



Prevalence of Type II Diabetes Mellitus in Patients with Chronic HCV.

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Abstract:

Objective: The main aim of this study was to find the prevalence of type II diabetes mellitus in patients with chronic HCV.

Place and Duration of Study: This study was carried out in a duration of 8 months from April 2019 to December 2019.

Materials and Methods: A total of 200 patients were selected for this study between the ages of 18-60 years. Both male and female genders with a positive history of HCV infection and no past history of diabetes mellitus were included in this study. Qualitative PCR was done for the detection of HCV. Patients with fasting blood glucose levels greater than 126mg/dl were labelled as diabetics. A pre designed proforma was used for collection of the data. Informed consent was taken from all the patients. Ethical committee approval was taken. Data was analyzed using SPSS using version 20.

Results: 200 patients with a chronic history of HCV were included in this study. Among these 80 (40%) were female patients and 120 (60%) were male patients. Mean age of the patients was 47.25 years. Diabetes mellitus was seen in 56% of the cases and it was 28% proportionally. Signs of diabetes mellitus were seen in 30 patients with a positive family history constituting 53.57% of the total. 0.001 was the significant p-value. BMI < 25kg/m² was seen in 14 patients while BMI > 25 was seen in 42 patients.

Conclusion: Diabetes mellitus type II has been reported repeatedly in already diagnosed patients of HCV. Positive family history and increased BMI above 25 are also contributing factor having strong association with type II diabetes.

Keywords: Type II diabetes, HCV infection

Introduction: Chronic liver disease is mainly caused by HCV infection and it also leads to severe liver cirrhosis and liver cancers. Recent stats have shown that around 3% of the world's population is infected with HCV reaching up to 170 million people all over the world. Mainly liver is affected by HCV but extra hepatic diseases like cryoglobulinemia, sialadenitis, glomerulonephritis

and porphyria cutanea tarda are also seen. Metabolism of glucose is mainly affected by chronic DM. Approximately 171 million people around the globe are affected by diabetes and it is estimated that till 2030 this number will rise up to 366 million. While doing meta-analysis and review of south Asia, Jayawardane in 2012 showed that 3-7.2% population of Pakistan is affected by this. Four to six fold higher prevalence of DM is seen in South Asia as compared to Europe. Multiple studies have shown the association between HCV and diabetes mellitus. Increased percentage of type II diabetes is seen developed countries in between 2% to 9.4% especially patients with chronic HCV.

Correlation between hepatitis C and DM was first shown by Allison in 1944. Multiple studies on this subject has been done since then. Positive family history, age, sex, race and HIV infection are the main risk factors leading to diabetes which is further affected due to HCV. At any stage of infection with hepatitis C, resistance to insulin and diabetes can be seen. Resistance of insulin is further augmented by the hindrance of signaling pathway of insulin to the hepatocytes which leads to an increased inflammatory response and production of cytokines like IL-6, oxidative stress and TNF alpha.

Multiple studies have been done to show the frequency of diabetes and HCV infection. Elhawary 2011 showed in his study that incidence of type II DM is 13.84 in patients with HCV with additional risk factor for DM cirrhosis. Main aim of our study was to find the prevalence of type II diabetes in patients with chronic HCV. For this to be true a valid correlation has to be shown between type II diabetes and HCV infection.

Materials and Methods: A total of 200 patients were selected for this study between the ages of 18-60 years. Both male and female genders with a positive history of HCV infection and no past history of diabetes mellitus were included in this study. Qualitative PCR was done for the detection



of HCV. Patients with fasting blood glucose levels greater than 126mg/dl were labelled as diabetics. A pre designed proforma was used for collection of the data. Informed consent was taken from all the patients. Ethical committee approval was taken. Data was analyzed using SPSS using version 20.

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Discussion: Long term complicated and devastating problems arise due to long standing diabetes and chronic hepatitis C virus. Insulin resistance is the main cause leading to type II diabetes and cirrhosis is mainly caused by the chronic hepatitis C infection. Correlation between DM type II and hepatitis C is a well understood factor. Cross sectional studies around the globe has shown correlation between these two diseases. In the previous studies association between Hepatitis C and type II DM has been shown. Presence of Type III diabetes in patients with hepatitis C infection has been shown in recent studies especially in people who are already diagnosed

diabetics and hepatitis C positive. Qureshi in his study showed that diabetes had already been detected in 24.5% of the patients with chronic hepatitis C infection. Similar research carried in Islamabad showed rate of 18%. Results of our study are comparable to the ones carried out in Italy, Korea, China and Los Angeles showing percentage of 32.5%, 24%, 19.05% and 21%.

Allison and his coworkers found that patients with past history of HCV and having liver cirrhosis had 5 fold increased risk for developing type II DM excluding sex and BMI. Increased age above 45 years is also a risk factor for developing type II DM according to current studies. This has been shown by Mitchell and Shurti in their study. Positive family history DM and hepatitis has been seen in more than 50% of the patients. Similar study was done by Samir in which he found 41.08% of the patients with positive family history of DM along with HCV. Obesity plays a major role in type II diabetes. BMI of > 25kg/m² has been reported in previous studies. 20% of the cases of HCV and DM were in obese category. Steatosis and fibrosis was seen in these patients. Nevita also showed in his study the relation between obesity, hepatitis C, BMI and type II DM.

Conclusion: Diabetes mellitus type II has been reported repeatedly in already diagnosed patients of HCV. Positive family history and increased BMI above 25 are also contributing factor having strong association with type II diabetes.

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