

# SCREENING FOR HEPATITIS B & C: A ROUTINE PREOPERATIVE INVESTIGATION?

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## ABSTRACT

**Objective:** To find out the seroprevalence of HBsAg and Anti-HCV and to evaluate associated risk factors in patients admitted for elective surgery in a tertiary care public hospital of Karachi.

**Design:** Descriptive serological analysis.

**Setting:** Surgical Unit IV, Civil Hospital, Karachi.

**Patients and Methods:** All patients admitted for elective surgery from February 1, 2004 to September 30, 2004 were included. HBsAg and Anti HCV screening was done in all patients with Enzyme Linked Immunosorbent Assay (ELISA) during the preoperative period. The information was collected by a specially designed proforma that included current and previously known hepatitis profile, risk factors and history of vaccination apart from demographic data.

**Main Outcome Measures:** Seroprevalence of HBsAg and anti HCV, different risk factors.

**Results:** A total of 387 patients were admitted for elective surgical procedure during the study period. It included 221 (57.1%) males and 166 (42.9%) females. After screening HBsAg was positive in 25 (6.5%) of patients, anti HCV in 44 (11.3%) of patients while 6 (1.5%) were positive for both HBsAg and anti HCV. A vast majority of patients gave history of frequent use of intravenous and intramuscular medication i.e. 24 (96%) in HBsAg positive and 42 (95.5%) for anti HCV positive patients, followed by blood transfusion where HBV seropositivity was found in 21 (84.0%) while HCV seropositivity was in 38 (86.3%). History of previous surgical procedures was present in 15 (60%) of HBsAg positive and 28 (63.6%) of Anti HCV positive patients. History of jaundice was present in 12 (48.0%) in HBV seropositive and 22 (50%) in HCV seropositive patients. Three patients were previously known seropositive for hepatitis B and two for hepatitis C. None of patients had vaccination against hepatitis B.

**Conclusion:** The prevalence of HBsAg and anti-HCV in hospitalized surgical patients is very high. There is lack of routine serological screening in our hospitals prior to surgery. A protocol should be developed and implemented whereby screening for Hepatitis B and C should be a routine pre operative investigation. The major risk factors include re-use of contaminated syringes, contaminated surgical instruments and blood products.

**KEY WORDS:** HBsAg, anti-HCV, seroprevalence, surgical patients.

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## INTRODUCTION

Hepatitis B and C virus (HBV & HCV) are known cause of infectivity leading to significant morbidity and mortality world wide especially in the developing countries like Pakistan<sup>1</sup>. The hepatitis B virus (HBV) was first isolated in 1963.<sup>2</sup> It has infected over two billion individuals world wide. More than 520,000 die each year from HBV related acute and chronic liver disease.<sup>3</sup> The hepatitis B surface antigen (HBsAg), a serological marker for HBV was first demonstrated by Blumberg in 1963,<sup>4</sup> while hepatitis C was first cloned in 1989.<sup>5,6</sup> Nearly

500 million people are estimated to be infected with hepatitis C world wide.<sup>7</sup> Presence of anti HCV and HBsAg indicates that patient may harbour acute hepatitis leading to serious complication of fulminant hepatitis and chronic hepatitis with symptomatic or asymptomatic carrier state which may progress to serious consequences like cirrhosis and hepatocellular carcinoma.<sup>8-10</sup>

Hepatitis B & C is commonly transmitted by percutaneous exposure to contaminated blood and as little as 0.01ml can transmit infection making them a big culprit.<sup>11</sup>

The objective of this study was to evaluate the magnitude of this disease in the hospitalized surgical patients. Screening with HBsAg and anti HCV was done in all admitted patients prior to elective surgery to find the seroprevalence of both hepatitis B and C so that special precautions should be taken to check its transmission.

## PATIENTS AND METHODS

This study was conducted in Department of Surgery, Unit IV, CHK which is a tertiary care public hospital providing services not only to Karachites but to a large number of patients from interior of Sindh and coastal Balochistan. All patients admitted for elective surgery from February 1, 2004 to September 30, 2004 were included.

During the preoperative period all patients were screened with Enzyme Linked Immunosorbent Assay (ELISA) for HBsAg and anti HCV from Civil Hospital Lab 2000 located

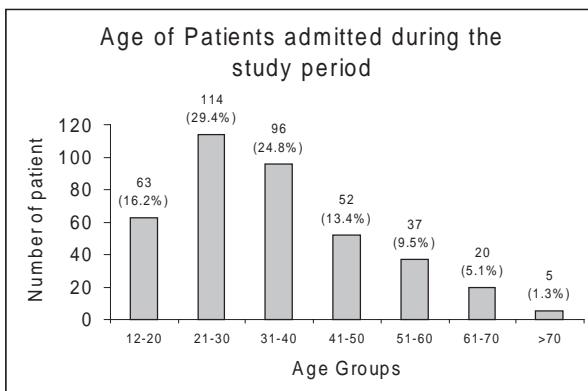


Figure-I: Ages of the admitted patients

in the premises. ELISA has a sensitivity of 97%. The instrument used for screening was ELx800 Universal Microplate Reader BIO-TEK (USA). Kit used for hepatitis B screening was Monolisa HBsAg Plus which is a one-step enzyme immunoassay for the detection of the surface antigen of the Hepatitis B virus (HBsAg) in human serum or plasma, upto 480 tests can be performed from a single kit. Hepatitis C screening was done with Diasorian S. A kit which can detect anti HCV 192 times per kit. All the information was recorded on a specially designed proforma, which included current, and previously known hepatitis profile, risk factors and history of vaccination apart from demographic data.

## RESULTS

A total of 387 patients were admitted for elective surgical procedures which included 221 (57.1%) males and 166 (42.9%) females. Ages of all patients are shown in Figure-I. Out of 387 screened patients, HBsAg was positive in 25 (6.5%) of patients, Anti HCV was present in 44 (11.3%) of patients while 6 (1.5%) were positive for both HbsAg and Anti HCV. Among 25 HBsAg positive patients 14 (56%) were females and 11 (44%) were males (Table-I). Almost all of these seropositive patients had more than two risk factors. Risk factors of all patients are shown in Table-II. None of the patients had vaccination against hepatitis B.

## DISCUSSION

Pakistan is highly endemic for hepatitis B and hepatitis C.<sup>12</sup> Many studies were conducted in

Table-I: Seroprevalence of HBsAg and Anti HCV (n=387)

Seroprevalence	Male Number (%)	Female Number (%)	Total Number (%)
HBsAg +ve	11 (44%)	14 (56%)	25 (6.5%)
Anti HCV +ve	23 (52.2%)	21 (47.7%)	44 (11.4%)
HBsAg & Anti HCV +ve	02 (33.3%)	04 (66.7%)	06 (1.5%)
HBsAg & Anti HCV -ve	185 (59.2%)	127 (40.7%)	312 (80.6%)

Table-II: Risk Factors of the patients (n=387)

<b>Risk Factors</b>	<b>HBsAg +ve</b>	<b>Anti HCV +ve</b>	<b>HBsAg &amp; Anti HCV +ve</b>	<b>HBsAg &amp; Anti HCV -ve</b>
Blood transfusion	21 (84%)	38 (86.3%)	03 (50%)	76 (24.3%)
Previous surgeries	15 (60%)	28 (63.6%)	03 (50%)	52 (16.6%)
Frequent I/M, I/V drugs	24 (96%)	42 (95.4%)	06 (100%)	259 (83.0%)
Dental procedures	11 (44%)	24 (54.5%)	0 (0%)	34 (10.9%)
H/o Jaundice	12 (48%)	22 (50%)	04 (66%)	22 (7.0%)
Tattooing	09 (36%)	14 (31.8%)	01 (16.6%)	11 (3.5%)
Piercing of ear and nose	13 (52%)	22 (50%)	02 (33.3%)	141 (45.0%)
Regular barber visits	14 (56%)	25 (56.8%)	02 (33.3%)	85 (27.2%)

Pakistan during the past decade and guidelines for the prevention and control of hepatitis were formulated. Even then the graph of hepatitis B and C positive patients is going up in our population. The overall incidence in general Pakistani population ranges between 4-25%<sup>13,14</sup> which is alarming. In our study the prevalence of HBsAg and Anti HCV in surgical patients was 6.45% and 11.3% while 1.6% were positive for both HBsAg and Anti HCV. In a study by Bhopal FG et al<sup>15</sup> out of 300 surgical patients 18.66% were positive for HBV and 6.33% for HCV. Results from another study<sup>16</sup> showed 16.24% for HBsAg and 8.66% for HCV antibody positive patients respectively. Both of these are higher as compared to our study. A study by Haroon Khan et al<sup>17</sup> which enrolled 695 patients reported 4.5% patients were Anti HCV positive which are comparable to our findings.

In an epidemiological study of 34,336 patients from Japan the prevalence of HBV seropositivity was found 1.8% while HCV seropositivity was 7.1%<sup>18</sup>. In another study from the same country prevalence for Anti HCV was higher 16.9%.<sup>19</sup> A study from Turkey<sup>20</sup> reported the prevalence of HBsAg 6.6% which is again comparable to our findings but anti-HCV in that study was 2.4% as compared to 11.3% in our study which is significantly higher.

A more recent study of 142 patients screened before surgery showed that 11.26% were positive for HCV while 2.11% were HBsAg positive.<sup>21</sup> This also compares well with our findings of 11.3 % of patients found to be HCV positive.

Contaminated needles and equipments can transmit infection even after months being soiled by virus<sup>22</sup>. Infectivity of HBV is eight times greater than HIV<sup>2</sup>. An average risk of HCV transmission after needle stick injury is estimated to be about 1.8%.<sup>23</sup> In our study history of frequent use of I/V and I/M drugs was present in 96% patients positive for HBsAg while 95.4% patients reactive to Anti HCV. In a study from USA parenteral drug use was reported to be the major risk factor in majority of HCV positive cases.<sup>24</sup>

Hepatitis B and C virus infection is transmitted mainly by blood products. Different studies published on Pakistani blood donors have shown prevalence of HBsAg & Anti HCV ranging from 3.4-14%.<sup>25-28</sup> In our study history of blood transfusion was present in 84% of HBV seropositive and 50% HCV seropositive patients which is quite high than 0.01-0.02% reported from UK and Northern Europe.<sup>29</sup>

Surgeons, theatre staff, nurses and other health-care workers are at greater risk of acquiring these infections.<sup>30</sup> Rehman K et al<sup>25</sup> and Pirzado et al.<sup>31</sup> has reported HBsAg was positive in 5-9% health care personnel.

Previous surgical history was also prevalent in 60% HBsAg positive and 63.3% of AntiHCV reactive patients in our study. History of dental procedure in our study was present in 11 (44%) and 22 (54.5%) of hepatitis B and C seropositive patients which are comparable to a study from Istanbul<sup>20</sup> where it was a major risk factor. Jaundice which is considered as a reliable

sign for hepatitis was present in 48% of HBsAg positive and 50% in Anti HCV positive patients.

## RECOMMENDATIONS

On the basis of our findings we recommend that:

1. Greater emphasis should be laid on public health education particularly creating awareness about the risk factors of hepatitis B and hepatitis C, its prevention and control to minimize its transmission.
2. All patients should be routinely screened for Hepatitis B (HBsAg) and Hepatitis C (Anti HCV) prior to any invasive procedure.
3. All the surgeons, theatre nurses and health care staff should be vaccinated and their antibody status should be checked on regular basis.
4. Healthcare professionals doing invasive procedures in general and dental surgeons in particular should be advised to use sterilize instruments and equipments to eliminate the chances of transmitting these infections.
5. Surgeons should take standard precautions and use barrier techniques while operating upon infected patients.
6. Only screened blood products should be transfused.
7. Disposable syringes should be disposed properly eliminating the chance of their re-use.
8. Vaccination against hepatitis B has now been included in EPI. However, all adolescents and adults should also be vaccinated.
9. The government initiative to formulate the national action plan for hepatitis is laudable but it needs to be further strengthens by using the mass media.

## CONCLUSION

There is significant seroprevalence of hepatitis B and C in surgical patients. Risk factors include re-use of contaminated syringes, contaminated surgical instruments and blood products. Lack of proper precautions while managing infected patients and lack of vacci-

nation among surgeons and health care workers leads to transmission of infection from patients to them and vice versa. A protocol should be prepared regarding strict screening and all patients should be routinely screened for hepatitis B (HBsAg) and hepatitis C (Anti HCV) prior to any invasive procedure.

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