular carcinoma. Hepatitis C virus infection is an important public health problem which currently affects more than 170 million people (about 3% of world population) out of which 55-80% have chronic infection[1]. The likelihood of chronicity after acute HCV infection is as high as 85% with chronic infection being common even in those having normal aminotransferase levels after the acute episode[2]. The progression to cirrhosis is up to 50% even in well compensated patients. The severity and rate of progression depend on several disease related factors and various host related factors[2,3]. Infection with HCV has been shown to produce both hepatic and Extrahepatic manifestations, the latter including insulin resistance, essential mixed cryoglobulinemia, glomerulonephritis, porphyria cutaneous tarda and benign monoclonal gammopathy[4]. A meta-analysis showed that HCV increases the risk of type 2 diabetes mellitus (T2DM) by 1.8 times in excess of that posed by relative degree of liver pathology[5]. The link between the HCV and diabetes was first reported by Allison et al. in 1994 and later explored by Simo and colleagues in 1996[6,7]. The initial idea that patients with T2DM have more parenteral exposures because of use of finger stick devices and thus are at an increased risk of contacting blood borne infections such as HCV was disproved by a study from France in 1998[8]. Several studies have shown that HCV increases the risk of development of T2DM. The mechanism of pathogenesis of diabetes in patients with HCV infection remains unclear though it has been implicated that insulin resistance plays an important role and is related to fibrosis score[9]. Mehta et al. reported that HCV infected individuals were 3.77 times more likely (95%CI = 1.80-.87) to have T2DM as compared to those without the infection[10]. There is possibility of implication of chronic liver disease in the etiology of diabetes. Liver plays a pivotal role in the carbohydrate metabolism. This metabolism is deranged in terms of impaired glucose tolerance in about 70% of the cases suffering from liver cirrhosis while frank diabetes occurs in few. Hyperinsulinemia, insulin resistance and Hyperglucagonemia characterize this abnormal glucose metabolism. This study was designed to observe the frequency of Diabetes in anti-HCV positive patients.

MATERIALS AND METHODS

In this prospective and observational study 100 cases of HCV positive on Elisa method were inducted. All cases were segregated into different states of liver disorders and were screened for Blood Sugar level, for one year i.e. 1st November 2009 to 31st October 2010 at Medical

Wards at Combined Military Hospital Jhelum so as to observe the frequency of Diabetes Mellitus among HCV positive patients. All the entitled patients were thoroughly examined and details were recorded in a proforma & were subjected to the following important investigations.

1. Complete Blood Count (Sysmex Poch 100 I Japan).
2. Urine Routine examination
3. HCV Antibodies on Eliza (International Immuno-Diagnostics Foster City, USA).
4. Fasting/Random Blood Sugar.
5. Liver Function Test
6. U/S Abdomen
7. Liver Biopsy (If required)

The diabetic status was confirmed according to the new diagnostic criteria based on 2 fasting or 2 random plasma glucose levels of more than 126 mg/dL and 200 mg/dL respectively.

INCLUSION CRITERIA

All the cases were included suffering from HCV infection or DM with HCV Positive.

EXCLUSION CRITERIA

All the cases with HCV Negative or already suffering from DM without HCV infection were excluded.

RESULTS

One hundred patients were studied. Fifty five (55 %) were males and forty five (45 %) were females. (Fig 1) The ages ranged from 15 to 71 years (Mean age 44.72). The characteristics of this population are shown in table-I. Most of these patients belonged to Jhelum and adjoining areas. Out of 100 patients, total of 28 (28%) had diabetes mellitus. Out of these 100 patients, 82 patients had chronic hepatitis C virus infection without cirrhosis and 22 (26.4 %) of these had diabetes. Total of 18 patients had cirrhosis and out of these 6 patients (33.33 %) had diabetes mellitus. Details of these patients are shown in table-II. Twenty two patients with chronic hepatitis C, who had diabetes mellitus, twenty (90.9 %) were non-insulin dependent diabetics and two (9.1 %) were insulin dependent. Their ages ranged from 30-70.

Fig-1. Sex distribution of patinets

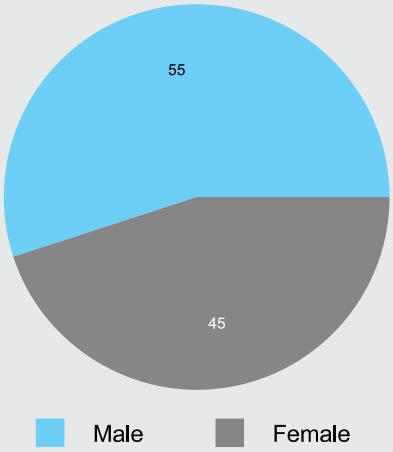

Table-I. Characteristics of study population (n=100)

Age	Male	Female
21-30	03	01
31-40	26	20
41-50	11	09
51-60	07	09
61-70	06	05
>71	02	01
Total	55	45

Table-II. Prevalence of diabetes mellitus in patients with chronic hepatitis C (n=100)

Diagnosis	No. of patients	Patients with diabetes			%
		Male	Female	Total	
Chronic hepatitis C	82	14	08	22	26.4
Cirrhosis	18	04	02	06	33.3
Total	100	18	10	28	28

There were 14 males (63.6%) and 8 females (36.3%). Among Diabetics, Five patients who were found to have non- insulin dependent diabetes mellitus, had positive family history. Two patients who had insulin dependent diabetes mellitus did not show positive family history

Details of these patients are shown in table-III. Of eighteen patients with chronic hepatitis C associated cirrhosis none had insulin dependent diabetes mellitus in 6 patients who had diabetes.

Table-III. Characteristics of anti-HCV positive patients with diabetes mellitus (n=28)

Age	Sex		Total patients	Positive family history	BMI
	M	F			
31-40	04	01	05	01	23.27
41-50	06	03	09	02	21.76
51-60	05	02	07	01	22.65
61-70	02	03	05	01	20.12
>70	01	01	02	-	20.42
Total	18	10	28	-	-

DISCUSSION

There are several studies pointing to possible link between HCV infection and Type 2 Diabetes Mellitus[11]. Reports from Europe, Middle East and North America also show an increased prevalence of diabetes in patients having chronic liver disease when compared with other chronic liver diseases like primary biliary cirrhosis, primary sclerosing cholangitis, alcoholic liver disease or for that matter chronic HBV related disease[12,13]. Mason et al reported a case controlled study on the association of chronic hepatitis C with diabetes mellitus[13]. The prevalence of diabetes was found to be higher in HCV related chronic liver disease (21%) than in chronic HBV (12%). Moreover prevalence of chronic HCV infection was much higher in diabetics (4.2%) than in controls (1.6%). Our study showed 28 % of the hepatitis C patient had diabetes mellitus at the time of diagnosis. These figures have varied from 21-23 % in studies from USA[11,13]. Twenty four percent patients from Korea and 25 % from Egypt had diabetes mellitus associated with chronic hepatitis C[14,15]. Suliman MI et el, at Bhawalpur hospital found 19% T2DM among chronic HCV cases[16]. Khokar N, in their study among 411 cases of HCV positive in which males were 244 (55.07%) and females were 199 (42.92%) found the prevalence of T2DM 18.28%[17]. In another study by Muzzafar et al, association between HCV and T2DM was found and out of 206 HCV infected cases 24 (11.65%) were found to be diabetic[18]. In a study by Qureshi et el Type 2DM was present in 24.5% of HCV infected patients as compared to 19.4% with HBV infection[19]. Prevalence of Diabetes has been found to be higher in patients of chronic hepatitis C in our study as compared to these studies .In our study, 33 % patients with cirrhosis, were associated with diabetes mellitus which was non-insulin dependent. In original study from by Allisons and associates, 50 % patients with HCV cirrhosis were noted to have diabetes mellitus[6]. In an Italian study, out of 416 cirrhotic patients, 20 % had diabetes mellitus[20].

CONCLUSIONS

In conclusion, this study of patients with chronic hepatitis C virus infection has shown more than normal association of diabetes mellitus in these patients and majority of these diabetics were non-insulin dependent. In this study we found strong association of T2DM with HCV infection which not only affects the course of liver disease but may also affect the treatment course. Therefore it is necessary to screen and control earlier for presence of Diabetes Mellitus. Also, patients with HCV cirrhosis had greater association with diabetes mellitus.

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An executive is a person who always decides; sometimes he decides correctly, but he always decides.

John H. Patterson