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SEROPREVALENCE OF HEPATITIS C;
AMONG HEALTHY BLOOD DONORS IN BLOOD BANKS OF KHYBER PAKHTUNKHWA.

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ABSTRACT: Objectives: To find out seroprevalence of Hepatitis C among healthy blood donors in Khyber PakhtunKhwa. **Study Design:** Descriptive study. **Place and Duration of Study:** From 1st July 2008 to March,2009. The study was conducted by department of Community Medicine KMU Institute of Medical Sciences, Kohat. All healthy blood donors who reported for bleeding in blood banks of Khyber Pakhtunkhwa were screened for Hepatitis C antibodies. The study was conducted in seventeen (17) districts and three (3) teaching hospitals. The kits used were rapid immunochromatography kits. The kits were provided by safe blood transfusion project of Khyber Pakhtunkhwa. **Results:** A total of 61170 healthy blood donors were screened during a period of 9 months. Out of which 1341 (2.19%)were positive for hepatitis antibody. **Conclusions:** Hepatitis C virus infection has become a major health problem in Khyber Pakhtunkhwa. Blood is one of the main source of infection. Strict monitoring of blood is necessary before transfusion. To limit and prevent the spread of Hepatitis C, public awareness by print, social and electronic media is the need of time. Resource allocation is necessary for amelioration of the weak infrastructure and ill-equipped blood banks and training of the staff.

Key words: Hepatitis C, Healthy blood donors, Blood banks

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INTRODUCTION

Hepatitis C virus (HCV) is an important causative agent of parenteral Non-A,Non-B hepatitis. Choo and coworkers at Chiron corporation discovered HCV group as a new viral agent of non-A and non-B hepatitis virus in 1989[1].

HCV is a member of Flaviviradae family. HCV is envelope virus and is approximately 50 nm in size. The HCV genome is single-stranded RNA molecule of 9500 kilodaltons[2]. HCV is being increasingly recognized as a significant public health problem around the world as well as in Pakistan. The global epidemiology of viral hepatitis A and B is well established, although HCV data remain limited, particularly in Pakistan.

Despite the availability of sophisticated laboratory apparatus for screening of the blood, blood products remains the main mode of transmission of HCV infection as unscreened blood and blood products are still used in many developing countries. As a result, HCV is the most common transfusion transmitted infection.

Blood has been used since 1930 for various indications[3].

After the introduction of blood banks and better storage techniques it becomes widely used in patients. In Pakistan more than 1.5 million pints of blood are collected each year[4,5].

Among them about 65% is from replacement donors, 25% from volunteer donors and about 10 % from professional donors[4,6].

The majority of acutely infected patients is asymptomatic and have clinically mild course. HCV is a major cause of chronic liver disease and

hepatocellular carcinoma(HCC)[7].

World Health Organization (WHO) estimates that about 200 million people, 3 % of world population are infected with HCV. 3-4 million people are newly infected each year. Globally 170 million are at risk of liver cirrhosis or liver cancer[8].

The ideal sample for any sero-prevalence study is a sample from general population; however, this may not always be feasible. Therefore, prevalence among healthy blood donors is often used[9].

In Pakistan, the parenteral route is the most common mode of transmission of Hepatitis C[10]. This study was conducted to find out the seroprevalence of Hepatitis C in apparently healthy blood donors, which will provide insight into the overall prevalence of Hepatitis C in the general population.

Epidemiological studies conducted in the past have provided data regarding the prevalence of Hepatitis C in different parts of the World. Many studies have been conducted in Pakistan, but they are single centre studies. Such studies are necessary for ongoing preventive strategies. This large study was conducted to determine the prevalence of HCV in healthy blood donors of Khyber Pakhtunkhwa.

SUBJECTS AND METHOD

Subjects consisted of apparently healthy blood donors who reported to the blood banks for bleeding between 1st July 2008 to March 2009. Blood samples were screened for HCV using rapid immuno-chromatographic kits.

61170 healthy blood donors were screened for anti HCV. This study was carried out at 17 blood banks and 3 teaching hospitals of Khyber Pakhtunkhwa. (Hayatabad Medical Complex (HMC), Khyber Teaching Hospital (KTH) and Lady Reading Hospital (LRH), Peshawar.

RESULTS

Over the 9 months period under study, a total of 61170 samples were screened, out of which HCV positives were 2.19 %. Total data was collected from 17 different districts of Khyber Pakhtunkhwa, FATA and three Teaching Hospitals; (Hayatabad medical complex (HMC), Khyber Teaching Hospital (KTH) and Lady Reading hospital(LRH), Peshawar).

The districts included were DHQ Hospital Dera Ismail Khan, Bannu, Dagar, Buner, Kohat, Karak, Batkhela, Mansehra, Timergara, Lakki Marwat, Nowshehra, Mardan, Chitral, Battagram.

The other hospital from which the data was collected King Abdullah Teaching Mansehra, Ayub Teaching Hospital, Saidu group of teaching hospital and agency Headquarter Hospital, Parachinar.

Results from various districts are given in Table-I.

DISCUSSION

Epidemiological studies about the blood borne diseases such as hepatitis C are more important to reveal the risk factors and risk groups. Evaluation of prevalence among blood donors is common and easy method to obtain the epidemiology of such type of infection i.e. Hepatitis C in a community[11,12].

There are some differences between normal population and blood donors, however; this approach is very common for screening studies. Such types of screening studies give insight into the problems and help us in solving difficulties in collecting information among healthy population[12].

Seroprevalance of HCV in blood donor is different in various countries. It ranges 6 % in Africa, 1.5 % in Japan, 0.6 % in USA,0.24% in Finland and 0.17% in UK[13,14,15,16,17,18].

An extremely low prevalence has been reported from UK and Scandinavia (0.04 - 0.09%), a low prevalence (0.15 - 0.5 %) from Western Europe, Israel, a moderate prevalence (0.6 - 1 %) i.e., 0.42% in Germany, 0.68% in France, 0.87% in Italy, in some area of Southern Europe, a high

Hospital Name	Subjects Screened	HCV Positive %age
DHQ, Hospital, Chitral	1183	0.76%
DHQ,Hospital, Mansehra	994	8.45%
DHQ,Hospital, Karak	297	4.00%
DHQ,Hospital, Lakki Marwat	8	0%
DHQ,Hospital, Bannu	135	2.22%
DHQ,Hospital, D.I Khan	1405	0.98%
DHQ,Hospital, Kohat	393	0%
DHQ,Hospital, Mardan	1209	2.56%
DHQ,Hospital, Timergarah	574	0%
DHQ,Hospital, Batkhela	687	0.29%
DHQ,Hospital, Haripur	145	0.69%
DHQ,Hospital, Battagram	43	5.28%
KTH, Peshawar	13870	1.20%
LRH, Peshawar	29479	2.83%
HMC, Peshawar	3981	1.78%
King Abdullah Teaching Hospital	798	10.76%
Ayub Teaching Hospital, Abbotabad	5571	0.63%
DHQ hospital, Daggar,Buner	110	2.98%
DHQ hospital, Parachinar	190	2.13%
DHQ hospital, Nowshehra	98	6.0%

Table-I. District wise results

prevalence (1.6 to 3.5%) in the middle east, Turkey, Japan and Extremely high prevalence in Egypt (14%)[18,19,20,21]. In Iran it is 0.59%[22].

A slightly high prevalence (0.2 - 1 %) has been reported in other European countries, Australia and North America. An intermediate (1.1-5 %) prevalence has been reported in South America, Eastern Europe, Medetaranian countries[23].

In South East Asian countries, prevalence in Japan is 1.21 % and in Singapore 0.37%. The prevalence of HCV in blood donors of India varies from 1-1.5 %. It has been reported as 6 % for all blood bag collected in Bangladesh[24,25,26,27,28].

Exact Sero-prevalence of Hepatitis C virus could not be established for Pakistan like developed European countries due to lack of representative study at national level. The cumulative prevalence ranges from 0.13-6%, the average prevalence is estimated to be 4.1%[29]. Pakistan remains in the intermediate HCV prevalence area[30]. Prevalence of Hepatitis C among blood donor reported in literature during the last 10 years is given in table-II.

The Sero-prevalence observed in our study was 2.19%. Various national studies published in the last 10 years were compared with this study. The mean prevalence for HCV of these studies was 2.98 %.

Author and place of Study	Year	Anti-HCV
Bangash M H et al, Agency Headquarter Hospital, Parachinar and Tehsil Headquarter Hospital, Parachinar[30]	2007	1.1%
Muhammad A et al, Khyber Medical College, Peshawar[31]	2007	1.8%
Farooqi J I et al, Govt Lady Reading Hospital Peshawar and Khyber Teaching Hospital Peshwar.[32]	2007	3.21%
Chaudhry I A et al, Fauji Foundation hospital, Rawalpindi.[23]	2007	2.52%
Ahmad J et al, Rehman medical institute, Peshawar[33]	2004	2.2%
Mehmood MA et al, Nishtar Medical college, Hospital, Multan [34]	2004	0.27%
Asif N et al, Shifa International Hospital, Islamabad [4]	2004	5.14%
Ali N et al, Combined Military Hospital, Quetta [13]	2003	5.14%
Fayyaz KM et al, Quaid e Azam Medical college, Rawalpindi [35]	2002	1.87%
Khattak MF et al, Armed Forces Institute of Transfusion Medicine, Rawalpindi[36]	2002	4.0%
Ahmad S et al, Services Hospital and Sir Ganga Ram Hospital, Lahore [37]	2002	4.97%
Mumtaz S et al, Isamic Int Medical College, Rawalpindi [38]	2002	6.21%
Rehman M et al, Institute of Hematology and blood transfusion Services, Lahore [39]	2002	4.1%
Alam M et al, Combined Military Hospital, Sialkot [40]	2001	3.26%
Ahmad M U et al Abbasi Shaheed Hospital, Karachi [41]	2001	6.8%
Ryas M Military Hospital [42]	2001	4.7%
Mujeeb et al, Blood Transfusion Service, Jinnah Postgraduate Medical Centre, Karachi (College Going Students) [43]	2000	2.4%
Lone D.S et al, Allama Iqbal Medical College, Lahore [44]	1999	4.30%
Mujeeb et al, Blood Transfusion Service, Jinnah Postgraduate Medical Centre, Karachi (Family Blood Donors)[45]	1996	0.5%
Bhatti et al, Armed Forces Institute of Transfusion Medicine, Rawalpindi[46]	1996	4.2%
Mujeeb et al, Jinnah Postgraduate Medical Center, Karachi (Family blood doners)[45]	1995	2.40%

Table-II. National studies with HCV percentage for comparison

The sero-prevalence reported in various selected studies is 2.2% from Peshawar[33] 5.14 % from Islamabad[4], 4 % to 6.2 % from Rawalpindi[2,3,25,26,38,42,46], 2.89 % to 4.97 % from Lahore[37,39,44], 3.26% from Sialkot[40]. 0.27% from Multan[34], 6.8% from Karachi and 1.87% from Quetta[13]. So it was noted in these various study that HCV sero-prevalence ranges from 0.27% to 6.80%, among healthy blood donors from various parts of the country.

The highest sero-prevalence has been reported from Karachi[41] and Rawalpindi[38].

The sero-prevalence in our study was 2.19% which is almost the same as compared to study done by Ahmad J et al[33].

In Pakistan, blood transfusion is still a major source of HCV transmission. Possible reason for this includes lack of resources, weak

infrastructure, ill-equipped resources, poorly trained staff, inadequate policy implementation, frequent power breakdown and ineffective screening of blood donors for anti HCV antibody.

CONCLUSIONS

It is concluded that Hepatitis C virus infection has become a major public health problem in Khyber Pakhtunkhwa, like rest of the country and blood is one of the main source of transmission. Therefore, screening of blood donors and selection of blood donors is necessary. The epidemic of HCV still continues due to lack of education, and unawareness of the disease, shortage of medically qualified, scientifically trained health workers and lack of health infrastructure. To limit and prevent the spread of Hepatitis C, public awareness by print, social and electronic media is the need of time. Resource allocation is necessary for amelioration of the weak infrastructure and ill-equipped blood banks and training of the staff.

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