



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3818169>Available online at: <http://www.iajps.com>

Research Article

**FREQUENCY OF HEPATITIS B SURFACE ANTIGEN
SEROCONVERSION IN PATIENTS PLANNED FOR
CARDIAC SURGERY****Aniqua Tahir, Saba Noor, Hira Javed**
Shaikh Zayed Hospital, Lahore**Article Received:** March 2020**Accepted:** April 2020**Published:** May 2020**Abstract:****Objective:** To control the incidence of hepatitis B virus surface antigen (HBs-Ag) in patients with heart disease.**Place and Duration:** In the Cardiac Surgery department of Shaikh Zayed Hospital Lahore for one year duration from March 2019 to March 2020.**Material and Method:** One hundred more patients were admitted to cardiac surgery at the Lahore Punjab Cardiology Institute. All patients with negative HBs-Ag pre-surgery were selected. They were named 04-06 months after surgery to reassess HBs-Ag status.**Results:** Three out of 100 patients (3%) obtained a positive HBs-Ag test after 04–06 months of heart surgery.**Conclusion:** Heart surgery is a safe procedure as a risk of HBs-Ag seroconversion; HBs-Ag seroconversion was present in 3% of patients. More stringent diagnostic and preventive measures are needed to further reduce the spread of hepatitis B infection.**Keywords:** hepatitis B infection, HBs-Ag seroconversion, heart surgery**Corresponding author:****Aniqua Tahir,**
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Please cite this article in press Aniqua Tahir et al, *Frequency Of Hepatitis B Surface Antigen Seroconversion In Patients Planned For Cardiac Surgery ., Indo Am. J. P. Sci, 2020; 07(05).*

INTRODUCTION:

Two billion people around the world are diseased with the hepatitis B virus, and around 600,000 persons expire each year from the significances of hepatitis B infection and are chronic due to 400 million HBV infection. Pakistan is quite endemic for HBV infection; About 9M persons are diseased with hepatitis B virus, and infection rates are steadily rising¹. The reason for this may be the lack of adequate sanitation, poor economic situation and lack of public awareness of the transmission of serious infectious diseases such as HBV, HCV and HIV². Hepatitis B Virus is a life-threatening liver infection caused by the HBV, it can cause chronic liver disease and expose people to demise due to cirrhosis³. The incubation period for hepatitis B Virus is from 4 to 20 weeks. Though virus-related DNA is perceived in the tear and urine of chronic carriers, saliva, the virus is spread by exposure to infectious body fluids such as blood or vaginal fluids and semen⁴⁻⁵. In furthest cases, these transmissions result from non-compliance with optional infection control practices designed to prevent cross-contamination of medicinal devices. There are numerous blood tests to analyze and monitor patients with hepatitis B Virus⁶. They can be used to differentiate between chronic and acute infections. Laboratory diagnosis of HBV infection focuses on the detection of HBV surface antigen (HBs-Ag)⁷.

Cardiac surgery is a delicate and sometimes life-saving procedure, and many patients undergoing heart surgery require a blood transfusion. Any carelessness can make the patient susceptible to one or more blood infections⁸. Hepatitis B infection is an infection that can be obtained if an adequate blood test is not performed⁹. The purpose of this study was to detect HBs-Ag seroconversion at the Punjab Lahore Institute of Cardiology using an enzyme immune-absorption test (ELISA) technique in these patients to confirm quality control four to six months after heart surgery. blood detection and sterilization of operating room equipment.

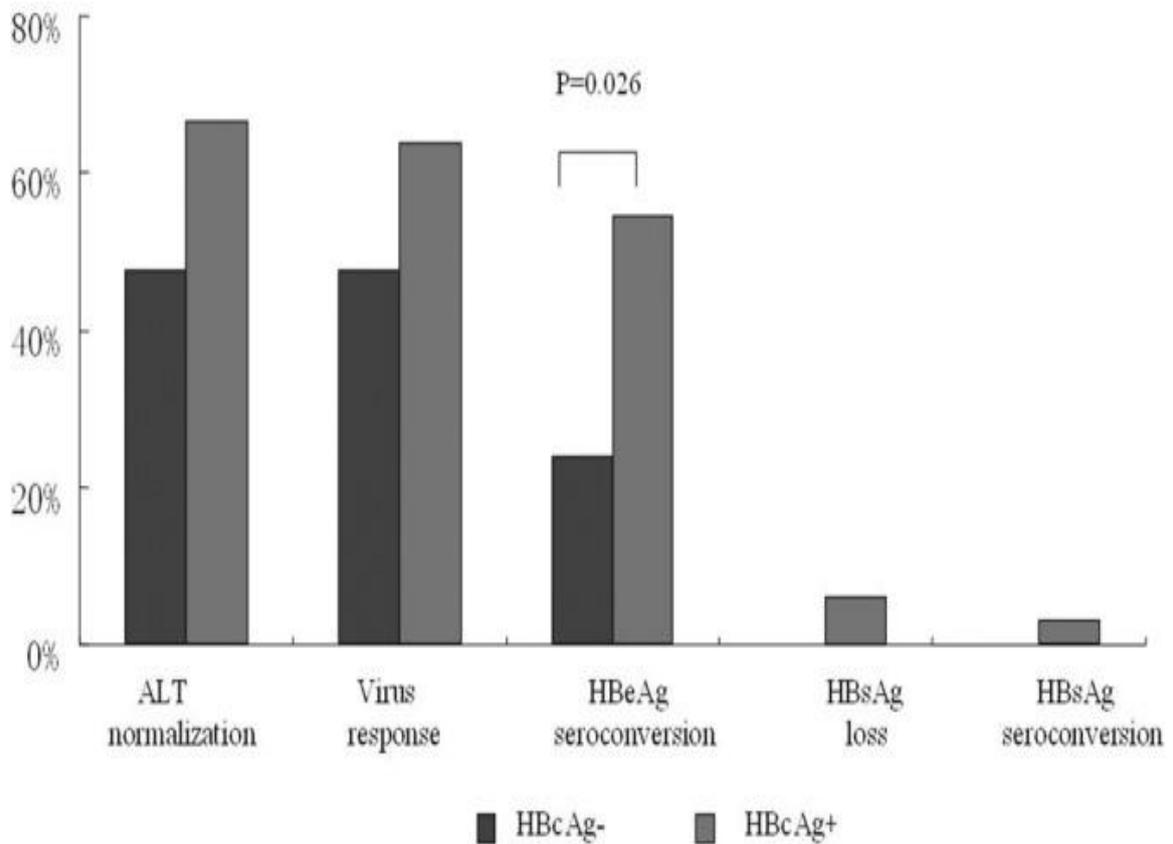
MATERIAL AND METHODS:

This observational study involved 100 consecutive patients who had undergone heart surgery from March 2019 to March 2020 in the Cardiac surgery department of Shaikh Zayed Hospital Lahore. The study included male and female patients of all ages who had all types of cardiac surgery requiring cardiac bypass. The study excluded patients with HBV infection (laboratory or interview data), earrings, tattoo traces, major / minor surgery, or evidence of any blood transfusion. Intravenous drug users and patients who have received hepatitis B vaccine are also excluded.

Data was collected using a questionnaire containing demographic information and information on disease risk factors. Serum samples were taken just before going to the operating room for heart surgery in patients in the preoperative room. Medical history was reviewed from all patients and clinical information was obtained. Patients with missing data were excluded from the study. The serum was tested for HBs-Ag in the laboratory of the Institute of Cardiology in Punjab (ISO certified laboratory). All patients were invited to take control samples after 4-6 months. Post-operative questions were again asked about body puncture or any blood transfusion and were excluded if they requested one of them. HBs-Ag serum was confirmed by ELISA (third generation) according to the manufacturer's instructions.

ELISA

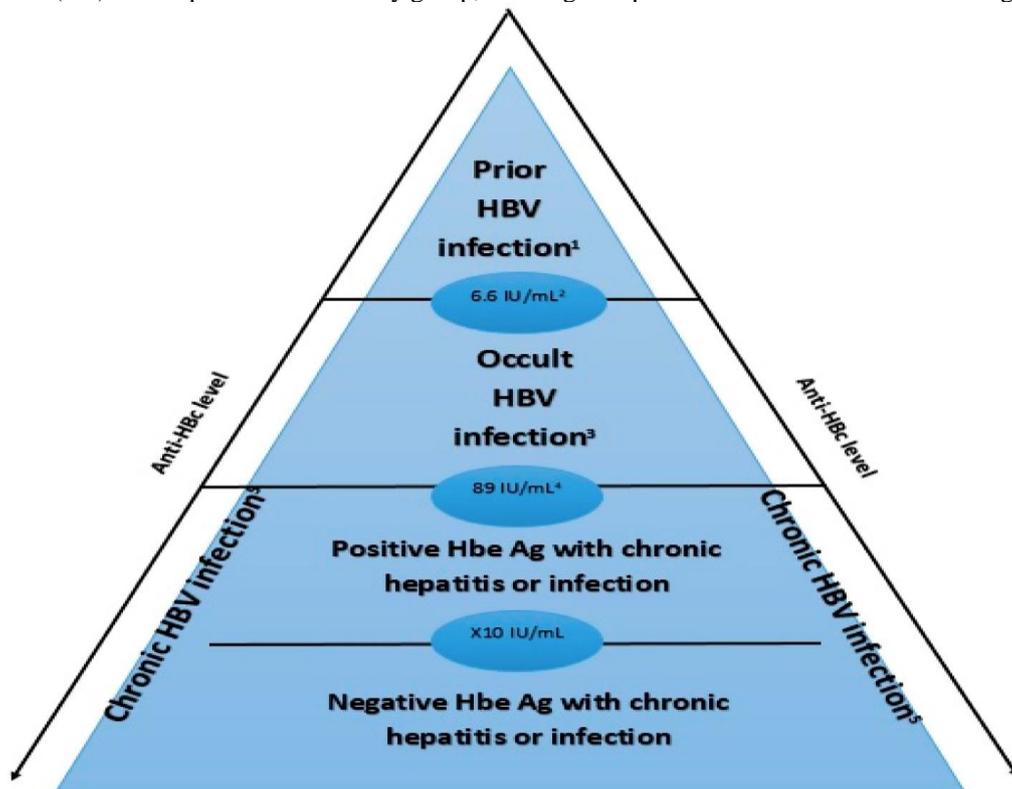
This is a double antibody "sandwiched" immunoassay; anti-HBs-Ag polyclonal antibodies with anti-HBs-Ag monoclonal antibody immobilized at the bottommost of microtiter wells and horseradish peroxidase as conjugate solution. During the experiment, HBs-Ag present in the sample reacts with these antibodies to form the HBs-Ag-antibody-HRP "antibody" immunocomplex. After washing the unbound material during the test procedure, the substrate is functional to designate the result. The blue color in the microtiter wells shows the re-active HBs-Ag result. No color indicates unreactive outcomes in the sample.



STATISTICAL ANALYSIS:

Statistics were evaluated by SPSS version 16.0. All qualitative variables are presented as frequency and percentage.

Results: In 3 (3%) of 100 patients in the study group, HBs-Ag was positive 4-6 months after heart surgery.



DISCUSSION:

Hepatitis B virus infection is an important community health problematic and reason of death associated with infectious diseases globally.¹⁰ About 2B persons, 1/3 of the world's populace, have serological evidence of previous or current Hepatitis B Virus infection, and 350M persons have chronic infections. This study was conducted to assess the incidence of Hepatitis B Virus in patients after heart surgery at the Punjab Lahore Cardiology Institute. After heart surgery, 3% of patients had a positive HBs-Ag test after 4 to 6 months of follow-up¹¹⁻¹². Possible important factors for HBV transmission during heart surgery include poor sterilization quality, disinfection procedures, and less ideal blood detection methods provided to patients during heart surgery. In the study with inflammatory bowel disease (IBD), the risk of passing on HBV infection was not significant when these patients required surgery for IBD complications. A study was conducted at the Shaikh Zayed Hospital Lahore to assess the risk of endoscopic upper gastrointestinal tract surgery to transfer hepatitis B and C infection, and 2% seroconversion was reported. HBs Ag; One of these two patients underwent non-selective blood transfusion after endoscopy¹³. A study conducted in the United States about 20 years ago showed that infection control practices did not meet the required standards when performing gastrointestinal endoscopy¹⁴. Various studies of operated patients have shown that the incidence of HBV was 7.397% ± 2.012%.

Possible risk issues for operating patients contain the reuse of dirty syringes, dirty surgical instruments and blood products. In the Nawabshah study, Sindh reported a lack of information and a poor approach to detecting HBV and HCV infection¹⁵⁻¹⁶. A possible source of infection during cardiac surgery may be an HBV-positive surgeon, heart lung machine, blood transfusion, and steel stitches closing the sternum. Healthcare workers in Pakistan have not been routinely tested for blood-borne viruses. Patients need blood transfusions during heart surgery¹⁷. Routine screening at blood banks in Pakistan is based on the ICT kit method, but the ICT kit method is definitely not a reliable screening method because it sometimes gives false positive and false negative results¹⁸. Our study showed a 3% HBV infection in patients after heart surgery¹⁹. Every effort should be made to minimize the risk of transmission of such infections as much as possible²⁰. In order to reduce the occurrence of HBV infections, the method of detection in blood banks is based on the new ELISA technology, it is periodically tested to improve the sterilization processes of surgical instruments and operating theaters as well as HBV infections of healthcare professionals.

CONCLUSION:

Heart surgery is a safe risk procedure as far as risk of HBs-Ag seroconversion is concerned; HBs-Ag seroconversion was present in 3% of patients. More stringent diagnostic and preventive measures are needed to further reduce the spread of hepatitis B infection.

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