ORIGINAL ARTICLE

Impact of Dyslipidemia on Frequency of Hepatitis C Infection in Type II Diabetics

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ABSTRACT

Aim: To determine the association between dyslipidemia and hepatitis C in cases of type-II DM.
Methods: In this prospective study, total 200 type-II diabetics were included. Patients were taken from private clinic of consultant physician from January 2015 to June 2015 either male or female.
Results: Mean age of the patients was 50.79±12.21 years and frequency of hepatitis C was 70(35%). Male patients were 82(41%) and female patients were 118(59%). Hepatitis C infection was insignificantly (P=0.7635)associated with gender, DM status (controlled or poorly controlled) and duration of DM, but dyslipidemia was significantly associated with the hepatitis C infection.
Conclusion: Results of this study revealed that a hepatitis C infection was most frequently prevalent in type-II diabetics. Male and female can equally be victim of hepatitis C infection. Results of this study also revealed that there is no associate of hepatitis C infection with good controlled DM or poorly controlled DM. Dyslipidemia was significantly associated frequency of hepatitis C infection.
Keywords: Dyslipidemia, Hepatitis C, diabetes mellitus

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder which is characterized by hyperglycemia in context of insulin resistance and relative lack of insulin[1]. The total number of individuals with DM is projected to rise from 171 million individuals in 2000 to 366 million individuals in 2030[2].DM has become a very important public health problem in Pakistan with 7.1 million individuals with DM in 2010 expected to rise to 13.8 million in 2030 when the country will rank 4th in terms of number of individuals aged 20 years to 79 years with DM[3].

Frequency of Hepatitis C Virus (HCV) infection in patients of DM is 2-3 times as compared to non-diabetics[4]. The association between type-II DM and HCV was first reported by Allison et al[5] in 1994 and later explained by Simo et al[6]. The HbA1c levels in HCV infected patients are significantly higher in type-II DM patients as compared to HCV negative patients[7].

In metabolic syndrome the fatty liver and dyslipidemia is found alongwith DM and hypertension. The fatty liver secondary to dyslipidemia in DM-II may be a risk factor for the increased frequency of hepatitis C infection.

In our previous study we have detected hepatitis C frequency is more in diabetics than normal population. Our aim in this study was to detect relationship if any of dyslipidemia with the frequency of hepatitis C in type-II DM.

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MATERIAL AND METHOD

In this prospective study, total 200 type-II diabetics were included. Patients were taken from private clinic of consultant physician from January 2015 to June 2015 either male or female having age between 30-70 years.

Patients with type I diabetes mellitus, known or treated cases of HCV, Patients with positive hepatitis B serology and impaired liver function tests, ALT twice the upper limit of normal, patients, with history of IV drug abuse, patients with acute and chronic pancreatitis, patients with history of blood transfusion, body tattooing, organ transplantation and those on maintenance hemodialysis, patients taking drugs which alter glucose metabolism like thiazide diuretics, corticosteroids and estrogen were excluded from the study.

Poor controlled type II diabetes mellitus was defined as: when HbA1c was ≥7% and Good controlled type II diabetes mellitus was defined as: when HbA1c was <7%.Detection of anti HCV antibodies was done by 3rd Generation ELISA. Dyslipidemia defined as: when anyone of these values outside the following range;Triglycerides<150 mg/dl, HDL<40mg/dl, (in male), <45mg/dl(in female). Five ml blood sample was taken from every patients and send to laboratory for lipid profile, HbA1c and HCV. Demographic profile of all the patients was also noted on the proforma.

All the collected data was analyzed by using SPSS version 18. Numerical variables were presented as mean and SD and qualitative variables were presented as frequencies and percentages. Chi-square test was used as test of association and p value ≤ 5% was taken as significant.

RESULTS

Total 200 patients with type-II DM were selected for the study. Mean age of the patients was 50.79±12.21 years and frequency of hepatitis C was 70(35%) (Fig. 1). Out of 200 diabetics male patients were 82(41%) and female patients were 118(59%). HCV was found positive in 30(36.59%) in male patients and 40(33.9%) in female patients. But insignificant (P=0.7635) difference between the frequency of hepatitis C in male and female patients was noted (Table 1).

Table 1: Relation of status of DM with Hepatitis C

Gender	Hepatitis C		Total
	Yes	No	
Male	30(36.59%)	52(63.41%)	82(41%)
Female	40(33.9%)	78(66.1%)	118(59%)

P value 0.7635

Stratification of the patients for status of DM (in term of Good controlled and Poor controlled) was done. Total 24 (12%) patients found with good controlled DM and hepatitis C was noted in 10(41.67%) patients. Out of 176 (88%) patients with poor controlled DM, hepatitis C was noted in 60(34.09%) patients. Association of status of DM with hepatitis C was statistically insignificant (P=0.748). (Table 2)

Table 2: Relation of status of DM with Hepatitis C

Status of DM	Hepatitis C		Total
	Yes	No	
Good controlled	10(41.67%)	14(58.33%)	24(12%)
Poor controlled	60(34.09%)	116(65.91%)	176(88%)

Minimum duration of DM was 1 year and maximum duration of DM was 25 years. Patient were divided into two groups according to duration of DM, 1-12 years and 13-25 years. In group 1-12 years, there were 186(93%) patients and in group 13-25 years there were 14(7%) patients. HCV positive cases in 1-12 years' group was 64(34.41%) and in 13-25 years' group were 6(42.86%). Insignificant (P=0.693) difference between the both groups were detected for the frequency of hepatitis C infection (Table 3).

Table 3: Relation of duration of DM with Hepatitis C

Status of DM	Hepatitis C		Total
	Yes	No	
1-12 yrs	64(34.41%)	122(65.59%)	186(93%)
13-25 yrs	6(42.86%)	8(57.14%)	14(7%)

P value 0.693

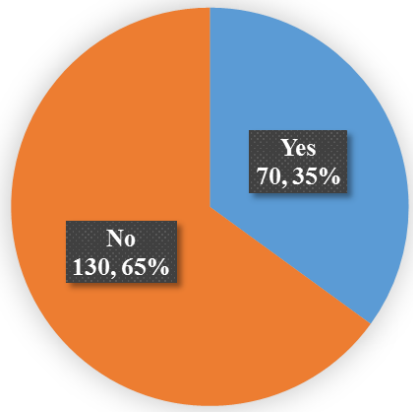
Distribution of patients was done according to status of dyslipidemia. Out of 148 (74%) patients with dyslipidemia, hepatitis C was noted in 60 (40.54%) cases. Fifty-two (26%) patients found without dyslipidemia and hepatitis C was noted in 10 (19.23%) patients. Frequency of hepatitis C patients was significantly (P = 0.058) higher in patients with dyslipidemia as compare to patients without dyslipidemia (Table 4).

Table 4: Relation of dyslipidemia DM with Hepatitis C

Dyslipidemia	Hepatitis C		Total
	Yes	No	
Yes	60(40.54%)	88(59.46%)	148(74%)
No	10(19.23%)	42(80.77%)	52(26%)

P value 0.05

Fig. 1: Frequency of hepatitis C



DISCUSSION

The link between the HCV and diabetes was firstreported by Allison et al. in 1994 and later explored bySimo and colleagues in 1996[8,9]. The epidemiological link between T2DM and HCV has been investigated from two perspectives[9]. Various studies have shown high HCV seropositivity among patients with T2DM as compared to the control group, prevalence being two to seven times higher in the diabetic group[10]. However, other investigators performing did not find such an association of HCV with T2DM[11]. In addition, several studies have shown that HCV increases the risk of development of T2DM[12].

In present study 200 type-II diabetics were selected to determine the frequency of hepatitis C infection and its relation with status of DM (good controlled or poor controlled) and dyslipidemia. In present study frequency of hepatitis C was 35% and in 24 patients with good controlled DM, HCV was positive in 41.67% patients and in 176 patients with poor controlled DM, HCV was positive in 34.09% patients and statistically insignificant (P=0.748) difference between good controlled DM and poor controlled DM for the HCV status was detected.

Similarly Ali et al[13] and Qazi et al[14] reported frequency of hepatitis C in diabetics as 36% and 27.6%. But in study of Jadoon et al[15] among the

3000 type-II diabetics, 13.7% patients were positive for hepatitis C and in same study, out of 744 patients with good glycemic control, HCV was positive 18.7% patients and out of 2256 patients HCV was positive in 11.9% patients. Findings of this study were not in agreement with our study. In another study by Naveed et al[16], 9.7% patients were found positive for HCV which is also in contrast with our study. Okan et al[17] reported 7.5% patients infected with hepatitis C virus among the type II diabetics. In study by Chen et al[10], among the 820 type II diabetics HCV was positive in 6.8% patients and lastly study by Yahya et al(4), 18.83% diabetics was infected with hepatitis C virus.

In our study there is insignificant (P=0.7635) difference between the frequency of hepatitis C infection between male and female patient. But Jadoon et al[15] reported a significant difference between the frequency of hepatitis C infection between the male and female patients.

Out of 148 patients with dyslipidemia, hepatitis C was noted in 40.54% cases. Fifty-two patients found without dyslipidemia and hepatitis C was noted in19.23% patients. Frequency of hepatitis C patients was significantly (P=0.058) higher in patients with dyslipidemia as compare to patients without dyslipidemia.

There is a scarcity of data in literature internationally as well as nationally on the impact of dyslipidemia on the frequency of hepatitis C infection in T2-DM. In our study we have detected an effect of dyslipidemia on the frequency of hepatitis C infection in T2-DM. we suggest further studies in regard of this association as well as intervention to decrease the dyslipidemia and it effect on the frequency of hepatitis C infection.The incidence of fatty liver is more common in type-II diabetics (many of them are also obese) than general population and this could be underlying possible reason that hepatitis C infection not cleared by fatty liver. So every type-II diabetic should be screened for dyslipidemia. Further studies with larger sample size are required to assess this association and can intervention to control dyslipidemia in DM may or may not decrease the frequency of hepatitis C infection?

CONCLUSION

Results of this study revealed that a hepatitis C infection was most frequently prevalent in type-II diabetics. Male and female can equally be victim of hepatitis C infection. Results of this study also revealed that there is no associate of hepatitis C infection with good controlled DM or poorly controlled DM. Interestingly we found that dyslipidemia was significantly associated frequency of hepatitis C infection.

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