

# HEPATITIS B SCREENING IN PATIENTS ADMITTED FOR SURGERY AT A TERTIARY CARE HOSPITAL OF ABBOTTABAD, PAKISTAN

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## ABSTRACT

**Introduction:** Screening for Hepatitis B is not a routine in most hospitals of Pakistan, and precautions are taken only when a known case is being treated, whereas studies indicate HBV infection is at high frequency in patients admitted for elective surgery. The present study was conducted to determine the frequency of Hepatitis B infection in patients admitted for surgery at a tertiary care hospital of Khyber Pakhtunkhwa province of Pakistan.

**Methods:** The cross-sectional study carried out at all the surgical and allied wards of Ayub Teaching Hospital Abbottabad, from December 2015 to August 2016, enrolled 115 pre-surgical patients by convenience sampling. Data were collected through questionnaires and analyzed using SPSS 16 for descriptive statistics.

**Results:** Among 115 patients, 06(5.2%) were positive for HBV while 109(94.8%) were HBsAg negative. There were 64(55.65%) males and 51(44.35%) females; 26(22.6%) patients were from ENT ward, Gynae A 3(2.6%), Gynae B 5(4.3%), Gynae C 14(12.2%), Orthopedic A15 (13.0%), Orthopedic B 6(5.2%), Surgical A 8(7.0%), Surgical B 7(6.1%), Surgical C 8(7.0%) and Urology 23(20.0%). Out of 6, four Hepatitis positive patients were having past surgical history. Only one of them was having past history of blood transfusion. 16(13.9%) patient had a family history of Hepatitis and 95(82.6%) patients have no history. 29 patients were vaccinated, 50 patients were not vaccinated and 36 patients did not know their immunization status. The frequency of HBV was 5.2%.

**Conclusion:** Males are more prone to HBV infections as compared to females. Infection rate is also high among people who had previous surgeries in the past.

**Keywords:** HBsAg, Surgery, viral Hepatitis, HBV.

The authors declared no conflict of interest. All authors contributed substantially to the planning of research, data collection, data analysis, and write-up of the article, and agreed to be accountable for all aspects of the work.

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## INTRODUCTION

Hepatitis B is an infectious disease caused by Hepatitis B virus (HBV) which affects the liver; it can cause both acute and chronic infections. Some develop a rapid onset of sickness with vomiting, tiredness, yellow skin, dark urine, and abdominal pain. Most of those with chronic disease have no symptoms but cirrhosis and liver cancer eventually develop.<sup>1</sup> Globally, 30% of cirrhosis and 53% hepatocellular carcinoma was attributable to HBV.<sup>2</sup> More than 780,000 people die every year due to complications of Hepatitis B, including cirrhosis

and liver cancer.<sup>3</sup> The virus may be detected within 30 to 60 days after infection and can persist and develop into chronic Hepatitis B. The incubation period of Hepatitis B virus is 75 days on average, but can vary from 30 to 180 days. The virus may be detected within 30 to 60 days after infection and can persist and develop into chronic Hepatitis B.<sup>4</sup>

Diagnostic tests, called assays, for detection of Hepatitis B virus infection are serum or blood tests that detect either viral antigens (proteins produced by the virus) or antibodies produced

by the host.<sup>5</sup> IgM antibodies specific to the Hepatitis B core antigen (anti-HBcIgM) may be the only serological evidence of disease. Therefore, most Hepatitis B diagnostic panels contain HBsAg and total anti-HBc (both IgM and IgG).<sup>6</sup> PCR tests have been developed to detect and measure the amount of HBV DNA, called the viral load, in clinical specimens. These tests are used to assess a person's infection status and to monitor treatment.<sup>7</sup> For prevention, vaccines of Hepatitis B have been routinely recommended for infants or as catch-up vaccination in adolescence.<sup>8</sup> In 10- to 22-year follow-up studies there were no cases of Hepatitis B among those with a normal immune system who were vaccinated.<sup>9</sup> There is no specific treatment for acute Hepatitis B although treatment can slow the progression of cirrhosis, reduce incidence of liver cancer, and improve long term survival.<sup>10,11</sup>

Many studies indicate high number of HBV infected patients admitted in surgical wards for elective surgery.<sup>12</sup> Screening for Hepatitis B is routinely not done in majority of hospitals in Pakistan. It is usually done in patients with a history of jaundice or for some liver diseases. Precautions against Hepatitis B are taken only when a known positive case is being treated or operated. Unfortunately, majority of the patients do not present with jaundice and the carriers usually do not display the symptoms.<sup>1</sup> Surgical procedures in the ward or in the operation theater are the important modes of transmission of Hepatitis B virus. Contaminated needles, surgical equipment, surgical disposables, blood transfusion and self-pricks during procedures can be the cause of transmission of virus from patient to patient and even to the doctors and para-medical staff and nurses.<sup>4</sup> A large number of population in Pakistan consist of asymptomatic carriers.<sup>13</sup> Under this situation we in Pakistan cannot afford to operate on patients without Hepatitis screening; this makes it mandatory to conduct such research to find frequency of

patients having HBV in surgical wards to eliminate future complications.

This study was conducted to know the frequency of Hepatitis “B” in patients admitted for surgery at a tertiary care hospital.

## **MATERIALS & METHODS**

It was an observational cross-sectional study, which was carried out in different surgical wards of Ayub Teaching Hospital, Abbottabad, Khyber Pakhtunkhwa, Pakistan, from December 2015 to August 2016. Sample was selected using non-probability convenience sampling and included all those patients undergoing elective surgery regardless of age, gender and nature of operations. All patients included in study were screened for Hepatitis “B” surface antigen (HBsAg) by using ICT (Immunochromatography) technique for screening of Hepatitis “B” surface antigen in laboratory of same hospital. An informed consent was taken from the patient or his/her next of kin including biodata and several other independent and dependent variables of interest. Those having HBsAg positive were considered Hepatitis B positive patients. The questionnaires were filled from the wards by the students. Data were analyzed in SPSS version 16 for descriptive statistics.

## **RESULTS**

The sample size was 115, of which 64(55.7%) subjects were males and 51(44.3%) were females. The mean age of subjects was  $32.55 \pm 20.47$  years.

Most patients, 72(62.6%) were from rural areas, and unmarried, 55(47.8%); 58(50.4%) were Housewives by occupation, followed by Self-employed, 27(23.5%); a majority, 55(47.8%) were Illiterate. Most patients were from ENT ward, 26(22.6%), followed by Surgery and Urology (23, 20% each), Gynecology, 22(19.1%), and Orthopedics, 21(18.3%).

Relevant demographic data are shown in Table I.

**Table 1: Demographic data of subjects (n=115).**

#	Demographic Variables	Frequency (f)	Percentage (%)
1.	<b>Gender</b>		
	Male	64	55.7
	Female	51	44.3
2.	<b>Residence</b>		
	Rural	72	62.6
	Urban	43	37.4
3.	<b>Marital Status</b>		
	Single	55	47.8
	Married	54	47.0
	Separated	02	01.7
	Widow / Widower	04	03.5
4.	<b>Occupation</b>		
	Government Employee	03	02.6
	Private Employee	12	10.4
	Self Employed	27	23.5
	Housewife	58	50.4
	Others	15	13.0
5.	<b>Education status</b>		
	Illiterate	55	47.8
	Primary	15	13.0
	Middle	15	13.0
	Secondary	21	18.3
	Higher Secondary	06	05.2
	Graduate	02	01.7
	Postgraduate	01	0.90
6.	<b>Ward Distribution</b>		
	ENT	26	22.6
	Gynecology	22	19.1
	Orthopedic	21	18.3
	Surgery	23	20.0
	Urology	23	20.0

Among the sample of 115 patients, 06(5.2%) were Hepatitis positive while 109(94.8%) were negative.

Out of these 6 Hepatitis B positive patients, 05(83.3%) were male, and 01(16.7%) was female.

Four of these six (66.7%) Hepatitis B positive patients gave a history of previous surgery, 01(16.7%) had a history of previous blood transfusion, while 01(16.7%) had no history of any surgery or blood transfusion in the past.

When the participants were asked the question of Hepatitis B presence in their family, 16(13.9%) responded Yes, 04(3.5%) responded that they

Did Not Know, while 95(82.6%) gave no family history of Hepatitis.

Considering vaccination status, 29(25.2%) patients were vaccinated, whereas 50(43.5%) patients were not vaccinated against HBV, while 36(31.3%) did not have any idea about their vaccination against Hepatitis B. Among 06 Hepatitis B positive patients, 04(66.7%) were from that group who were not vaccinated while 2(33.3%) were from that group who did not know about their vaccination status.

Relevant data about Hepatitis B characteristics in patients is given in table 2.

**Table 2: Data of patients regarding Hepatitis B.**

#	Hepatitis B Variables	Frequency (f)	Percentage (%)
1.	<b>Hepatitis B status (n=115)</b>		
	Positive	06	05.2
	Negative	109	94.8
2.	<b>Gender of HB+ patients (n=6)</b>		
	Male	05	83.3
	Female	01	16.7
3.	<b>Previous history of HB+ patients (n=6)</b>		
	Previous surgery	04	66.7
	Blood transfusion	01	16.6
	No history	01	16.6
4.	<b>Family history of Hepatitis B (n=115)</b>		
	Positive	16	13.9
	Negative	95	82.6
	Don't know	04	03.5
5.	<b>Hepatitis B vaccination status (n=115)</b>		
	Done	29	25.2
	Not done	50	43.5
	No idea	36	31.3
6.	<b>Hepatitis B vaccination status of HB+ patients (n=6)</b>		
	Done	-	-
	Not done	04	66.7
	Don't know	02	33.3

## DISCUSSION

Pakistan is highly endemic with HBV, with nine million people infected with HBV, and its infection rate is on a steady rise.<sup>14-16</sup> The reason may be the lack of proper health facilities, poor economic status and less public awareness about the transmission of major communicable diseases including HBV.<sup>17</sup> The prevalence of Hepatitis B is over 10% in the Asia-pacific region and two thirds of the 350 million people in the world who are chronically infected with Hepatitis B infection live in this region while in Pakistan this number is estimated around 7 million with a 5% reporting rate.<sup>18-20</sup> A few studies from Pakistan done on surgical patients showed a mean HBV prevalence of  $7.397 \pm 2.012\%$  in patients undergoing surgery.<sup>21-23</sup>

The current study shows that Hepatitis B positivity was found in 5.2% patients of Surgical and related wards of a tertiary care hospital of Abbottabad, Khyber Pakhtunkhwa, Pakistan. This

slightly decreased frequency might be because total sample size was relatively small with low statistical power. Moreover, people of the area where the research was conducted were well educated about the transmission of HBV infection; the tests used for screening of blood were not 100% accurate for HBV antigens; standard test like PCR were not performed, and so positive cases could have been missed from the study.

In the present study it was found that 4 out of 6 HBV positive cases had previous history of surgical procedures which suggests surgical procedures were performed through instruments or procedures that were not completely sterile. It also suggests that Doctors and healthcare professionals are at higher risk of acquiring Hepatitis B infection. Health professionals are exposed to this danger while handling the patients, during treatment and investigations procedures in wards, during

surgery, renal dialysis, and so on. In operation theaters, accidental cuts and pricks to the surgeons or their assistants and spillage of blood drops in the eyes are the commonest modes of transmission. It was also found that HBV infected males more than females, which is more likely due to the work and jobs of males, shaving by barbers who use unsterile instruments and their direct contact to outside environment of community as compared to females who work inside their houses and are not prone to be infected much likely. This finding is matching with certain other studies in which males are infected more than females.<sup>24,25</sup>

It was found that 25.2% of the subjects of the present study were vaccinated, 43.5% were not vaccinated, and 31.3% did not know about vaccinations; thus almost 74.8% are at risk of getting Hepatitis B. Also, the data showed that 9 patients had a positive family history yet were not vaccinated.

## LIMITATIONS

The current study had some limitations; the tests used for screening of blood were not 100% accurate. A standard test like PCR should have been performed but is not routinely available in developing countries like Pakistan and so some

cases may have been missed from the study. The sample size was relatively small and it was a single time point testing. Questionnaires were filled in the wards and it is likely that some degree of wrong information was given regarding demographic and Hepatitis B data, including vaccination status.

## CONCLUSION

Hepatitis B antigen positivity in preoperative patients from surgical wards of a tertiary care hospital of Khyber Pakhtunkhwa, Pakistan was noticeably high and a matter of concern, particularly for males, and those having had past surgeries.

## RECOMMENDATIONS

Screening of patients admitted for elective surgery should be performed routinely prior to surgery, especially for high risk patients.

Hospital staff in general, and Operation Theaters staff particularly, must ensure that adequate sterility is maintained for surgical equipment and procedures in the peri-surgical period.

Segregation of treatment facilities should be practiced for patients who test positive for Hepatitis B antigen prior to surgery.

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