

## Prevalence of hepatitis B in Kpk Province Pakistan

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### ABSTRACT

Pakistan carries one of the world's highest burdens of chronic hepatitis and mortality due to liver failure and hepatocellular carcinoma. In Pakistan about 10-12 million of the people are suffering from hepatitis. WHO estimates that there are about 300 million of carriers of HBV all over the world. This study is conducted in the Khyber Teaching Hospital Peshawar. A total of 3,977 patients, belonging to different localities were screened for HBSAg by using ELISA (enzyme linked immunosorbent assay) and ICT (immuno chromatographic technique). Out of 3,977 cases, 81(2.03%) were positive for HBV. Co-infection was found only in 6 patients. The common risk factors associated with HBV was found such that history of dental treatment was 70%, treatment from unqualified doctor 49%, history of blood transfusion 43%, history of minor/major surgery 40%, HBV positive patients in family 35%, shaving from street barbers 32%, diabetes 16%, tattooing 11%, HCV co- infection 7.41%, sharing of drug injecting equipments 1.2%, HIV and T.B co- infection was 0%.

## **INTRODUCTION**

Hepatitis (plural hepatitises) is the injury or inflammation of the liver, which is characterized by the presence of inflammatory cells in the tissue of the liver. This name is from ancient Greek heper or hepato, meaning liver and suffix –itis, meaning Inflammation. A group of viruses known as the hepatitis viruses causes most of the damages worldwide. Hepatitis A, B, C, E, G and delta factor are viruses that causing hepatitis. Hepatitis may be caused by alcohol, drug, autoimmune diseases and metabolic disorder ( Gilchrist, 1999). Jaundice (yellowish color of skin and mucous membrane) was described by Hippocrates. Infectious nature was suggested in the 8<sup>th</sup> century. In 1885, it was found that hepatitis is transmittable through blood transfusion and syringes. Mac Donald in 1908 postulates that the infectious jaundice is cause by virus. In world war, between 1939–1945, a series of outbreaks occurs. Further, it was discovered that the virus is blood-borne. In 1947, Mac callum classified viral hepatitis into two types i-e viral hepatitis or infectious hepatitis and viral hepatitis B or serum hepatitis. In 1965, Barunch Blumberg, working at the national health institute (NIH), discovered the hepatitis B surface antigen (HBsAg). In 1968, Prince and Okochi isolated the hepatitis B surface antigen in hepatitis B patient. Dane in 1970 discovered Dane particle (complete HBV particle). In 1972, Magnius discover HBeAg. HAV was identified by Feinstone and Purcell in 1973. In 1977, Rizzetto described Delta antigen HDV. In 1981, first vaccine for HBV was produced. In 1983, Balayan discovered HEV. In 1955–1956, epidemics of water borne hepatitis occurred in Delhi, India. HCV was cloned and identified by Chiron group (choo, kue, Houghton) in 1988. In 1994, hepatitis F was reported to be a variant of HBV in Japan. In 1995, Abbott group reported GB virus-C (GBV–C) and Gene labs group in 1996 reported hepatitis G virus (HGV) ----GBV–C=HGV (Danem and Prince, 2004).

### **Route of transmission**

Oro– fecal...A and E

Blood-borne....B, C, D, G

There are six main types of hepatitis virus that have been identified, which are as follow.Hetatistatus A,B,C,D,E,F,.

## **MATERIALS AND METHODS**

### **Patients Collection**

The data collection was started from October to November (2008). A total of 1, 33,193 patients visited the Khyber Teaching Hospital Peshawar, from different localities, for different diseases or problems in these two months. Out of 1, 33,193 patients, 3,977 were prescribed by the doctors to HBV screening before any treatment. Out of 3,977 patients, 1624 were screened in the month of October and 2353 were screened in the month of November in the laboratory of the Khyber Teaching Hospital Peshawar.

### **Sample Collection**

The blood sample was collected by the laboratory technician by using disposable syringes. Then they put the whole blood into the collection tube (containing anti-coagulant such as heparin, EDTA and sodium citrate). Then they centrifuge the blood to get plasma specimen.

## **LABORATORY DIAGNOSIS**

The data was collected on the basis of the results of the following test Performed by the laboratory technicians:

### **ICT (Imuno Chromatography Technique):**

It is an in-vitro immunochromatographic, one assay designed for qualitative determination of HBsAg in human serum or plasma. This test cassette contains a membrane strip, which is pre-coated with mouse monoclonal anti-HBs capture antibody on test band region. The mouse monoclonal anti-HBs-colloid gold conjugate and serum sample moves along the membrane chromatographically to the test region (T) and forms a visible line as the antibody – antigen –antibody gold particle complex form. This test cassette has a letter of T and C as Test Line and control line on the surface of the cassette. Both the Test Line and Control Line in result window are not visible before applying any samples. The Control Line is used for procedural control. Control line should always appear if the test procedure is performed properly and the reagents of control line are working. This test can identify HBsAg in plasma or serum specimens with a high degree of sensitivity.

### **ELISA (Enzyme Linked Immuno Sorbent Assay) Test:**

The Hostage test is based on a direct sandwich assay comprising micro wells coated with a monoclonal antibody (mab, mouse) against HBsAg.

Test sample reacts simultaneously with the immobilized mab and with a polyclonal anti-HBsAg antibody (guinea pig) conjugated with horseradish peroxidase. If HBsAg is present in the sample, the peroxides –containing complex is captured on the micro wells surface. After incubation unbound enzyme conjugate is removed by washing. Substrate solution is added and during further incubation a blue color develops. The intensity of this color, which to yellow after stopping the reaction with acidic solution, is proportional to the amount of HBsAg in the specimen. Reading less than cut-off value is considered negative for HBsAg. A reading equal to or greater than the

cut-off value is considered reactive for HBsAg tests. Specimens yielding repeatedly reactive readings by this assay are considered positive for the presence of HBsAg. These specimens must be confirmed by a confirmatory test.

## RESULTS

This study was conducted to estimate the prevalence of hepatitis B virus infection in the general population of NWFP, attending the Khyber Teaching Hospital, Peshawar. The data collection is based on medically made Proforma, filled from the patients itself or from their relatives after the HBV positive test result and note a detail disease history including the major causes or route of hepatitis B infection, its symptoms, age, sex and locality. Results were concluded from the laboratory test recommended by doctors before any treatment. The data was collected in the months of October and November. A total of 1, 33,193 patients visited the Khyber Teaching Hospital, Peshawar, from different localities such as Peshawar, Mardan, Charsadda, Nowshera, Malakand, Swat, Dir, Bajawar, Chitral, Parachinar, Hango, Kohat, D.I.Khan, Karak, Bannu, Khyber Agency, Waziristan, Miranshah etc, attended different OPDs, for different diseases or problems. Some of them were being hospitalized. About 3,977 patients were referred by the doctors for the screening of HBsAg and anti-HCV before any treatment, out of which 81(2.03%) of the patients were positive for HBsAg. Six of the patients were co-infected with HCV. In the co-infected patients, six females and two males were included.

Months	Total patients	Positive HBsAg	%age
October	1624	32	1.970%
November	2353	49	2.08%
Total	3,977	81	2.03%

**Table 1: Distribution of Hepatitis B in selected patients at KTH.**

The overall prevalence of HBsAg in general population of NWFP, referred to KTH, is 2.03%. The prevalence of hepatitis B virus infection in both male and female sex in the months of October and November is summarized in Table 1:

It can be noted from the table that out of 1624 patients in the month of October, 32 were HBsAg positive in which males were 1% (19/1624) while females were 0.8% (13/1624). In the month of November, out of 2353 patients, 49 were HBsAg positive in which males were 1.40% (33/2353) while females were 0.68 % (16/2353). Overall, average prevalence of HBsAg in males were 1.3% while in females 0.73%. The age group selected was 1-90 years both for males and females. Most of the cases were positive in adults, especially young people having age between 21-40 years.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

Results of the study show that HBV infection are increasing day by day and are the major health problem all over the world and in our country Pakistan. The incidence of viral hepatitis is increasing every year due several reasons.

1. Transfusion of unscreened blood and blood products
2. Use of contaminated syringes or reuse of needles
3. Lack of awareness about hepatitis
4. Lack of health education
5. Lack of hygienic measure

There are extensive need to give attention to the high risk groups such as babies born to infected mothers, donors for blood and organ transplant, patients of haemophilia, Thalassaemia and Haemodialysis etc.

### **Recommendations**

1. People should be immunized. A massive vaccination programme should be started for this purpose in which vaccine is given free of cost.
2. Cost of blood screening and medicine should be made low so that poor people can get the treatment easily.
3. Injection use should be limited and instead of injection, powdered or liquid form of medications should be introduced.
4. Safety measures should be adopted while living in the environment or family that have high load of HBV infection.
5. Sharing of syringes, razors, needles, tooth brush, dental treatment equipments and even sharing of towel, comb, nail cutter, should d be avoided to prevent transmission of hepatitis through these factors.
6. All the health care workers, doctors and technicians should be guided properly about safety measures and should observed strict sterilization standard for surgery tools.
7. Government should arrange seminars, workshops and public gathering for the awareness of people.
8. In the centers of blood screening, there must be trained Pathologists for diagnostic tests and standard protocols should be followed for blood screening.
9. All disposable medical equipments such as syringes, needles, plastic bottles and drips should be cut to make non-usable at the point of use.
10. Discarded blood is highly infectious, before disposal it must be disinfected.

11. When hepatitis is once detected, the treatment should be started as soon as possible.

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