

## **HEPATITIS B VIRUS: EVALUATION OF INFECTION RISK AND SEROLOGICAL RESPONSE TO VACCINE IN HOSPITAL CLEANERS OF THE BOTUCATU SCHOOL OF MEDICINE**

**THESIS.** C. Osti submitted this dissertation for her Masters in Tropical Diseases at Botucatu School of Medicine, São Paulo State University, UNESP, Botucatu, São Paulo, Brazil, 2004.

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**ABSTRACT:** Hepatitis B virus (HBV) infection is a major worldwide health problem. It is estimated that 300 million people are chronic carriers and 2 million deaths occur annually. The Hepatitis B virus is transmitted by both parental and sexual routes. Infection risk, which is 5% in the general population, can be 15%–20% in health care workers, since they are in frequent contact with blood. Today, Hepatitis B is considered one of the major occupational infections in hospitals. The most effective measure against infection is active immunization of susceptible individuals with available vaccines that are highly efficient and safe. Seroconversion occurs at an inverse proportion to the immunized person's age, reaching up to 90% in young adults. The objectives of this study were: 1. to evaluate natural HBV infection prior to vaccination determined by anti-HBc antibodies and its relation to general epidemiological conditions of personal and professional life as well as risk of HBV infection; 2. to determine anti-HBs antibody levels and their relation to general epidemiological conditions of personal and professional life as well as exposure to risk of HBV infection. We studied 113 health care workers; 98 females between 21 and 60 years old, and 15 males between 21 and 53 years old. They were submitted to a complete vaccination program between 1998 and the first semester of 2001. Blood samples were obtained from September 2001. The presence of anti-HBc showing infection prior to vaccination was found in 9 workers (8 were women). There

was no association between anti-HBc and the following: age, gender, duration of professional exposure (years), work accidents, number of sexual partners, unsafe sexual contact, blood transfusion, and tattoos. There was an association between not using condoms and infection, since the 9 workers with anti-HBs reported unprotected sexual intercourse. In relation to vaccination response, we found a highly significant association between females and anti-HBs antibody production  $\geq 100$  mUI/me. We also found an association between higher titers and non-smoking. Lower anti-HBs levels were significantly associated with the presence of more than one sexual partner. There was no association between anti-HBs levels and gender, age, schooling, presence and number of work accidents, condom use, and obesity. Hospital cleaners normally exposed to hazardous biological materials were studied. The value of the study was soon clear: the discovery of a HBV-carrier who will receive outpatient follow-up for diagnosis of chronic hepatitis; those who were not protected by vaccine will all receive booster doses on revaccination. The results of this study are in agreement with other HBV-infection studies. The lack of association between anti-HBc and real risk factors of infection is certainly explained by the small number of workers (9) naturally infected by HBV prior to vaccination.

**KEY WORDS:** Hepatitis B virus, health care workers.

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