

FREQUENCY OF IMPAIRED GLUCOSE TOLERANCE IN PATIENTS OF CIRRHOSIS DUE TO HEPATITIS C

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ABSTRACT

Introduction: Impaired glucose tolerance (I.G.T.) is defined as two – hour glucose levels of 140 to 199 mg/dL. (7.8 to 11.0 mmol) after 75 g oral glucose tolerance test.

Objective: The objective of this study was to determine the frequency of impaired glucose tolerance in patients with liver cirrhosis due to hepatitis C. It was a cross – sectional study. This study was conducted in a East Medical Ward of Mayo Hospital, Lahore. The study was carried out from August 2010 to February 2011.

Material and Methods: A total of 200 patients of liver cirrhosis due to hepatitis C admitted to East Medical Ward through emergency and outdoor were recruited. Purposive (non-probability) sampling technique was used for sample collection. Cirrhotic patients of either sex or age above 12 years were included in this study.

Results: Results of study were accessed on SPSS version 12. In 200 patients, 120 (60%) were males and 80 (40%) were females. The mean age of the patient was 56.31 years, for females it was 50.36 years and for male it was 49.25 years with standard deviation of 6.992. It was observed in 200 selected patients 68 (34%) had impaired glucose tolerance of which males were 43 (63%) and female were 25 (36%). All the patients developed impaired glucose tolerance after developing cirrhosis due to hepatitis C infection.

Conclusion: The percentage of patients showing impaired glucose tolerance turned out to be 34% in our study. The principle conclusion of the study was that patients with decompensated cirrhosis due to hepatitis C had significantly higher frequency of impaired glucose tolerance.

Keyword: Hepatitis C, liver cirrhosis, chronic liver disease, impaired glucose tolerance, diabetes mellitus, insulin metabolism, oral glucose tolerance test.

INTRODUCTION

Hepatitis C virus (HCV) infection is a major cause of chronic liver disease, affecting ~3% of world's population.¹ HCV mainly affects the liver, but also several tissues outside the liver have been reported to be involved, resulting in a wide spectrum of extra-hepatic manifestations.¹ During the last decade, it has been hypothesised that diabetes could be one more of these extra-hepatic conditions attributable to HCV infection.¹

Glucose intolerance occurs frequently in patients with liver cirrhosis as it was shown in 23% of patients according to a study.² Several investigators have claimed an association between diabetes and hepatitis C virus (HCV) infection.³ In most cases, diabetes seems to follow cirrhosis and is called hepatogenous diabetes. Early stage cirrhosis with hepatogenous diabetes is characterized by marked post-prandial hyperglycaemia and insulin resistance.⁴ Several lines of evidence suggest that insulin stimu-

lated glucose uptake in muscle is impaired in cirrhosis of the liver.⁵

There are a few reports suggesting that DM may affect long term survival in liver cirrhosis, the increased death rate is mainly caused by an increased risk of hepatocellular carcinoma.⁶ Therefore, altered glucose metabolism may affect prognosis of cirrhotic subjects, which has been changed by recent improvements in the management of cirrhotic complications.⁷

Impaired glucose tolerance occurring in patients of cirrhosis due to Hepatitis C virus infection influences the prognosis of disease in such patients as DM pattern on the 75 g OGTT was thus found to be associated with hepatocarcinogenesis and the 75 g OGTT is considered to be useful for identifying this risk factor for HCC in patients with HCV.⁷

The study was conducted in East Medical Ward of Mayo Hospital, Lahore. The period of study was from August 10, 2010 to February 09, 2011.

MATERIAL AND METHODS

A total of 200 patients of liver cirrhosis due to hepatitis C admitted to East Medical Ward through emergency and outdoor were recruited. Purposive (non-probability) sampling technique was used for sample collection. Cirrhotic patients of either sex and age above 12 years were included in this study.

Data was collected through a proforma. Informed written consent was taken from all patients. The patients were assessed as being cases of liver cirrhosis due to hepatitis C confirmed by Elisa and abdominal ultrasound. All the data were analysed through Statistical Package for Social Sciences (SPSS version 12). The quantitative variables like age were presented by calculating mean \pm SD. The qualitative variables like gender and outcomes, presence or absence of IGT were presented by calculating frequency and percentages.

Objective

The objective of this study was to determine the frequency of impaired glucose tolerance in patients with liver cirrhosis due to hepatitis C.

RESULTS

Results of study were accessed on SPSS version 12. In 200 patients, 120 (60%) were male and 80 (40%) were female. The mean age of the patients was 56.31 years, for females it was 50.36 years and of males it was 49.25 years with standard deviation of 6.992. It was found that out of 200 selected patients 68 (34%) had impaired glucose tolerance out of which males were 43 (63%) and female were 25 (36%). All the patients developed impaired glucose tolerance after developing cirrhosis due to hepatitis C.

Table 1: Age distribution of the patients.

	Age (Years)
N	200
Mean	56.31
S.D	6.992
Minimum	37
Maximum	75
Range	38

Table 2: Gender distribution of the patients (200).

		Frequency	Percentage
Gender	Males	120	60
	Females	80	40
Total		200	100

Table 3: Number of patients with impaired glucose tolerance.

Impaired Glucose Tolerance	Frequency	Percentage
Male	43	63
Female	25	36
Total	68	99

Table 4: Frequency of impaired glucose tolerance.

	Frequency	Percentage
Impaired Glucose Tolerance	68	34

Table 5: Number of patients with diabetes mellitus.

	Males	Females
Diabetes Mellitus	27 (45%)	33 (55%)

Table 6: Number of patients with normal glucose tolerance.

	Males	Females
Normal Glucose Tolerance	50 (69%)	22 (30%)

DISCUSSION

Diabetes mellitus is a wide spread health hazard and economic burden. Number of patients is increasing with chronic liver disease with concomitant type II diabetes mellitus.⁸

IGT was observed in older age group of patients in our study (age range = 58 ± 9) as was shown in studies of Nishida et al² and Konishi et al,⁷ in which IGT was observed in 59 ± 9 and 52 ± 11 respectively. In our study, the number of males showed that IGT was more than 43 (63%). As seen in the study by Konishi et al⁷ where IGT was observed in 38 (77%) males and 11 (22%) females. This is similar with our study. The frequency of IGT turned out to be 34% in our study. 42.3% of the patients with impaired glucose tolerance were found to be HCV positive in a Pakistani study performed by Shah.⁹ In another study conducted by Huang et al,¹⁰ which included 522 subjects, IGT was observed in 34.6% patients of cirrhosis due to hepatitis C. Both of these studies concluded frequency of IGT which is similar to our study. They also suggested the use of OGTT in all patients of chronic hepatitis C which is also indicated in our study.

All patients with disturbed liver function tests

need to be screened for hepatitis C virus and conversely oral glucose tolerance test should be performed in patients presenting with HCV infection so that preventive measures to be taken to increase the honey moon period and to delay the onset of diabetes mellitus. Self awareness should be ensured among diabetics, especially while using needles for insulin injection or while undergoing dialysis for renal failure as a complication of diabetes mellitus. General practitioners, dentists and community service personnel especially barbers the virus and therefore they should be educated about the spread of HCV infection, so that better preventive strategies can be evolved to prevent the fatal complications of both of these irreversible diseases in this country.

It is **concluded** that the percentage of patients showing impaired glucose tolerance turned out to be 34% in the present study, meaning there by the patients with decompensated cirrhosis due to hepatitis C had significantly higher frequency of impaired glucose tolerance.

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