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PREVALANCE OF HBV & HCV INFECTION IN FAISALABAD

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ABSTRACT

Introduction: *Blood-borne pathogens like hepatitis B virus (HBV) and hepatitis C virus (HCV) are considered major but preventable public health problems in the developing world. Routes of transmission include unsafe injections, blood, sex and transmission from infected mothers to their babies and many other unusual routes like through barbers, dentists and beauty parlors. In Pakistan, national efforts have been made to reduce potential transmission of HBV and HCV, e.g. HBV vaccination programmes, public health education programmes on safe sex, blood and injection practices and legislation to standardise and ensure safety in blood banks. A common element of these programmes and initiatives is a baseline situation analysis using routine surveillance data, or data from surveys or studies, typically followed by a repeat analysis to determine if any change has occurred as a result of an intervention. Given the paucity of surveillance data in Pakistan, high risk areas are an excellent sites for sentinel surveillance of blood-borne pathogens to determine trends in prevalence and disease distribution defined on social, demographical, geographical, and biological variables.* ***Material:*** *We therefore conducted a baseline analysis of residents in Faisalabad city which is a high risk area as part of a pilot phase to develop a sentinel surveillance system for HBV and HCV infections. Similar analysis are expected to follow data in subsequent years to allow comparisons based on time, place and person to determine trends and evaluate interventions. A total of 193 blood samples were collected from Faisalabad. Blood samples safely reached Laboratory and were tested for HBV and HCV by ELISA technique.* ***Results*** *showed that 4.5% blood samples were reactive for HBV and 22% blood samples were reactive for HCV. In HBV reactive cases co-infection is 22% and in HCV reactive cases co-infection is 4.6%.*

INTRODUCTION

Hepatitis B virus (HBV) and Hepatitis C virus (HCV) infections account for a substantial proportion of liver diseases worldwide, because the two viruses share similar modes of transmission, co-infection with the two viruses is not uncommon.[1]

Hepatitis B is a liver disease caused by hepatitis B virus. The liver becomes swollen and tender and may develop permanent damage, such as scarring or liver cancer. Symptoms like jaundice, light-coloured stool, unexplained fatigue that persists for weeks or months. Gastrointestinal symptoms such as fever, loss of appetite, nausea and vomiting may occur.[2]

Hepatitis C is a disease caused by hepatitis C virus that infects the liver. Many people do not know that they have hepatitis C until they already have some liver damage. This can take many years. Some people who get hepatitis C have it for a short time and then get better. This is called acute hepatitis C. But most people who are infected with the virus go on to develop long-term, or chronic, hepatitis C.[3]

Acute hepatitis C infection is clinically silent for most infected people, with only 15% to 20% of individuals develop symptoms. Symptoms may be low-grade fever, fatigue, loss appetite, abdominal pain, nausea, and vomiting. Chronic hepatitis C infection is also often asymptomatic, and both acute and chronic hepatitis C infections may go undiagnosed. Although the incidence of HBV infection has been markedly reduced after mass vaccination programs, HCV infection remains a worldwide public health concern.[4]

Both HBV and HCV are blood-borne viruses but have distinct routes of transmission. Most commonly, HBV is acquired by vertical transmission from an HBsAg(+) mother or via horizontal transmission in childhood. However, HCV is primarily transmitted parenterally in adulthood by intravenous drug use, blood transfusion, or medically related parenteral exposures, but rarely through the placenta, breast-feeding, or sexual contact.[5,6]

There are three standard blood tests for hepatitis B. HBsAg (surface antigen test) is part of the hepatitis B virus that is found in the blood of some-

one who is infected. HBsAb or anti-HBs (surface antibody test) is produced in response to the hepatitis B virus or vaccine.[7,8]

Hepatitis C diagnosis depends on demonstration of anti-HCV detected by an EIA. Anti-HCV is generally not detectable in patients with initial signs or symptoms of hepatitis C. Anti-HCV develop in acute infection generally between 2 and 8 weeks after evidence of liver injury. Hepatitis C viremia may be detected by RT-PCR within days after infection.[9]

The ideal public health approach to disease prevention and control is to use routine population based surveillance data to monitor the magnitude and distribution of disease, identify high-risk subgroups, guide national strategic plans for prevention and control and evaluate intervention efforts. However, establishing a broad surveillance system requires an ongoing commitment to and allocation of significant financial, logistical and technical resources, which may be difficult for developing countries.[10]

Small studies are useful in the absence of sound epidemiological data as a basis for planning, monitoring and evaluation. Comparisons of such studies by person, place and time are difficult as study designs are not standardised and often lack scientific rigor. While population-based surveillance may not always be feasible, sentinel surveillance of selected subgroups can serve as a cost-effective and viable alternative.

Sentinel surveillance is based on selected population samples chosen to represent the relevant experience of particular groups. In Pakistan, both HBV and HCV pose major risks as blood-borne pathogens. Widespread practices such as unsafe injections, improper disposal of hazardous waste, recycling of used syringes without proper sterilization, sharing of needles by injecting drug users and unsafe sex are believed to facilitate the transmission of these infections, resulting in high prevalence rates in the country. Given the paucity of surveillance data in Pakistan, high risk areas are an excellent sites for sentinel surveillance of blood-borne pathogens to determine trends in prevalence and disease distribution defined on social, demographical, geographical, and biological variables. We therefore conducted a baseline analysis of residents in Faisalabad city which is a high risk area as part of a pilot phase to develop a sentinel surveillance system for HBV and HCV infections. Similar analyses are expected to follow in subsequent years to allow comparisons based on time, place and person to determine trends and evaluate interventions.

MATERIAL AND METHODS

Study Type: It was a descriptive cross sectional study.

Study Universe: Mohalla Nishatabad at Lahore to Faisalabad Road. District Faisalabad.

Study Population: A population of 2000 living in U.C 105 Mohalla Nishatabad.

Sample Size: 193 blood samples were obtained from male subjects who live in Mohalla Nishatabad.

Method of Data Collection: Before taking the sample of blood, informed consent was taken explaining in detail the procedure and brief summary of hepatitis as a disease. A combined questionnaire for hepatitis B and C was designed. The questionnaire had close ended questions having answers in YES or NO. Convenient sampling method was adopted for selection of subjects. One hundred ninety three blood samples were obtained from male subjects who were living in U.C 105 Mohalla Nishatabad. All the blood samples were tested for HBV and HCV by ELISA.

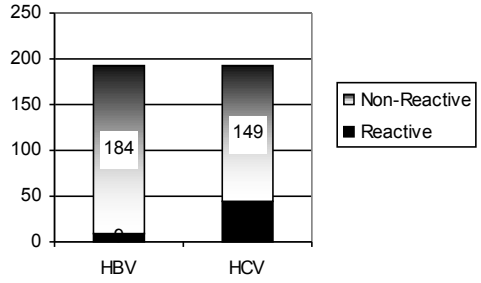

Fig. 1: *Seropositivity in 193 cases.*

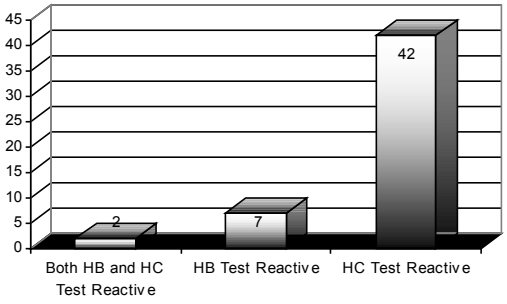

Fig. 2: *Breakup of 9 cases.*

Table 1: *Results of tests for HBV and HCV.*

	Reactive	Non-Reactive
HBV Test	9 (4.6%)	184 (95.3%)
HCV Test	44 (23%)	149 (77%)

RESULT

Among the 193 blood samples 9 blood samples were reactive for HBV and 44 blood samples were reactive for HCV. Accordingly Table-1 shows 4.5% blood samples were reactive for HBV and 22% blood samples were reactive for HCV. Figure-2 shows two blood samples were reactive for both HBV and HCV. The remaining 7 blood samples were only reactive for HBV and 42 blood samples were reactive for HCV.

In HBV cases co-infection was 22% and in HCV it was 4.6% (Table 2). Table 3 shows risk factor in HBV and HCV as follows. History of tooth extraction 56% and 50%. History of blood transfusion 56% and 68%. History of visit to barber shop 56% and 77%. History of tooth sharing of syringes 33% and 18%. History of extraction multiple injection receiving 22% and 32%. History of accident 00% and 27%. History of extraction needle pricks 56% and 77%. Family History of hepatitis 22% and 50%.

Table 2: *Coinfection HBC and HCV cases.*

	Co-infection case (n=2)
HBV Reactive cases (n=9)	22%
HCV Reactive cases (n = 44)	4.6%

Table 3: *Clinical risk factors for HBV and HCV.*

Sr#	**Risk Factors**	**H B Test Reactive Individuals (n= 9)**	**H C Test Reactive Individuals (n= 44)**
1.	H/O tooth extraction	5 (56%)	22 (50%)
2.	H/O blood transfusion	5 (56%)	30 (68%)
3.	H/O visit to barber shop	5 (56%)	34 (77%)
4.	H/O sharing of syringes	3 (33%)	8 (18%)
5.	H/O multiple injection receiving	2 (22%)	14 (32%)
6.	H/O accident	0 (00%)	12 (27%)
7.	H/O needle pricks	5 (56%)	34 (77%)
8.	Family H/O hepatitis	2 (22%)	38 (86%)

H/O means History of

DISCUSSION

Blood-borne pathogens like hepatitis B virus (HBV) and hepatitis C virus (HCV) are considered major but preventable public health problems in the developing world. In Pakistan, national efforts have been made to reduce potential transmission of HBV and HCV e.g. HBV vaccination programmes, public health education programmes on safe sex, blood and injection practices and legislation to standardise and ensure safety in blood banks.[11]

Present study revealed 4.5% blood samples were reactive for HBV and 22% blood samples were reactive for HCV. It is estimated that 15–20% of the world's population, infected with hepatitis B and 3% with hepatitis C virus.[12,13] A study conducted by Ali et al in Aligarh region of Uttar Pradesh India to see prevalence of HCV and HBV infection in liver disorder showed that 36.5% were positive for HBV, which is the most prevalent viral infection associated with liver disorders in this region. A low prevalence of HCV infection 4% was seen in Aligarh and its surrounding region. Prevalence levels 2.5% have been reported from South India. On the contrary, a very high prevalence 37.5% of HCV has been reported from Delhi.[14] Another study conducted in Rangoon Myamar by Pyone et al revealed that in healthy individual 2.5% were positive for anti-HCV where as in patient with various liver diseases 25% patient seem to be positive for Hepatitis C Virus marker coming to hospital.[15]

The study showed in HBV cases co-infection is 22% and in HCV cases co-infection is 4.6%. Approximately 10 percent of people with HCV are thought to be co-infected with hepatitis B. In patients with chronic hepatitis B, estimates of the rates of HCV co-infection vary from 9% to 30%. Patients with two or three types of hepatitis infection tend to exhibit a more severe progression to liver disease than alone.[16]

Risk factors for HBV and HCV shows more or less same in both except sharing of syringes 33% in HBV infection and 18% in HCV infection. History of needle prick 56% in HBV infection and 77% in HCV infection. Family history of hepatitis 22% in HBV infection and 86% in HCV infection.

Highest risk factors seen in the study were visit to barber shop and history of needle prick for both HB and HC viral infection. Secondly history of blood transfusion followed by history of tooth extraction. A study conducted by Ali et al in Aligarh region of Uttar Pradesh India, the commonest risk factors for transmission of HBV and HCV infection was found to be needle prick injuries followed by tooth extraction and blood transfusion.[14] Family history of hepatitis was only 22% in HBV reactive cases as compare to 86% in HCV reactive cases. In HBV reactive cases no history of accident as compare to 27% HCV reactive cases give history of accident. In HBV reactive cases 33% individuals give History of sharing syringes and in HCV reactive cases only 18% individuals give history in the present study.

We recommend that an access to sterile syringes and injection equipment is vital to hepatitis C prevention. Research on the efficacy of bleach and identification of optimal disinfection practices for injection drug equipment is necessary as well. Policies that create barriers to risk reduction must be changed. Awareness compaigns to be launched for various community factions responsible for transmission of such deadly diseases.

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