



Screening For Hepatitis B Virus Infection In Pregnant Women In Owerri Metropolis, Imo State

S.I. Umeh*, C.L. Owuamalam, and J.O. Asota

Department of Microbiology, Federal University of Technology Owerri, Imo State, Nigeria.

(Submitted: November 15, 2011; Accepted: February 03, 2012)

Abstract

A total of 300 asymptomatic pregnant women attending a medical diagnostic laboratory in Owerri Metropolis were screened for Hepatitis B surface antigen (HBsAg) between June and August 2011 using the rapid kit with double sandwich antibody procedure. Twenty (20%) of the pregnant women tested positive for HBsAg. Prevalence of HBsAg (10.0%) was higher in the age group 31 – 35 years indicating the role of age in the transmission of Hepatitis B virus. Routine perinatal screening for HBsAg of all pregnant women is recommended to detect infected persons and administer treatment.

Keywords: Hepatitis B virus, HBsAg, Age, Screening, Pregnant women, Treatment, Owerri, Imo State.

1.0 Introduction

Worldwide, about 350 – 400 million people are chronically infected with hepatitis B virus (HBV) (Dienstag, 2008). Vertical (mother-to-infant) transmission of the infection occurs usually in perinatal period and is responsible for the majority of the disease burden in endemic areas. About 50 million people are chronic carriers of HBV in Africa. Nigeria a tropical country, has been documented as highly endemic for HBV infection and about 75% of its population is likely to have been exposed to the virus at one time or the other in their lives (Sirisena *et al.*, 2002).

Hepatitis B virus (HBV), a DNA virus transmitted percutaneously, sexually and perinatally causes acute and chronic infections of the liver and it is the most common serious liver infection in the world and it is caused by the hepatitis B virus (HBV) that attacks liver cells and can lead to liver failure, cirrhosis (scarring) or cancer of the liver later in life. Chronic HBV infection at birth occurs in approximately 90% of infants born to HBV surface antigen (HBsAg) positive mothers (Hyams, 1995; McMahan *et al.*, 1985). In addition, maternal transmission of HBV predisposes infected newborns to liver cirrhosis and hepatocellular carcinoma in young adulthood (sookoian, 2007). The present study investigated the prevalence of hepatitis B surface antigen (HBsAg) among healthy pregnant women attending

a medical diagnostic laboratory in Owerri Municipality with a view of recommending ways of preventing its transmission. The hepatitis B surface antigen (HBsAg) is formed in response to the hepatitis B virus.

The benefits of detection of infected pregnant women include not only identification of infants who require prophylaxis but of women who might need treatment and counselling.

2.0 Materials and Methods

The approval of the management of the medical laboratory in Owerri Imo State were received before carrying out the screening of pregnant women for HBV surface antigen (HBsAg).

Five ml of blood sample was aseptically collected by venepuncture from each of the 300 pregnant women tested for hepatitis B virus infection. The blood samples were dispensed into labeled anticoagulant blood sample bottles and were left to clot, after which sera were separated from the clotted blood by centrifugation. The sera samples were stored at 20°C until screened. Antibodies to HBsAg were determined using rapid kit with double sandwich antibody procedure (Clinotech Tm Diagnostic, Canada). The test was carried out according to manufacturer's protocol. The test device was removed from the pouch. The test strip

*Corresponding author's email: elisarahumehsam@yahoo.co.uk

was dipped into fresh serum specimen for one minute with the arrow pointing down taking care to ensure the marker line on the strip was not immersed in the serum. The strip was then laid flat on clean, non-absorbent test bench with each strip placed beside each labeled sample tube for identification. The test results were read by observing the line bands on the test strips after one minute. Interpretation of results was done according to manufacturer's instruction.

3.0 Results

The results of the investigation are presented in (Table 1). HBsAg was detected in 12 (20%) of the asymptomatic pregnant women tested. The highest prevalence of (10.0%) was recorded in age group 31 – 35 years while the lowest of (0.0%) was recorded in age group of 15 – 20 years.

Table 1: Prevalence of HBsAg in pregnant women in relation to age

Age group (years)	Number examined	Number Positive (%)
12-20	60	0(0.0%)
21-25	60	1(1.67%)
26-30	60	3(5.0%)
31-35	60	6(10.0%)
36-40	60	2(3.33%)

4.0 Discussion

Hepatitis B carrier state is a major public health problem and screening asymptomatic pregnant women for HBsAg is an important instrument in disease detection, prompt diagnosis and intervention particularly at an early stage of the disease. The result of this investigation showed a seroprevalence of 20% among asymptomatic pregnant women attending a medical diagnostic laboratory in Owerri metropolis. This is higher than the rates reported in other parts of Nigeria. A seroprevalence rate of 12% had been previously reported in Warri Delta State (Ophori *et al.*, 2004), 9.3% sero-prevalence reported in Awka, Anambra State (Ezegbudo *et al.*, 2004) 7.0% in Ibadan South western Nigeria (Awosere *et al.*, 1999) and Ojo (4.7%) in Akure Ondo State. High HBsAg seroprevalence rates in pregnant women have been reported from Ghana (10.5%) (Damale *et al.*, 2005) and Yemen (13.2%) (*see Al-Shamahy, 2000*).

Geographical differences may explain the variation in sero-prevalence rates of HBsAg among pregnant women from different countries. Studies have shown that variation may even exist among regions of the same country (Khalil *et al.*, 2005; Vazquez – Martinez *et al.*, 2003). Also the screening method used and whether the pregnant women had been vaccinated in the past against HBsAg will explain differences in seroprevalence rates.

The highest prevalence in this study was (10.0%) in age group 31 – 35 years. Dawaki *et al.*, 2006 in Kano Nigeria also recorded the highest prevalence (14.55%) in age group 31 – 40 years. This correlates with the peak age of greatest sexual activity thus supporting the role of sexual intercourse in the transmission of Hepatitis B virus. Also several studies have reported that HBV infection in pregnant women increased with age (Al-Shamahy, 2000; Vazquez Martinez *et al.*, 2003). In our study 20% of pregnant women tested were seropositive for HBsAg and can transmit the virus to their neonates in the absence of immunoprophylaxis. It has long been recognized that prevention of perinatal transmission is a high priority in the attempt to decrease the global burden of chronic HBV (Jonas, 2009).

Universal HBsAg screening of all pregnant women will greatly assist in reducing the maternal transmission of HBV infection at birth among infants born to HBsAg positive mothers.

Vaccination is the best prevention against spreading the hepatitis B virus. Over 1 billion doses of the hepatitis B virus have been given worldwide making it the most widely used vaccine in the world (www.hepb.org/pdf/pregnancy.pdf).

References

- Al – Shamah, H.A. 2000, “Prevalence of hepatitis B surface antigen and risk factors of HBV infection in a sample of healthy mothers and their infants in Sanaa, Yemen”, *Ann Saudi Med.*, **20**, 464 – 67.
- Damale, N.K.R., Lassey, A.T. and Bekoe, V. 2005, “Hepatitis B virus sero-prevalence among pregnant women in Accra, Ghana”, *Intern. J. Gynecol and Obstet*, **90**, 240 – 41.
- Dawaki, S.S. and Kawo, A.H. 2006, “Seropre-

- valence of hepatitis B surface antigen (HBsAg) in pregnant women attending an urban maternity hospital in Kano Northern Nigeria”, *Nig. J. Microbiol* **20**(1), 705 – 709.
- Duebstag, J.L., 2008, “Hepatitis B virus infection”, *N. Engl. J. med.* **35**, 1486-1500.
- Ezeugbudo, C.N., Agbonlahor, D.E., Nwosu, G. O., Igwe, C.U., Agba, M.I., Okpala, H.O. and Ikaraocha, C.J. 2004, “The sero-prevalence of hepatitis B surface antigen and immunodeficiency virus among pregnant women in Anambra State Nigeria”, *Shiraz E – medical Journal*, **5**(2), 15 – 19.
- Hyams, K.C. 1995, “Risk of chronicity following acute hepatitis B virus infection, *Clin. Infect. Dis.*, **20** , 992 – 1000.
- Khalil, M.K.M., Al – Mazrou, Y.Y., Al – Jeffri, M. and Al – Ghamdi, 2005, Serosurvey of hepatitis B surface antigen in pregnant Saudi women”, *Eastern mediterranean Health J.*, **11**, 640 – 47.
- Kiire, C.F., 1996, “The epidemiology and prophylaxis of hepatitis B in Sub sahara Africa; a view from tropical and subtropical Africa”, *Gut* **38** (Suppl. 2), 505 -512.
- Jonas, M.M., 2009, “Hepatitis B and pregnancy: An underestimated issue”, *Liver International*, **29** (SL), 133 – 139.
- McMahon, B.J., Alward, W.L.M., Hall, D.B., Heyward, W.L. and Bender, T.R., 1985, “Acute hepatitis B virus infection: relation of age to the clinical expression of disease and subsequent development of the carrier state, *J. Infect. Dis.* **151**, 599 -603.
- Onuzulike, N. and Ogueri, E.O., 2007, “Sero-prevalence of hepatitis B surface antigen (HBsAg) in pregnant women in Owerri, Imo State of Nigeria”, *Res. J. Biol. Sci.*, **2**, 178 – 82.
- Ophori, E.A., Waghassoma, A. and Atanunu, O., 2004, “Seroprevalence of hepatitis B Virus among pregnant women in central hospital, Warri, Delta State, Nigeria”, *Journal of Microbiol*, **18**(1-2), 217 -221.
- Pineau, P. and Tiollais, P., 2009, “Hepatitis B vaccination: A major player in the control of primary liver cancer”, *Pathol. Biol.* **42**, 89 – 97.
- Sirisena, N.D., Njoku, M.O., Idoko, J. A., Isamade, E., Barau, C. and Jelppe, D., 2002, “Carriage rate of hepatitis B surface antigen in an Urban community in Jos, Plateau State Nigeria”, *Nigerian Postgraduate Medicine Journal*, **9**, 7 – 10.
- Sookoian, S. 2007, “Hepatitis B virus and pregnancy. *Hepatitis B Annual.* **4**, 12-23.
- Vazquez – Martinez, J.L., Coreno – Jaurez, M.O., Montano – Estrada, L.E., Atatlan, M., and Gomez – Dantas., H., 2003, “Sero-prevalence of hepatitis B in pregnant women in Mexico”, *Salud publica de Mexico*, **45**(3), 27.
- www.hepb.org/pdf/pregnancy.pdf