



The Brazilian Journal of INFECTIOUS DISEASES

www.elsevier.com/locate/bjid



Letter to the Editor

Screening for hepatitis B virus in Maracanã workers



Dear Editor,

Hepatitis B, an important viral infection occupational hazard for health care workers, is transmitted through contact with infected blood. As part of the campaign “Ball begins with B and Champion with C” with the objective of analyzing the presence of viral hepatitis in the stadiums that were going to be part of the 2014 Soccer World Cup, we conducted a screening for hepatitis B virus (HBV) infection in workers of the reconstruction of the Maracanã Stadium. Public health officials are concerned that migrant workers may serve as a “bridge” transmitting infectious disease to the general population in both the sending and receiving countries.¹ With continental dimensions, Brazil is divided into five regions with different HBV epidemiology. Construction workers are the main ‘floating’ migratory population in Brazil.

There is little published data on the construction workers as a study group, because they are not considered “permanent employees”. There are some determinants related to the increased risk of acquiring sexually transmitted diseases (STDs): family separation, lack of social support, substance use, limited condom use, multiple sexual partners, and visiting sex networks. The last ones are related to the co-infection with others STDs and the low knowledge of its transmission. According to the International Organization for Migration there are an estimated 214 million international migrant population worldwide. These numbers do not include all internal migrants, such as the estimated 16 million who move from rural to urban settings within their own countries.^{2,3}

From the 5500 workers involved in the stadium reconstruction, only 1200 provided informed consent for hepatitis B virus surface antigen (HBsAg) testing with the rapid detection kit (Biomerieux, L'Etoile, France) and answered the questionnaire of lifetime history. Sera from eight HBsAg positive workers were collected for hepatitis B virus e antigen (HBeAg) and antibody to hepatitis B virus e antigen (anti-HBe) markers (AxSYM commercial system – Abbott Laboratories, IL, USA). They were also tested for hepatitis C virus (HCV), hepatitis D virus (HDV) and human immunodeficiency virus (HIV).

The assays were conducted according with manufacturer's instructions. HBV DNA was extracted from sera using the High Pure Viral Nucleic Acid kit (Roche, Konzern-Hauptsitz, Switzerland) and the HBV pre-S/S region was amplified by semi-nested polymerase chain reaction (PCR) as described previously.⁴ Positive amplicons were visualized in 1% agarose gel electrophoresis, stained with ethidium bromide under ultra violet (UV) light. HBV nucleotide sequences were determined using BigDye Terminator kit (Applied Biosystems, CA, USA) with the same primers used for PCR amplification as well as specific internal HBV primers. Nucleotide sequences and a phylogenetic tree (for HBV genotyping) were generated by neighbor-joining analysis of genetic distances, using the Mega software package. HBV DNA was quantified by real time PCR (TaqMan technology), using a panel with reference sera containing given numbers of HBV DNA molecules, in the conditions described previously.⁵

In this study, a total of 1200 workers were tested for HBV and HCV in the stadium. Eight workers (0.6%) who tested positive for HBsAg were also tested for both HDV and HIV that turned out negative. Out of the eight HBsAg positive workers, seven (87.5%) were men with a mean age of 49.5 years. Six workers (75%) were HBV DNA and anti-HBe positive. Five workers (65.5%) were infected with genotype A1 and the average HBV viral load was 6645 UI/mL. The HBsAg positive workers were from: Rio de Janeiro (62.5%), Rio Grande do Sul (South of Brazil, 12.5%), Pernambuco (North of Brazil, 12.5%) and from Angola (Africa, 12.5%) corroborating the data of migration studies. Associations were observed between the prevalence of serological markers and the following variables: multiple sexual partners, injections while in the army, and dental procedures. None of the workers had any knowledge about viral hepatitis. In conclusion, HBV prevalence was low (0.66%) in the Maracanã Stadium reconstruction workers. To understand how labor migrants may differ from other vulnerable population and to better inform the development, implementation, and evaluation of targeted multilevel interventions, additional research is needed.

Financial support

This research was funded by Foundation for Research Support of Rio de Janeiro Carlos Chagas Filho (FAPERJ – n: 100.009/2013)

Conflicts of interest

The authors declare no conflicts of interest.

Acknowledgements

The authors would like thank Katharina Röltgen for the English revision and Dra. Kycia Rodrigues do Ó for the invitation to participate in this campaign.

REFERENCES

1. Bottecchia M, Madejón A, Puentes S, et al. Detection of hepatitis B virus genotype A3 and primary drug resistance mutations in African immigrants with chronic hepatitis B in Spain. *J Antimicrob Chemother.* 2011;66:641–4.
2. Moraes MTB, Niel CMG, Gomes SA. A polymerase chain reaction-based assay to identify genotype F of hepatitis B virus. *Braz J Med Biol Res.* 1999;32:45–9.
3. Bottecchia M, Ikuta N, Niel C, et al. Lamivudine resistance and other mutations in the polymerase and surface antigen genes of hepatitis B virus associated with a fatal hepatic failure case. *J Gastroenterol Hepatol.* 2008;23:67–72.
4. International Migrant Stock: the 2008 Revision. United Nations; 2009. <http://esa.un.org/migration> [accessed 30.04.14].
5. International Labour Office. An International Labour Organization-ILO-Code of Practice on HIV/AIDS and the World of Work; 2001 <http://www.ilo.org> [accessed 30.04.14].

Marcelle Bottecchia*

Laboratório de Virologia Comparada e Ambiental, Oswaldo Cruz Institute, Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil

Juliana Custódio Miguel, Elisangela Ferreira da Silva

Laboratório de Hepatites Virais, Oswaldo Cruz Institute, Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil

Cleber Ferreira Ginuino

Laboratório Central de Saúde Pública Noel Nutels (LACEN/RJ), Rio de Janeiro, RJ, Brazil

Marcia Terezinha Baroni de Moraes e Souza

Laboratório de Virologia Comparada e Ambiental, Oswaldo Cruz Institute, Oswaldo Cruz Foundation (FIOCRUZ), Rio de Janeiro, RJ, Brazil

*Corresponding author at: Laboratório de Virologia Comparada e Ambiental, Oswaldo Cruz Institute, Oswaldo Cruz Foundation (FIOCRUZ), Prédio Helio e Peggy Pereira, Room B201, Av. Brasil 4365 – Manguinhos, CEP: 21040-360 Rio de Janeiro, RJ, Brazil.

E-mail addresses: mbottecchia@ioc.fiocruz.br, mbottecchia@globocom.com (M. Bottecchia).

Received 6 August 2014

Accepted 19 August 2014

Available online 13 October 2014

<http://dx.doi.org/10.1016/j.bjid.2014.08.006>

1413-8670/© 2014 Published by Elsevier Editora Ltda.