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Original Research

A Study of Seroprevalence of Hepatitis B and C in Type 2 Diabetes Patients in a Tertiary Care

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***ABSTRACT*:**
Background: Chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) are the leading causes of cirrhosis and hepatocellular carcinoma, two conditions with increasing mortality and burden of disease especially in the developing countries. Since diabetes is another major concern in public health, it is very important to establish if chronic viral hepatitis is associated with an increased risk of diabetes prior to the development of end-stage liver disease. **Aim of the study:** To study seroprevalence of Hepatitis B and C in type 2 diabetes patients in a tertiary care. **Materials and methods:** For the study, we evaluated 50 patients with type II diabetes mellitus. The patients were evaluated on the basis of clinical, biochemical and ultrasonographic findings. We only selected patients who had at least one year of history of T2DM, and on anti-diabetic agents and or insulin therapy. Patients between the age of 25-70 years of age. We also selected 50 non-diabetic patients to compare the seroprevalence rates in patients without DM. A detailed history, anthropometry and clinical examination was done and recorded from all the patients. All patients in the study had undergone relevant investigations including complete blood count, blood sugar, liver function test, HBsAg, Anti HCV antibodies and Lipid Profile. **Results:** A total of 100 patients participated in the present study, 50 were diabetic and 50 were non-diabetic. Number of males in study group and control group was 29 and 28, respectively. The number of females in study group and control group was 21 and 22, respectively. The mean age was 39.68 years in study group and 34.68 years in control group. It was observed that mean FBG was more in study group as compared to control group. Furthermore, 12 patients in study group were tested postive for HbsAg and 10 patients in control group tested postive. In diabetic group, 11 patients tested postive for anti-HCV and 3 patients in control group tested postive for anti-HCV. The results were statisticlaly significant for FBG and anti-HCV results. **Conclusion**: Within the limitations of the present study, it can be concluded that the rate of seroprevalence for hepatitis B is non-significant between diabetic and non-diabetic patients. On the contrary, HCV seroprevalence has statistically significance between diabetic and non-diabetic patients.
Keywords: hepatitis B, hepatitis C, type 2 diabetes mellitus.

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INTRODUCTION:

Diabetes mellitus (DM) and pre-diabetes mellitus (pre-DM) are two common glucose metabolism disorders. DM is defined as a group of metabolic disorders characterized by high blood glucose levels.[1] Patients with pre-DM present with disordered glucose metabolism, but their blood glucose levels do not reach the cutoff point for a DM diagnosis. The prevalence of

DM continues to increase globally over the past decades.[2] Multiple studies[3] have reported that patients with DM may also suffer from lipid metabolism disorder. It has been established that the composition of lipid particles in diabetic dyslipidemia is more atherogenic than that in other types of dyslipidemia.[4] Chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) are the leading causes of cirrhosis and hepatocellular carcinoma, two conditions with increasing mortality and burden of disease especially in the developing countries. [5,6] As the liver has a key role in glucose metabolism and adequate liver function is essential to maintain glucose homeostasis, diabetes may be a complication of end-stage liver disease, especially in patients with chronic HCV infection. Since diabetes is another major concern in public health, it is very important to establish if chronic viral hepatitis is associated with an increased risk of diabetes prior to the development of end-stage liver disease.[7] Hence, the present study was conducted to study seroprevalence of Hepatitis B and C in type 2 diabetes patients in a tertiary care.

MATERIALS AND METHODS:

The present study was conducted in the Department of Gastroenterology, Sardar Patel Medical College Bikaner, Rajasthan. The ethical clearance for the study was approved from the ethical committee of the hospital. For the study, we evaluated 50 patients with type II diabetes mellitus. The patients were evaluated on the basis of clinical, biochemical and ultrasonographic findings. We only selected patients who had at least one year of history of T2DM, and on anti-diabetic agents and or insulin therapy. Patients between the age of 25-70 years of age. The patients who had alcohol intake more than 30grams/day in males and more than 20 grams/day in females and history of any severe co-morbidity such as malignancy were excluded from the study. We also selected 50 non-diabetic patients to compare the seroprevalence rates in patients without DM. An informed written consent was obtained from the participants. A detailed history, anthropometry and clinical examination was done and recorded from all the patients. All patients in the study had undergone relevant investigations including complete blood count, blood sugar, liver function test, HBsAg, Anti HCV antibodies and Lipid Profile. Serological testing for HBsAg and anti HCV were done using third generation microparticle enzyme immune assay.

The statistical analysis of the data was done using SPSS version 11.0 for windows. Chi-square and Student's t-test were used for checking the significance of the data. A p-value of 0.05 and lesser was defined to be statistically significant.

RESULTS:

A total of 100 patients participated in the present study, 50 were diabetic and 50 were non-diabetic. Number of males in study group and control group was 29 and 28, respectively. The number of females in study group and control group was 21 and 22, respectively. The mean age was 39.68 years in study group and 34.68 years in control group. Table 2 shows the comparison of study group and control group. It was observed that mean FBG was more in study group as compared to control group. Furthermore, 12 patients in study group were tested postive for HbsAg and 10 patients in control group tested postive. In diabetic group, 11 patients tested postive for anti-HCV and 3 patients in control group tested postive for anti-HCV. The results were statisticlaly significant for FBG and anti-HCV results. [Fig 1]

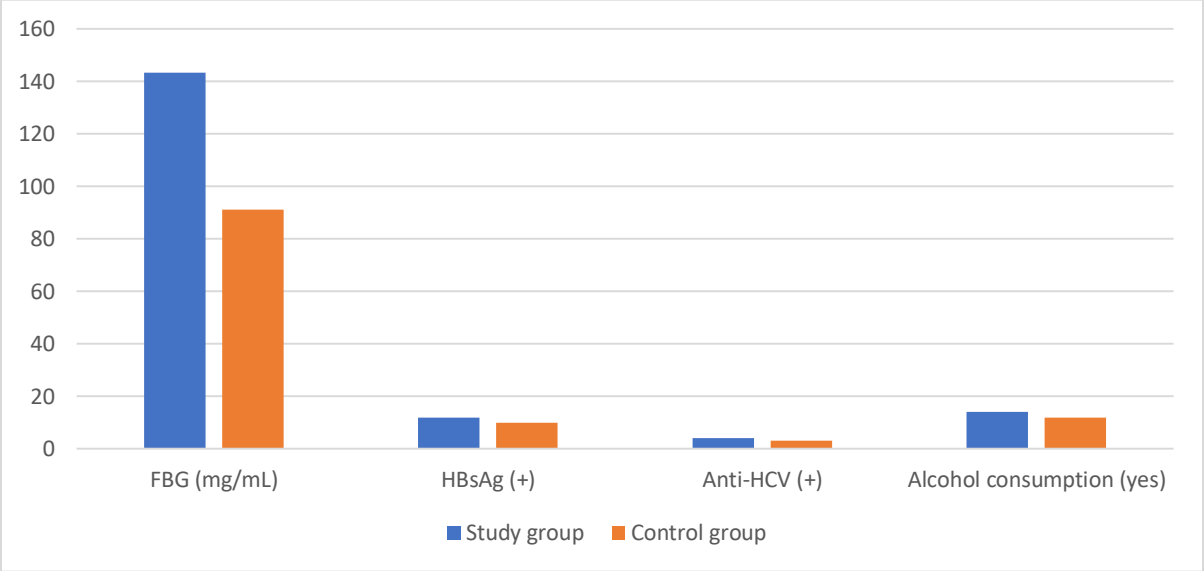
Table 1: Demographic data

Variables	Study group	Control group
Total no. of participants	50	50
No. of males	29	28
No. of females	21	22
Mean age	39.68	34.68
Smoking history present	14	16
Mean BMI (kg/m^2)	31.05	30.91

Table 2: Comparison of study group and control group

Variables	Study group	Control group	p-value
FBG (mg/mL)	143.37	91.29	0.02
HBsAg (+)	12	10	0.33
Anti-HCV (+)	11	3	0.003
Alcohol consumption (yes)	14	12	0.92

Figure 1: Study group and control group



DISCUSSION:

In the present study, we studied 50 diabetic and 50 non-diabetic patients to study the seroprevalence of Hep B and C in T2DM patients. It was observed that anti-HCV positive is statistically associated with T2DM patients. Furthermore, fasting blood sugar was also significantly higher in diabetic patients. There was statistically non-significant relation of HBsAg and diabetes mellitus. The results were compared with other studies over the year. Ephraim R et al [8] examined the prevalence of HBV and HCV infectionst among type 2 diabetics as well as its associated factors. Prevalence of HBV in type 2 diabetics was 5.5% (6/110). No type 2 diabetic was positive for HCV. The prevalence of HBV infection in the type 2 diabetes mellitus (T2DM) participants was higher (5.5% [6/110]) than that of HCV (0/110). A total of 69.1% (76/110) T2DM patients had poor glycemic control. They concluded that the seroprevalence of HBV was higher than that of HCV in T2DM patients. Gisi K et al[9] investigated a possible link between hepatitis B/C prevalence and microvascular complications as well as duration of diabetes. In total 1263 diabetic patients (1149 type 2, 114 type 1) were enrolled in the study. The control group consisted of 1482 healthy blood donors who were over 40 years old. HBsAg seropositivity was 3.7% in diabetic patients and 1.08% in the control group; this difference was statistically significant. HBsAg positivity rates in type 1 and type 2 diabetics were 0.8% and 4%, respectively. HCV seropositivity was 2.2% for diabetics and 0.5% for the control group; this difference was statistically significant. Anti-HCV seropositivity in type 1 and type 2 diabetics was 1.75% and 2.26%, respectively. Similar to our study, Hepatitis B and C seroprevalence was found to be increased in diabetes mellitus.

CA et al determined the seroprevalence of these viruses in diabetic patients. Seroprevalence of hepatitis C virus in diabetics was 24.8% compared to 1.9% in volunteer blood donors; that of hepatitis B virus was 3.4% versus 3.5% in volunteer blood donors. Hepatitis C virus infection was more common in type 2 diabetics and significantly associated with age of diabetic patients. They concluded that the seroprevalence of hepatitis C virus and not hepatitis B virus infection is significantly high in diabetic subjects. The results of present study are consistent with the results of CA et al.[10] Villar LM et al [11] determined HBV and HCV infection prevalence in DM2 patients from Northeast and Southeast Brazil. A total of 537 DM2 patients were included, 194 (36.12%) males and 343 (63.87%) females, with mean age of 57.13±11.49 years. Thirteen patients (2.42%) had anti-HCV and 7 of them were HCV RNA+. In the subgroup, anti-HBc positivity was associated to age and anti-HCV positivity was associated to age, time of diabetes diagnosis, total bilirubin, indirect bilirubin, alkaline phosphatase at bivariate analysis, but none of them was statistically significant at multivariate analysis. As conclusion, low prevalence of HBV and high prevalence HCV was found in DM2 patients.

Chen HF et al[11] investigated the seroprevalence of hepatitis B virus (HBV) and HCV infections in type 2 diabetes mellitus (DM) patients. They collected 820 consecutive type 2 diabetic patients attending 2 of 5 outpatient endocrinology clinics in Far Eastern Memorial Hospital from March to July 2003. The control group consisted of 905 subjects who came for medical check-ups at the Family Medicine Department. No significant difference was found between type 2 DM

patients and the control group for seropositivity of HBsAg but anti-HCV seropositivity was detected in 6.8% of patients and 2.6% of the control subjects. They did not observe any difference in risk factors for HCV infection between anti-HCV-positive and -negative DM patients. They concluded that the rate of seropositive anti-HCV is 2.8 times higher in type 2 DM patients than non-diabetic control subjects. Out study results are consistent with the previous studies from the literature.

CONCLUSION:

Within the limitations of the present study, it can be concluded that the rate of seroprevalence for hepatitis B is non-significant between diabetic and non-diabetic patients. On the contrary, HCV seroprevalence has statistically significance between diabetic and non-diabetic patients.

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