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HEPATITIS C;
FREQUENCY OF COMMON FACTORS FOR TRANSMISSION IN ADULT PATIENTS

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ABSTRACT… Introduction: WHO estimates that there are more than 185 million people over the globe infected with hepatitis C. Among these 350,000 die each year with hepatitis. He prevalence of hepatitis in Asia is estimated to be 3.4%. Pakistan has been rated as the second most common country in the world with active hepatitis C infection. This study aims at identifying the frequency of risk factors for hepatitis C irus transmission. Understanding the frequency of common factors of HCV would help to implement strategies in long-term prevention of hepatitis transmission among community. **Objectives:** To determine the frequency of common factors for transmission of hepatitis C in adult patients. **Study Design:** Descriptive cross-sectional study. **Setting:** Department of Medicine, Saidu Teaching Center, Swat. **Period:** 01-01-2016 to 01-12-2016. **Methodology:** 140 patients were observed and evaluated. Detailed medical history was taken.5 ml of venous blood sample was collected under aseptic conditions. Blood was centrifuged at 5000 rpm for 5 minutes and serum was transferred to separate test tubes for further testing. The initial screening was carried out by immunochromatography for the qualitative detection HCV antibodies in serum or plasma. Output variable was stratified among age and gender. Chi square test was applied to see effect of modification. All the positive samples on ICT were tested on ELISA (third generation) with signal-to-cut-off ratio $\geq$ 1.0 for confirmation. **Results:** Our study shows that mean age was 45 years with SD $\pm$ 12.24. Fifty eight percent patients were male and 42% patients were female. Forty two percent patients had hepatitis C due to Injection, infection and-* /transfusions, surgical scars were present in 23% patients with hepatitis C, (2%) patients with hepatitis C had tattoos, 8% patients had hepatitis C due to nose/ear piercing and 25% patients had hepatitis C due to dental procedures. **Conclusion:** Our study concludes that the most common risk factors responsible for transmitting hepatitis C in adults were infections/transfusions (42%) followed by dental procedures (25%) and surgical scars (23%).

Key words: Common Factors, Transmission, Hepatitis C.

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INTRODUCTION

According to WHO estimates, there are greater than 185 million individuals around the world who have been infected with hepatitis C virus infection. 350,00 of these individuals die each year. It has been estimated that approximately 3.4% of south Asian population hae been infected with hepatitis C virus.[1]

Pakistan has been ranked as the 2nd highest rated country with hepatitis infected individuals. 8.6 millions of Pakistani carry hepatitis C virus. Egypt is ranked as having the highest percentage of hepatitis C infected individuals. 22% of Egyptians are infected with hepatitis C. Pakistan being 2nd whereas 3rd is China with 3.2% of individuals infected with hepatitis C.[1] The most common mode of transmission among above mentioned countries is use of unsterilized needles and contaminated equipment. Currently Pakistan is undergoing an epidemic of viral hepatitis in the country. Survey conducted in 2007 showed prevalence of 4.9% among Pakistani individuals.[2]

The most common routes for transmission of HCV include use of unsterilized needles and other instruments, unsafe blood transfusion, IV drug abuse, shaving using contaminated blades

and poor hygiene.[3] Rehman et al reports 83.07% patients with HCV infection with positive history of transfusions, 51.14% with surgical scars, 40% with tattoos, 23.07% with nose and ear piercing using unsterilized equipments and 52.03% with history of dental procedures.[4]

Hepatitis C Virus belongs to the genus Hepacivirus and family Flaviviridae. HCV was formerly known as non-A non-B virus. It was postulated in 1970s and proved in 1989. HCV only infects human beings and chimapanzees. HCV consists of genetic material core composed of RNA surrounded by protein coat. This coat is again coated by lipid envelope of cellular origin.[5]

Techniques used to identify HCV include immunochromatography (ICT), Enzyme linked Immunosorbent Assay (ELISA) and Polymerase chain reaction (PCR).[6] There have been three generations of anti-HCV tests and discovery of each generation is associated with improvement in sensitivity of detecting anti-HCV.[5]

Transmission of HCV can be prevented if adequate measures are taken and can hence result in decrease in number of cases in community. There are very few studies done on determining the factors responsible for transmission of HCV. The aim of this study is to determine the common factors responsible for transmission of HCV. An understanding of common factors responsible for HCV transmission can reduce transmission and morbidity associated with HCV.

METHODOLOGY

This cross-sectional study was conducted at Department of Medicine, Saidu Teaching Hospital Swat. The duration of this study is one year (from 01-01-2015 to -01-12-2015). A total of 140 patients were observed. Male and female patients aged 18 to 60 years with HCV antibodies positive were included while patients presenting with hepatic encephalopathy, patients presenting with stroke or there complications were excluded as these conditions could act as confounders and produce biasness in results. Ethical approval was taken prior to conducting research. All those patients who fulfill our inclusion criterion and present to outpatient department and medical wards, Saidu Teaching Hospital Swat were enrolled for the study. Patients were evaluated carefully and detailed medical history was taken. 5 cc venous blood sample was collected from each patient with a disposable syringe under aseptic conditions and was allowed to clot. Blood was centrifuged at 5000 rpm for 5 minutes and serum was transferred to separate test tubes for further testing. Immunochromatography was done for qualitative detection of HCV antibodies. Output variable was stratified among age and gender. Chi square test was applied to see effect of modification. All the positive samples on ICT were tested on ELISA (third generation) with signal-to-cut-off ratio $\geq$ 1.0 (Saidu Teaching Hospital Swat) for confirmation. Data was collected on structured proforma and was analyzed in SPSS version 20.0. Results are reported as mean $\pm$ SD. Frequency and percentages were calculated for categorical variables like gender and common factors (infection/transfusions, surgical scars, tattoos, nose/ear piercing, dental procedures). Common factors were stratified among age and gender to see effect modification. Post stratification chi square test was applied to see effect modification. P-value $\leq$ 0.05 was taken as significant. All results are reported as tables and graphs.

RESULTS

This study comprised of 140 patients with age between 20-60 years. 22(16%) patients were in age range 20-30 years, 38(27%) patients were in age range 31-40 years, 45(32%) patients were in age range 41-50 years, 35 (25%) patients were in age range 51-60 years. Mean age was 45 years with SD $\pm$ 12.24. (Table-I)

Gender distribution among 140 patients was analyzed as 81(58%) patients were male while 59(42%) patients were female. (Table-II)

Frequency of common factors among 140 patients was analyzed as 59(42%) patients had hepatitis C due to Infections/transfusions, 32(23%) patients with hepatitis C had surgical scars on the skin surface, 3(2%) patients with hepatitis C had tattoos, 11(8%) patients had hepatitis C due to nose/ear piercing and 35(25%) patients had

hepatitis C due to dental procedures (Table-III).

Stratification of common factors with age, gender is given in Table-IV, V.

Age	Frequency	Percentage
20-30 years	22	16%
31-40 years	38	27%
41-50 years	45	32%
51-60 years	35	25%
Total	140	100%

Table-I. Age distribution (n=140)
Mean was 45 years with SD ± 12.24

Gender	Frequency	Percentage
Male	81	58%
Female	59	42%
Total	140	100 %

Table-II. Gender distribution (n=140)

Common Factors	Frequency	Percentage
Infections/transfusions	59	42%
Surgical scars	32	23%
Tattoos	3	2%
Nose/ear piercing	11	8%
Dental procedures	35	25%
Total	140	100 %

Table-III. Common factors (n=140)

Common Factors		20-30 years	31-40 years	41-50 years	51-60 years	Total	P value
Infections/transfusions	Yes	9	16	19	15	59	0.9991
	No	13	22	26	20	81	
Total		22	38	45	35	140	
Surgical scars	Yes	5	9	10	8	32	0.9989
	No	17	29	35	27	108	
Total		22	38	45	35	140	
Tattoos	Yes	0	1	1	1	3	0.6371
	No	22	37	44	34	137	
Total		22	38	45	35	140	
Nose/ear piercing	Yes	2	3	3	3	11	0.9839
	No	20	35	42	32	129	
Total		22	38	45	35	140	
Dental procedures	Yes	5	10	11	9	35	0.9902
	No	17	28	34	26	105	
Total		22	38	45	35	140	

Table-IV. Stratification of common factors with respect to age distribution (n=140)

Common Factors		Male	Female	Total	P value
Infections/transfusions	Yes	34	25	59	0.9625
	No	47	34	81	
Total		81	59	140	
Surgical scars	Yes	19	13	32	0.8431
	No	62	46	108	
Total		81	59	140	
Tattoos	Yes	2	1	3	0.7548
	No	79	58	137	
Total		81	59	140	
Nose/ear piercing	Yes	6	5	11	0.8168
	No	75	54	129	
Total		81	59	140	
Dental procedures	Yes	20	15	35	0.9213
	No	61	44	105	
Total		81	59	140	

Table-V. Stratification of common factors with respect to gender distribution (n=140)

DISCUSSION

Pakistan is rated as the 2nd country around the globe to have highest rate of HCV infection. 8.6 million Pakistani's suffer from HCV infection. The highest ranked country in Egypt with 22% of population suffering from HCV. On number 3 is China with 3.2% population suffering from HCV. Some common modes of transmission of HCV infection among Pakistani individuals include use of unsterilized needles and instruments, unsafe blood transfusion and IV drug abuse. Road side barbers use unsterilized blades for shaving which play major role in transmitting HCV. Unhygenic conditions aggravate these factors.[3]

Our study shows that mean age was 45 years with SD ± 12.24. Fifty eight percent patients were male and 42% patients were female. Forty two percent patients had hepatitis C due to Infections/ transfusions, hepatitis C had surgical scars on the skin surface, 3(2%) patients with hepatitis C had tattoos, 8% patients had hepatitis C due to nose/ear piercing and 25% patients had hepatitis C due to dental procedures.

Similar findings were observed in another study conducted by Rehman F et al[4] showed that a total of 110 patients were studied, 35 of them had hepatitis B, 65 had hepatitis C, and 10 had co-infection with both B and C. Among them, 77 (70%) were males, 33 (30%) were female, and 60% hailed from rural areas. Majority of them belonged to the farming community or the daily wage earners. All women were housewives 83.07% of the patients infected with hepatitis C had history of infections /transfusions, 51.14 % had surgical scars, 40% had tattoos, 23.07% had nose or ear piercing and 52.03% had history of dental procedures.

Dore GJ et al[7] conducted a study with 374 individuals in which mean age of patients was 47 years with SD ± 10.32. 60% patients were males with 40% females. 46% patients had hepatitis C due to Infections/transfusions, 20% patients had hepatitis C due to surgical scars, 4% patients had hepatitis C due to tattoos, 10% patients had hepatitis C due to nose/ear piercing and 20% patients had hepatitis C due to dental procedures.

Zaller N et al[8] conducted his study among 200 patients. 18% patients were in age range 20-30 years, 25% patients were in age range 31-40 years, 32% patients were in age range 41-50 years, 30% patients were in age range 51-60 years. Mean age was 46 years with SD ± 11.03. Seventy percent patients were male while 30% patients were female. Among 200 of hepatitis C infection, 50% patients had hepatitis C due to Infections/ transfusions, 22% patients had hepatitis C due to surgical scars, 2% patients had hepatitis C due to tattoos, 11% patients had hepatitis C due to nose/ear piercing and 23% patients had hepatitis C due to dental procedures.

CONCLUSION

Our study concludes that the most common risk factors responsible for the transmission of hepatitis C in adults were infections/transfusions (42%) followed by dental procedures (25%) and surgical scars (23%).

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AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
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2	Abdul Jabbar	Statistical expertise, Critical revision of the article for important intellectual content.	
3	Bacha Amin Khan	Drafting of the article.	
4	Abdul Ahad	Drafting of the article.	
5	Fazal Akbar	Data collection.	