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SEROPREVALENCE OF HEPATITIS B MARKERS IN A RURAL COMMUNITY IN GHANA

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Abstract: The seroprevalence of 2 hepatitis B virus markers, Hepatitis B surface antigen, and Hepatitis B core antibody were determined in 731 blood donors, and 1020 pregnant women in 3 hospitals in a rural community in Ghana during August 1991−July 1992 (blood donors) and August−November 1992 (pregnant women) by an Enzyme Immunoassay method. The prevalence of Hepatitis B surface antigen in the 2 groups was 19.5%, and 14% respectively. That hepatitis B virus infection is endemic in the community is borne out by the finding that 90% of the study population had serological evidence of Hepatitis B infection.

Key words: Hepatitis B, Seroprevalence, Ghana

INTRODUCTION

Hepatitis B virus (HBV) infection is one of the major causes world-wide of hepatitis, liver cirrhosis, and primary hepatocellular carcinoma (PHCC) (Beasley *et al, 1981*). Its prevalence and major modes of transmission vary in different parts of the world. In industrial countries, where transmission is mainly through homosexual males and intravenous drug users, prevalences of 0.1−0.5% have been reported (Centers for Disease Control, 1990). In the developing world where transmission is thought to occur vertically from mother to child or in early childhood by horizontal spread from infected siblings or playmates (Davis *et al,* 1989), prevalences of 6−20% have been reported. Other modes of transmission include transfusion of infected blood and heterosexual intercourse. The efficiency of HBV transmission through blood has been estimated at 30% (Centers for Disease Control, 1985). It is important therefore to make all transfusible blood safe from HBV infection. We report the prevalence of Hepatitis B surface antigen (HBsAg) and total Hepatitis B core antibody (HBcAb) in blood donors and pregnant women reporting to the Wa, Jirapa and Nandom Hospitals, all of which are rural communities in the Upper West Region of Ghana.

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SUBJECTS AND METHODS

The Upper West Region of Ghana (Fig. 1) has a population of about 450,000. The majority of the people are cash crop and subsistence farmers. An ethnographic characteristic of people in this region is universal tribal scarification. This is a traditional practice in which different sizes of scars are made on the face or other parts of the body of individuals often with unsterile sharp knives. The region is served by 3 hospitals with a total of 250−300 beds between them. The Regional Public Health laboratory has had assistance from the German Technical Co-operation Agency (GTZ) in the routine screening of blood for antibodies to HIV, Hepatitis B virus and *Treponema pallidum*. Blood was collected from all first time blood donors (August 1991−July 1992) and pregnant women (August−November 1992). After separation, sera were screened for HBsAg and HBcAb by an Enzyme immunoassay (Behring, Germany)

RESULTS

Seven hundred and thirty one (731) blood donors and 1020 pregnant women were screened. Of this total figure of 1751, only 164 (9.45%) were negative for all markers of HBV. The seroprevalence of HBsAg in the 731 blood donors was 19.5%, and 14% in the pregnant women respectively. None of the patients had HBsAg alone as a marker. 75% of the subjects had HBcAb alone, and 16.5% were found to have both HBsAg and HBcAb. In both groups, the prevalence of HBcAb was high (71.3% in blood donors and 76.4% in pregnant women), Table 1.

Table 1 Seroprevalence of Hepatitis B markers in blood donors and pregnant women

	HBsAg Only(%)	HbcAb Only(%)	HbsAg and HBcAb (%)	Negative for markers (%)	Total
Blood donors	0	521(71.3)	143(19.5)	67(9.1)	731
Pregnant women	0	780(76.4)	143(14)	97(9.5)	1020
Total	0	1301(75)	286(16.5)	164(9.45)	1751

DISCUSSION

The high seroprevalence of 19.5% of HBsAg found in blood donors in this region is higher than studies from other parts of the country (Acheampong, 1991 and Acquaye 1991) and may be accounted for by the almost universal traditional scarification in people of this region as explained previously. Chronic carriage of HBsAg from horizontal transmission in children from large families playing and sleeping together in small rooms due to poor so-

cioeconomic conditions, with probable dissemination of saliva could be another factor. It is difficult to estimate the relative contribution of these two factors. Perez *et al* (1989) studying blood donors in Maputo, reported a prevalence of 18.6%

Perinatal transmission of HBV from carrier mothers is important in determining the prevalence of infection in some regions of the world. 14% of pregnant women had both HBsAg and HBcAb serology in this study. These women together with the 143 blood donors, even though not acutely ill or jaundiced, could potentially infect their babies.

The endemicity of HBV in this rural community is shown by the finding that out of the total of 1751 subjects studied, 90% had serological evidence of present and/or past HBV infection. A figure of 78.4% has been reported from Yaoundé, Cameroun (Ndumbe and Njie, 1989).

Tropical Africa together with East and South East Asia and the Pacific Islands have been designated high endemic areas of HBV infection (Centers for Disease Control, 1989). These geographic areas have high incidences of PHCC, and patients with PHCC tend to be HBsAg positive or have high titres of HBcAb (Zuckerman *et al,* 1990). Sixty per cent of Acheampong's patients with PHCC were HBsAg positive (Acheampong, 1991). The contribution of HBV to the development of PHCC can not be underestimated.

Hepatitis B is now a vaccine preventable disease. It is recommended that in areas of intermediate to high endemicity and where transmission is primarily perinatal or child to child, all infants should receive hepatitis B vaccine as pre-exposure prophylaxis (World Health Organisation, 1989). Where it can be afforded, maternal screening should be carried out during pregnancy with the administration of hepatitis B vaccine and/or immunoglobulin to infants of HBsAg mothers. In the Gambia, Hepatitis B vaccine has been integrated into the National Expanded Programme on Immunisation without major changes to the schedule of immunisation or the mechanism of delivery (The Gambian Hepatitis Group, 1989). Serological study of some of the vaccinated children has shown the strategy to be effective in reducing the prevalence of persistently infected children (Whittle *et al,* 1995).

We have shown the endemicity of HBV infection in this rural community in Ghana. Ghana, like some other developing countries has not introduced Hepatitis B vaccine as a routine in the expanded programme on immunisation, due mostly to its cost. A closer look needs to be taken at this.

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