

ORIGINAL ARTICLE

HEPATITIS C VIRUS TRANSMISSION RISK FACTORS

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Background: Hepatitis C Virus (HCV) is major health hazard. About 350 million people have been suffering from HCV infection in the world. HCV progresses into chronic liver disease in 50–80% of cases and may end up in cirrhosis. This study was carried out to explore the transmission of risk factors for HCV. **Methods:** This prospective study included 210 consecutive HCV patients of either sex, ranging from 20–69 years of age, referred to Sheikh Khalifa Bin Ziad Hospital/ Combined Military Hospital, Muzaffarabad, Azad Kashmir. In patients having HCV positive by ELISA, the PCR qualitative tests of HCV RNA were performed. A questionnaire was filled for every patient regarding possible risk factors. **Results:** Most common risk factors among HCV patients were surgical procedures ($p<0.001$), followed by injections ($p<0.05$), dental surgeries ($p<0.010$), ear and nose piercing ($p<0.001$), and shaving ($p<0.001$). Univariate analysis identified tattooing ($p=0.033$) also as an important risk factor. **Conclusion:** Multiple risk factors have been identified in nearly all HCV infected patients. The identification of multiple risk factors of hepatitis C acquisition may have important implications in the approach to HCV surveillance, prevention, and management.

Keywords: Hepatitis C virus, Polymerase chain reaction, PCR, Risk Factors

INTRODUCTION

HCV is a major health hazard worldwide.¹ HCV progresses into chronic liver disease in 50–80% of cases and may end up in cirrhosis. The patients with cirrhosis and hepatocellular carcinoma may need liver transplantation.² About 2.5 million people are dying annually due to HCV.³ The estimated risk of HCV in Pakistan is 2.4–6.5%.⁴

Blood transfusion is the commonest mode of virus transmission. The blood screenings to avoid HCV contaminated transfusion has reduced its incidence.⁵ The intravenous drug abusers (IVDA) are major transmission risk factor for HCV in world.⁵⁻⁶ In our country injections, intravenous drug users (IDUs) surgical, dental procedure, tattooing, ear piercing and shaving by barbers have been reported as major risk factors.⁶⁻⁹ This study was carried out to explore the transmission of risk factors for HCV in our location.

MATERIAL AND METHODS

Between January 2010 and June 2012, a total of 210 consecutive HCV infected patients were included in this study. These were HCV, ELISA positive and referred to focal person of hepatitis program at EPI (Extended Program of Immunization) centre, and CMH Muzaffarabad for the purpose of HCV RNA confirmation by polymerase chain reaction (PCR). These confirmed HCV PCR patients were also assessed for therapeutic interventions. The written consent was taken in this regard from each patient. HbsAg positive cases were excluded. HCV positive cases by ELISA but negative by PCR were also excluded. These questionnaires were regarding the age, gender, marital status, treatment history, travel

history abroad, family history of HCV, shaving by barbers, dental surgeries, transfusion of blood/blood products, injections/infusion, intravenous drug abuse (IVDA), medical/surgical procedures, body/ear piercing, tattooing, sexual history and households exposure to HCV. For follow-up address and telephone numbers were recorded. Blood sample was drawn from each patient under sterilized condition. HCV PCR RNA qualitative test was obtained in every patient to confirm diagnosis.

Statistical analysis was performed using SPSS-20. Chi-square test was done, and $p<0.05$ was considered as statistically significant.

RESULTS

The age of patients ranged from 20–69 years with mean age 39.73 ± 11.80 years. Of 210 HCV patients, 125 (59.5%) were males and 85 (40.4%) were females. Most of these patients belonged to the age group of 21–59 years. Fifty-eight (27.6%) patients had major/minor surgical procedures/gynaecological surgeries, 65 (31%) had unsafe injections, and 48 (22.9%) had dental surgery (Table-1).

Other risk factors were blood/blood products transfusion (29, 13.8%), shaving (51, 40.8%), ear/nose piercing (32, 15.2%), tattooing (27, 12.9%), sexual spread (63, 30.0%), and no source risk factors were identified in 33 (15.7%) of the cases. Multiple risk factors were identified in some cases.

There were statistical significant associations between the gender and age. Univariate analysis also signifies tattooing ($p=0.033$) as risk factor.

Table-1: Risk factors for HCV infection stratified by gender and age

Risk factors	By gender			By age	
	Males n (%)	Females n (%)	Overall n (%)		
Total patients	125 (59.5)	85 (40.4)	210 (100)	<i>p</i>	<i>p</i>
Major/minor operation	28 (22.4)	30 (35.2)	58 (27.6)	<0.001	0.008
Injections (unsafe)	41 (32.8)	24 (28.2)	65 (31.0)	0.292	0.102
Dental extraction	28 (22.4)	20 (23.5)	48 (22.9)	0.488	0.010
Blood transfusion	18 (14.4)	11 (12.9)	29 (13.8)	0.465	0.975
Shaving (by barber)	51 (40.8)	0 (0)	51 (24.2)	<0.001	0.712
Piercing ear & nose	0 (0)	32 (37.6)	32 (15.2)	<0.001	0.001
Tattooing	19 (15.3)	8 (9.4)	27 (12.9)	0.149	0.452
No source	22 (17.6)	11 (12.9)	33 (15.7)	0.549	0.926
Sexual spread	40 (32.0)	23 (7.1)	63 (30.0)	0.271	0.433

DISCUSSION

A total 210 patients with chronic HCV infections were studied. Risk factors among gender were dealt separately because of diversity in the social aspects of either sex. Males are involved in shaving by barber, while females are amenable to ear or nose piercing due to local custom. Because of poor nutrition and fertility, female are prone to injection, transfusions, infusion and gynaecological procedures.¹⁰ In both sexes the commonest risk factor was unsafe injections. Very high frequencies of injection usage have been observed in our country¹¹ compared to the developed countries wherein the main risk factor for HCV spread is intravenous drug abuse (IVDA).

Transfusion-related hepatitis and dental surgery ($p=0.010$) was also common modes of transmission of HCV in our study. Possible source of such transmission, besides poor blood and donors screening, could be ineffective sterilisation methods, overcrowding hospital and non maintainability of safety standards.¹²⁻²⁴ In males shaving by barbers was a continuing source for acquisition of HCV. Sporadic and cases with multiple risk factors can be clustered in its spread.^{25,26} Studies have shown that HCV progresses into chronic liver disease, cirrhosis and hepatocellular carcinoma and patients may need liver transplantation.²⁵⁻³⁰ This study showed that majority HCV spreads by shaving, surgeries, body piercing, injections and transfusions in middle age. If appropriate measures are taken to control these risk factors, HCV spread and incidence can be minimised.

CONCLUSION

Surgical, gynaecological procedure, dental procedure, unsafe injections, blood transfusions, body piercing and shaving are playing hazardous role in the spread of HCV in our country. The community needs to adopt safety measures, healthy practices and health education.

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