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HEPATITIS C INFECTION;
TYPE II DIABETES MELLITUS PATIENTS IN A TERTIARY CARE HOSPITAL, KARACHI.

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ABSTRACT…Objectives: To determine the prevalence of Hepatitis C virus infection in Type II Diabetes Mellitus patients and its associated risk factors in our population. **Duration and Place of Study:** Study was conducted in Jinnah Post graduate Medical Centre, Karachi between December 2013 to December 2014.**Study Design:** It is a Cross-sectional study. **Data collection and Results:** Data was collected from registered diabetic patients, 355 diagnosed Type II diabetes mellitus patients including 128(36.1%) males and 227(63.9%) females were selected and their Hepatitis C screening was done by ICT method. The bio-data of the patients, history and duration of diabetes mellitus, history of blood transfusion, previous surgery, accidents, shaving from barber, tattooing, nose piercing, acupuncture,insulin use were recorded on a proforma. Out of the 355 diabetes mellituspatients tested, 33 were positive for anti-HCV antibodies giving a prevalence of 9.3%. **Conclusion**:There is increased prevalence of HCV infectionin diabetic patients when compared with general prevalence of HCV in Pakistan.

Key words: Hepatitis C virus, diabetes mellitus, Hepatitis.

INTRODUCTION
Hepatitis C infection and Diabetes Mellitus are two major Health concerns worldwide. It is therefore important to recognize the global burden of these diseases in order to decrease mortality and morbidity attributed to these diseases.

Development of Hepatitis C is a multi-factorial process[1] with a variety of risk factors ranging from virus related factors (e.g. viral load and genotype) to host related factors (e.g. age, gender, alcohol consumption, blood transfusion history, immune status).[2] Observation over past 30 years suggest that there is an association between DM and development of Hepatitis C infection.[3] Several studies suggested the association however a temporal relationship could not be established.

It has been suggested in some in vitro studies that HCV replication may be favored by hyperinsulinemia and/or the increased serum levels of free fatty acids observed in patients with insulin resistance and DM.[4,5] Additionally,

DM is, to some extent, associated with an immunocompromised state, which leads to derangements of immune function. Insulin resistance may play a role in the alteration of the natural course of HCV infection, thus leading to enhanced steatosis, steatohepatitis, and liver fibrosis.[6,7] Moreover, most patients with diabetes mellitus often withdraw blood and perform glycemic assessments at home and undergo needle pricks at several occasions during the course of their disease.

Pakistan being a third world country has sparse resources to fight the ever increasing burden of Hepatitis C infection. Since there is no vaccine or post-exposure prophylaxis available for Hepatitis C, the main focus is in primary prevention and early detection of disease in high risk group for prompt initiation of therapy.

The purpose of conducting this study is to determine the prevalence of Hepatitis C infection in Type 2 DM patients since the data is sparse in

this subject in our population.Pakistan has the second highest prevalence rate of hepatitis C worldwide ranging from 4.5% to 8%.[8] In a survey conducted by Pakistan Medical Research Council in 2009,the prevalence of anti HCV antibody in healthy general population was found to be 4.8% in Pakistan.[9]Therefore it is vital to identify and timely screen DM type 2 patients for hepatitis C infection.

The objectives of this study were (1) to find the prevalence between HCV infections and Type II DM in our population;and (2) to determine the frequency of common risk factors leading to Hepatitis C infection in Type II Diabetes mellitus patients.

MATERIALS AND METHODS

This cross sectional study was conducted at the Diabetes Clinic of Medical Unit III, Jinnah Postgraduate Medical Centre Karachi. A total 355 adult patients of diabetes mellitus (DM) type II were enrolled using non-probability convenience sampling technique. Patients of either gender, any age or duration of DM were included in the study.

After obtaining an informed consent,patient's bio-dataand a detailed history regarding diabetes and its duration,history ofblood transfusion,previous surgeries, accidents, shaving from barber, tattooing, nose piercing, acupuncture and use of insulin was recorded on a pre-designed proforma.

Physical examination was also performed to look for scar/ tattoo marks and needle pricks.
The patients were also grouped according to gender.

The serum samples of all recruitedpatients with DM Type II were screened for HCVusing rapid test ICT kits.

The data obtained were analyzed usingthe statistical package for social sciences (SPSS,version 15.0) statistical software.Chi-square test was applied to analyze the results. P value of $\leq$ 0.05 was considered significant.

RESULTS

Age of patients included in the study ranges between 22 years to 80 years with mean 52.93+/-9.5 years.On the basis of age,13.8% patients were aged<45 years,50.4% were between 45-55 years and 35.8% were aged>55 years.

Out of 355 patients recruited in the study,128 (36.1 %) were males and 227(63.9 %) were females. Most of these patients were married (96.9%).

Patients were divided into three groups according to the duration of diabetes.70 (19.7%) patients had DM for < 5 years which included 7 out of 33(21.2%) HCV reactive patients. 147(41.4%) patients had DM for 5-10 years which included 12 out of 33(36.3%) HCV reactive patients.138(38.9%) of all patients and 14 out of 33(42.4%) HCV reactive patients had DM for longer than 10 years.

56 (15.8%) patients had blood transfusions in past whereas 299 (84.2%) patients had no such history. Out of 33 HCV reactive patients 4(12.1%) had history of blood transfusion. All of these HCV reactive patients were females.

Out of 355 patients,136 (38.3%) gave history of previous surgery.However 219 (61.7%) didnot have any surgeries in past.12 out of 33(36.4%) HCV reactive patients had history of surgeries. These were 3 out of 10 (30%) males and 9 out of 23 (39.1%) hepatitis C positive females.26(7.3%) of all the patients had history of accidents. Only 1 out of 33 (3.0%) HCV reactive had similar history. This included 1 out of 10 (10%) male Hepatitis C reactive patients.However,none of the Hepatitis C reactive female patients had any accidents in past. 75(21.1 %) of all patients and 8 out of 33 (24.2%) HCV reactive patients reported history of shaving from barber or any exposure to instruments used in salons. 8 out of 9 (88.9%) male patients who were hepatitis C reactive gave history of shaving from barber.1 male patient refused to answer this question.

221 (62.3%) of all patients and 22 out of 33(66.7%) HCV reactive patients were exposed to either nose piercing, tattooing or acupuncture in the past.

Majority of Hepatitis C reactive female patients i.e. 21 out of 23(91.3%) gave history of nose piercing, tattooing or acupuncture.However only 1 out of 10(10%)males gave such history.

Only 2 (0.6%) patients had history of promiscuous sexual behavior. None of the patients from either gender with positive serology of Hepatitis C gave any such history.

History regarding use of Insulin was obtained which revealed that 71 out of 355(20%) diabetic patients used insulin therapy and therefore were exposed to daily needle pricks.10 out of 33(30.3%) HCV reactive patients also used insulin injections.

Data regarding presence of tattoo/scar marks on examination was missing in 5 patients.Out of 350 patients 62 (17.5 %) had tattoo/scar marks present while 288 (81.1 %) did not have any such finding on examination.5 out of 33(15.2%) HCV reactive patients also had these physical findings. 3 out of 10(30%) males and 2 out of 23(8.7%) female Hepatitis C reactive patients had tattoo marks/scars present on examination.

Patients were screened for hepatitis C which revealed that 33 out of 355 (9.3 %) patients were hepatitis C reactive.

DISCUSSION

The results of our study revealed that the frequency of Hepatitis C among Type II DM patients was 33 (9.3 %) which is comparable with the previous studies conducted in Pakistan.Ali et al(2007)[10] also found that HCV infection occurred more frequently in DM patients. Another study conducted in Pakistan quoted the prevalence of HCV infection among diabetic patients to be 18.83%.[11] These results show a considerable increase in the HCV seropositivity in diabetic patients as compared with the general population in Pakistan. In a survey conducted by Pakistan Medical Research Council in 2009,the prevalence of anti HCV antibody in healthy general population was found to be 4.8% in Pakistan.[9]

Table-I	Descriptive Statistics		
Risk Factor	Groups	n/N	Fraction
Age	<45 years	49/355	13.8%
	45-55 years	179/355	50.4%
	>55 years	127/355	35.8%
Gender	males	128/355	36.1%
	females	227/355	63.9%
Duration of diabetes	<5 years	70/355	19.7%
	5-10 years	147/355	41.4%
	>10 years	138/355	38.9%
Hx of blood transfusion	yes	56/355	18.4%
	no	299/355	84.2%
Hx of accidents	yes	26/355	7.3%
	no	329/355	92.7%
Hx of surgery	yes	136/355	38.3%
	no	219/355	61.7%
Hx of shaving from barber	yes	75/355	21.1%
	no	280/355	78.9%
Hx of tattooing/ nose piercing/ acupuncture	yes	221/355	62.3%
	No	134/355	37.3%
	no	337/355	94.9%
Hx of insulin use	yes	71/355	20%
	no	284/355	80%
Hepatitis C positive	yes	33/355	9.3%
	no	322/355	90.7%

Table-I. Basic Demographics of study subjects

A Nigerian study showed a significant increase in HCV infection in patients with DM compared with non-diabetic control as 9.3 % of Nigerian diabetic patients are found to have Hepatitis C infection compared with 2.4% of non-diabetic.[12]

The idea of this association was brought forth by Simo for the first time in 1993[13] which was further confirmed by Fraser GM et al[14] in 1996 that there is an association between Hepatitis C and diabetes mellitus. The cause of higher prevalence of HCV infection in diabetic infection still remains unclear.Several theories have been suggested in this regard. Factors such as exposure to medical interventions, instrumentations and compromised immunity leads to high risk of HCV infection.[15]

Table-II		HCV+ve	HCV -ve	P-value
History of blood transfusion	**Yes** 56/355 (18.4%)	4/56(7.1%)	52/56(92.9%)	0.545
	No 299/355(84.2%)	29/299(9.7%)	270/299(90.3%)	
History of accidents	**Yes** 26/355(7.3%)	1/26(3.8%)	25/26(96.2%)	0.320
	No 329/355(92.7%)	32/329(9.7%)	297/329(90.3%)	
History of shaving from barber	**Yes** 75/355(21.1%)	8/75(10.7%)	67/75(89.3%)	0.645
	No 280/355(78.9%)	25/280(8.9%)	255/280(91.1%)	
History of tattooing/nose piercing/acupuncture	**Yes** 221/355(62.3%)	22/221(10.0%)	199/221(90.0%)	0.583
	No 134/355(37.7%)	11/134(8.2%)	123/134(91.8%)	
History of surgery	**Yes** 136/355(38.3%)	12/136(8.8%)	124/136(91.2%)	0.809
	No 219/355(61.7%)	21/219(9.6%)	198/219(90.4%)	
History of insulin use	**Yes** 71/355 (20%)	10/71(14.1%)	61/71(85.9%)	0.120
	No 284/355(80%)	23/284(8.1%)	261/284(91.9%)	

Table-II. Risk factor distribution with Statistical Values

DM has shown to modify the course of Hepatitis C infection, development of cirrhosis and decompensation of liver occurs earlier in the course of disease in a diabetic patient[16] which warrants early screening and prompt initiation of anti-viral therapy to get maximal benefit from treatment and to decrease morbidity and mortality attributed to HCV complications.

We studied several risk factors in our study group such as history of blood transfusion, surgeries and accidents,shaving from barber or any exposure to instruments used in salons, tattooing, nose piercing, acupuncture, insulin use were and the results revealed that the presence of any of these factors is not statistically significant in diabetic patients. This implies that the risk factors are equally distributed in HCV seropositive and HCV seronegative patients.This equal distribution of risk factors suggests that it is likely that Diabetes Mellitus itself has an association with HCV infection.

In conclusion,there is a significant association between HCV infection and diabetes mellitus. However,a temporal relationship still needs to be established.It is important that health care workers pay attention to prompt diagnosis and timely management of HCV infection in diabetic patients.

This study will help in increasing the awareness amongst the health care personnel in reducing morbidity and mortality associated with accelerated complications seen in HCV positive diabetic patients.

CONCLUSION
The prevalence of HCV infection is higher in diabetic patients as compared with the general population of Pakistan but no significance of risk factors was found in this population.
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PREVIOUS RELATED STUDY

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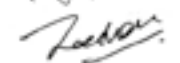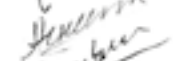
> ## "The future belongs to those who prepare for it today."

Malcolm X

AUTHORSHIP AND CONTRIBUTION DECLARATION

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1	Dr. Shabnam Naveed	Comptilized the study and contibution manuscipt coritting	
2	Dr. Syed Masroor Ahmed	Organized & Supervized the study	
3	Dr. Zeeshan Ali	Worked an result ctically revize the article	
4	Dr. Romana Awan	Manuscrript writting	
5	Humera Zabir	Acusitor results & interprite data revised	
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