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HEPATITIS C VIRUS INFECTION;
FREQUENCY OF A DUMB MURDERER IN BLOOD DONORS' COMMUNITY OF LAHORE

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ABSTRACT… Hepatitis C virus (HCV) is the main causative agent of post transfusion hepatitis. The virus is distributed worldwide with varying prevalence in different countries, which could easily lead to chronic infections, cirrhosis, and even hepatocellular carcinoma (HCC). The aim of this study was to determine the prevalence of HCV infection among asymptomatic Pakistani blood donors community. **Study Design:** Cross sectional study. **Setting:** Medicine Department, Allama Iqbal Medical College (AIMC) & Jinnah Hospital Lahore (JHL). **Period:** One year (Jan 2014 to 30 Dec 2014). **Material & Methods:** A total of 18,274 blood samples were collected from asymptomatic healthy blood donors (age range 19–59 years) at allama iqbal Medical College & Jinnah Hospital Lahore Pakistan. Blood samples were screened for anti-HCV by Immuno-chromatographic technique (ICT). **Results:** Out of 18,274 blood samples, the overall HCV prevalence was 2.62%. Among the HCV positive cases, male were more prevalent, according to marital status married individuals were more prevalent and the age group with 31-40 years was more frequently infected.in relation with blood group high frequency of HCV positivity seen in Blood Group B. **Conclusion:** We conclude that HCV is asymptomatic infection and easily can lead to chronic stat. therefore control of transmission requires continuous monitoring and surveillance. Trend of HCV infection is decreasing in recent years, In comparison with countries in geographic region, Pakistan has still high rate of HCV infection. The HCV epidemic in Pakistan continues due to lack of education and awareness of the disease. A multidisciplinary approach and the best policies for management will be required to adopt suitable technical methods increase awareness in both lay and medical communities. And produce more accurate diagnosis and effective treatment of HCV patients

Key words: HCV, ICT, blood donors, Pakistan

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INTRODUCTION

Hepatitis C infection is one of the most alarming health problems globally, with incidence rate of 200 million(3.3%) of the world's population.[1] Each year 3 to 4 million peoples are become victim of this bug with the variable frequency in the range of 0.2 -40 % has been reported in different regions of the world.[2,3] In the Pakistan the reported date indicated the 10 million people are infected per year.[4-6] Pakistan ranked second among highest burden countries with Hepatitis with incident rate of 4.5% to 8%.[7]

In this contagious disease the liver become primarily infected by hepatitis C virus (HCV), infectious in acute stage is frequently asymptomatic in nature, but in chronic cases, it will lead to liver fibrosis and ultimately cirrhosis which ultimately reached to other complication of liver such as liver failure and liver cancer.[8] HCV is one of the main causative agents of post transfusion hepatitis.[9]

Despite the implementation of most advance laboratory technologies in blood banking for the screening of blood donors, blood transfusion remains the core form of transmission of HCV infection, and in developing countries still unscreened blood products are still used which make HCV as a common blood borne transfusion transmissible infections. The use of infectious injection (reuse of syringes or needles), shaving barber shops, vertical transmission, ear piercing, tattooing by unhygienic tools and unsterilized

surgical and dental apparatuses, intravenous drug abuse are the risk factors associated with the mode of transmission of HCV in Pakistan.[10-12] Although the blood transfusion is the chief risk factor for transmission of HCV but still there are high proportion of non-transfused hepatitis C cases have been also reported which indicated the association of other route for the HCV of transmission.

The occurrence of infection in blood donors has been used as a surrogate marker for studying the frequency of any disease in general population, although certain pitfalls are still associated with this like the exclusion of people below 19 years and over 59 years and low frequency of female's donors. Due to public awareness education and donor health assessment the incidence rate of viral markers in donors group as compared to general population is lower.[13] The data and information about HCV prevalence in blood donors provides insight into disease burden and opportunities for prevention. This study was designed to study and collect the data about the HCV and its prevalence in blood donors. The aim of our study was to determine trends in prevalence of HCV infections among asymptomatic blood donors. The collected data is analyzed and correlated in terms of gender, age factor, marital status and blood groups. This epidomlogical report will thus provide the HCV prevalence which will be helpful in designing, implementation of strategies by the health policy makers on the basis of this data for the management and control of hepatitis C in Pakistan.

MATERIALS AND METHODS

This cross sectional study was conducted at transfusion medicine department, Allama Iqbal Medical College (AIMC) & Jinnah Hospital Lahore (JHL), Pakistan in the duration of one year (Jan 2014 to 30 Dec 2014). A total 18,274 blood samples were collected from asymptomatic healthy blood donors. Donors with age group in the range of 19-59 years were included in despite of gender discrimination.

3cc blood sample was taken by every donor, 02 ml in a plan clotted tube and 01 ml in EDTA tube. All samples were screened through immune-chromatography technique (ICT) for qualitative detection anti-HCV. Any Samples positive for anti-HCV was re-tested for by the same technique. Samples repeatedly reactive for anti-HCV were considered reactive/positive. The subjects positive for HCV were referred to the department of Medicine AIMC& JHL for further evaluation and treatment.

These ICT techniques are simple rapid and visually observable, it is qualitative membrane-based tests that can rapidly detect antibodies or antigens present in the whole blood, serum or plasma through color development on the ICT strips.

RESULTS

Out of 18,274 blood donors, 18,151 (99.32%) were males and 123 (0.67%) were females. The replacement blood donors were 18,255 (99.89%) while volunteer blood donors were only 19(0.10%) (Table-I).

Sr. No	Month	Total Donors	Replacement%	Volunteer%	Male %	Female %
1	January	1523	1520 (99.90%)	03 (0.19%)	1511 (99.21%)	12 (0.78%)
2	February	1488	1486 (99.86%)	02 (0.13%)	1472 (98.92%)	16 (1.07%)
3	March	1599	1599 (100.0%)	0 (0.0%)	1592 (99.56%)	07 (0.43%)
4	April	1401	1398 (99.78%)	03 (0.21%)	1396 (99.64%)	05 (0.35%)
5	May	1580	1579 (99.93%)	01 (0.06%)	1572 (99.49%)	08 (0.50%)
6	Jun	1563	1560 (99.80%)	03 (0.19%)	1555 (99.48%)	08 (0.51%)
7	July	1475	1475 (100.0%)	0 (0.0%)	1462 (99.11%)	13 (0.88%)
8	August	1505	1504 (99.93%)	01 (0.06%)	1495 (99.33%)	10 (0.66%)
9	September	1479	1477 (99.86%)	02 (0.13%)	1468 (99.25%)	11 (0.74%)
10	October	1573	1573 (100.0%)	0 (0.0%)	1560 (99.17%)	13 (0.82%)
11	November	1519	1517 (99.86%)	02 (0.13%)	1508 (99.27%)	11 (0.72%)
12	December	1569	1567 (99.87%)	02 (0.12%)	1560 (99.42%)	09 (0.57%)
Total		**18,274**	**18,255 (99.89%)**	**19 (0.10%)**	**18,151 (99.32%)**	**123 (0.67%)**

Table-I. Donors groups and gender distribution

Among the total 18,274 asymptomatic blood donors 17,794 (97.37%) were found free from anti-HCV. while the remaining 480 (2.62%) donors were positive/reactive for anti-HCV, and considered as infected therefore not suitable for blood donations (Figure-1).

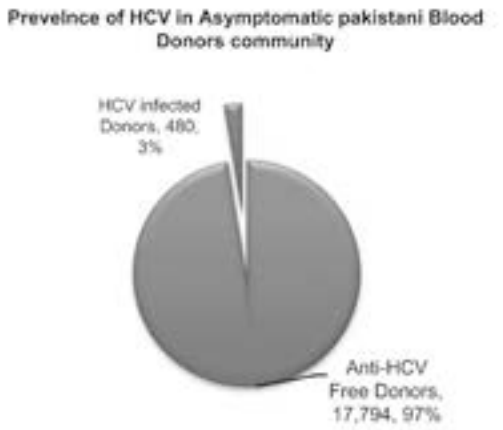

Figure-1. Prevalence of anti-HCV infected donors in Asymptomatic Pakistani Blood Donors Community

Among these positive blood donors' male was more prevalent in HCV (2.46%) while female patients had a low frequency of HCV (0.16%) (Table-II).

In age wise prevalence, Participants within age group 31-40 had the highest prevalence of HCV infection while the least rate was recorded in age group age 51-59 (Table-III).

Frequency of HCV was also calculated in different marital status. HCV was more prevalent in married population as compare to unmarried population (Table-IV).

Prevalence of HCV in relation to blood groups was also observed. Highest prevalence in blood group B and the lowest in blood group AB (Figure-2).

Gender	Total	HCV positive	Percentage
Male	18151	433	2.36%
Female	123	47	0.25%
Total	**18,274**	**480**	**2.62%**

Table-II. Gender wise Prevalence of Anti-HCV in Asymptomatic blood donors

Age Group	Total	HCV positive	Percentage
19-30	7373	159	0.87%
31-40	8460	183	1.00%
41-50	1676	85	0.46%
51-59	765	53	0.29%
Total	**18,274**	**480**	**2.62%**

Table-III. Prevalence of Anti-HCV in relation to age groups (n=18,274)

Total Married	HCV +ve	Total Unmarried	HCV+ve	Total HCV +ve %
11,192 (61.24%)	337(1.81%)	7082 (38.75%)	143(0.81%)	480 (2.62%)

Table-IV. Prevalence of anti-HCV in different marital status

Author	Place of study	Study Year	HCV %	Study population	References
Khodabandehloo et al	Iran	2011	0.50%	Blood donors	[28]
Parveen, et al	Kashmir	2010	0.169%	Blood donors	[31]
Kumar et al	India	2011	0.71%	Blood donors	[32]
Tigen et al	Turkey	2011	0.38%	Blood donors	[33]
Erhabor et al.	Nigeria	2014	2.00%	Blood donors	[34]
Ara et al	Bangladesh	2013	0.68%	Blood donors	[35]
Oliveira et a	Brazil	2010	0.09	Blood d0nors	[36]

Table-V. HCV Positivity Trend in blood donors reported in previously published literatures

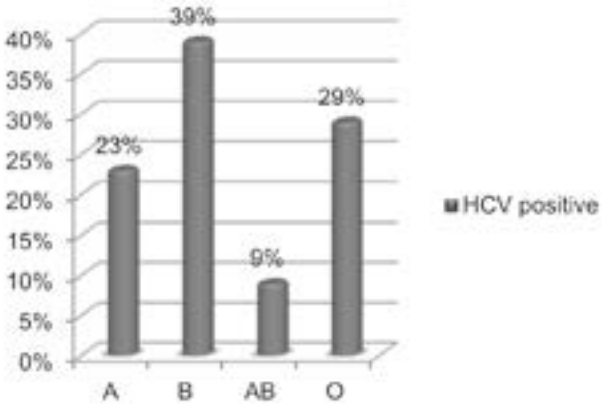

Figure-2. Prevalence of Anti-HCV Infected Donors in relation to the blood group

DISCUSSION

The purpose of this study was to assess the comprehensive prevalence of HCV infection in asymptomatic healthy Pakistani blood donors. We included 18,274 blood donors attending Jinnah Hospital Lahore. The results showed that 2.62% of the blood donors were Anti-HCV Reactive/positive in 18,274 individuals from 1st January to 30th December 2014 (Figure-1). In gender wise distribution male were more prevalent in HCV (Table-II). According to our study the younger age group (31-40year) of blood donors was more exposed to HCV as compared to other group. The reason behind this might be use of intervenes drugs, unhygienic shaving form community barbers shops (Table-III) according to marital status married population was with high rate of HCV positivity (Table-IV). It was also study the association between different blood groups and presence of HCV in donors. In our study the highest HCV positive cases were found in blood group B while least positive cases were observed in the blood group AB (Figure-2). Therefore it is concluded that there no non-significant relationship between blood groups and prevalence HCV were observed. The high HCV positivity rate among blood group B and O may be associated to the large size of these proportion sampled as the group B was the dominant blood group type encountered during the study.

In our study the rate of positivity for HCV were 2.62 % among the blood donors attending Jinnah Hospital Lahore. The rate of HCV positivity in the range of 0.4-31.9% was reported different in other studies conducted in various areas of Punjab province.[13-16-18] While in Lahore, the second largest city of Pakistan with a population of more than 7 million peoples[25], HCV prevalence was estimated from 0.58-17.78%.[15,18,24,26-29] Our study results are in agreement to all these study. Another similar works conducted in other province of Pakistan also to collect the data about the incident rate in their regions. According to these studies in Sindh, Quetta and KyperPakhtunkhwa (KPK) state reported the prevalence 4-6%, 1.5% and 1.1-9% respectively which were quite similar to our results.[15-22] The surprisingly in Northern areas of Pakistan the prevalence of HCV in blood donors were very high (25.7%) as compared to Punjab, Sindh, KPK and Baluchistan. The poor health conditions, lack of laboratory facilities, reuse of containmented blood syringes, use of un-sterilized surgical and dental instrument in these areas may b responsible for this highest rate.[18,22]

The transfusion-associated infections have been significantly decreased in the countries where routine serologic screening of blood donation has been implemented such as North European (0.01% - 0.02%) and in South European (1-1.5%) countries.[28]

HCV is higher among developing countries, because there are problems such as low quality in blood screening tests, unsafe medical practices, and intravenous drug abuse with shared needles. For example, higher HCV prevalence have been reported in India (1.5%), Malaysia (2.3%), Philippines (2.3%), Africa (6.5%), and Egypt (20%).[29,30] But in recent studies from Iran, Kashmir, India, turkey, Nigeria, Bangladesh, brazil) also reported very low rate of HCV positivity in asymptomatic blood donors community as compare to present study from Pakistan.[28,31-36] (Table-v).

In Pakistan prevention of transfusion-transmitted infections has been achieved by reducing unnecessary transfusions, using voluntary

donors, excluding donors with specific risk factors, and systematic screening of all donated blood for infection. Although these interventions in Pakistan are applied, the risk of HCV infections remains. By considering the vast population of the country, a prevalence of 2.62% leads to millions of positive patients, if we assume that negative donors were not viremic. Therefore, every blood transfusion carries a potential risk for transmission

The prevention and control of HCV infection, describing its geographic distribution, determining its risk factors, and evaluating co-factors that accelerate infection progression is somehow complicated. No vaccine exists to prevent HCV infection, and treatment for HCV infection is costly. Thus, the prevention of primary HCV infection is very important. Any strategy to prevent HCV infection must be based on accurate data, including information about its prevalence.

CONCLUSION

We conclude that HCV is asymptomatic infection and easily can lead to chronic state; therefore control of transmission especially by means of blood donors requires continuous monitoring and surveillance. Trend of HCV infection is decreasing in recent years, and these trends of HCV prevalence suggest that the safety measures implemented in recent years in Pakistan have been useful. In comparison with countries in geographic region, Pakistan has still high rate of HCV infection. The HCV epidemic in Pakistan continues due to lack of education and awareness of the disease. A multidisciplinary approach and the best strategies for management will be required to adopt suitable technical methods increase awareness in both lay and medical communities and produce more accurate diagnosis and effective treatment of HCV patients. The medical community needs to continue research aimed at improving understanding of predisposing factors and the clinical course of the disease. So that in future, innovative therapy can be directed to high-risk populations

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"Only those who will risk going too far can possibly find out how far one can go."

Unknown

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Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
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2	Dr. Shagufta Iram	Manuscript writing, Result unterpretation	
3	Shahida Hussain	Statistical analysis	
4	Dr. Rabeea Mobeen	Data collection	
5	Maqsood Ahmad	Data collection, Lab work	
6	Dr. Maleeha Ashraf	Review manuscript	