Other information suggests that immigrants might have relatively low screening levels. In a neighborhood site screening program, only 51 per cent of Haitians reported a previous Pap test, compared to 77 per cent of ESC women and 89 per cent of US-born Black women.[6] Haiti, the poorest Caribbean country, has limited medical services through which Pap tests can be provided.[7] English-speaking Caribbean countries vary in the extent and quality of their health services, but many women receive Pap tests during prenatal or contraceptive care.[8] The frequency of screening among immigrants is a function of age, socioeconomic level, and country of origin. In the USA, cultural, financial, and linguistic barriers (compounded by documentation problems) lead to a relatively low use of preventive health services among low-income Caribbean immigrants.

Haitians have a higher incidence of tuberculosis than other immigrants,[9] but evaluations of the health status and the need for services among the varied groups within Black and immigrant communities are lacking. Such studies are essential if focused, cost-effective education and screening services are to be implemented.

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Epidemiology of Hepatitis B Infection in Institutionalized Mentally Retarded Clients

SUNITA LOHIYA, MD, GHANSHYAM LOHIYA, MD, AND SHIRLEY CAIRES, RN

Abstract: In 1,149 clients of an institution for the mentally retarded, the prevalences of hepatitis B surface antigen (HBsAg) and hepatitis B virus markers were 12 per cent and 66 per cent, respectively. HBsAg prevalence was higher in males, Down syndrome, ambulatory, and older clients, and those with longer institutionalization. Serum alanine aminotransferase levels were abnormal in 31 per cent of HBsAg positive and 10 per cent of HBsAg-negative clients. (*Am J Public Health* 1986; 76:799–802.)

Introduction

Hepatitis B virus (HBV) infection is known to be hyperendemic among clients of institutions for the mentally retarded (IMRs);[1–4] HBV vaccination has been recommended for all susceptible clients.[5] This study was undertaken to identify such clients and to describe the current epidemiology of HBV infection in a large IMR in California.

Methods

General features of the clients of this institution have been described elsewhere.[6,7] Mental retardation was profound in 84 per cent, severe in 11 per cent, moderate in 4 per cent, and mild in 1 per cent; more than 90 per cent were retarded due to unknown prenatal influences. In 1984, all clients were screened by enzyme-immunoassay for hepatitis B surface antigen (HBsAg), hepatitis B surface antibody (anti-HBs), and serum alanine aminotransferase (ALT) levels. Screening for hepatitis B core antibody (anti-HBc) was also performed on 118 clients negative for both HBsAg and anti-HBs.

Significance of differences between groups was calculated by the Mantel-Haenszel (MH) test for independence. Yates correction for continuity was performed for small numbers.

TABLE 1—Prevalence of HBsAg and anti-HBs among All Clients Stratified by Race

Race	Number Tested	HBsAg Positive, Anti-HBs Negative No. (%)	HBsAg Negative, Anti-HBs Positive No. (%)	HBsAg Negative, Anti-HBs Negative No. (%)
White	924	111(12)	475(51)	338(37)
Black	81*	10(13)	46(57)	26(32)
Latino	116	7(6)	62(53)	47(41)
Others	28	5(18)	11(39)	12(43)
Total	1149*	133(12)	594(52)	423(37)

*One client was positive for both HBsAg and anti-HBs.

Results

Of 1,149 clients screened, 133 (12 per cent) were HBsAg positive, anti-HBs negative; 594 (52 per cent) were HBsAg negative, anti-HBs positive; and 423 (37 per cent) were HBsAg and anti-HBs negative (Table 1). Of the 423 clients negative for HBsAg and anti-HBs, 118 were screened for anti-HBc; of them, 10 (8.4 per cent) were anti-HBc positive. By extrapolation, 36 (8.4 per cent of 423) clients were estimated to be anti-HBc positive and HBsAg and anti-HBs negative. Thus 763 (133 HBsAg, 594 anti-HBs positive, and

Address reprint requests to Ghanshyam Lohiya, MD, Chief, Infectious Disease Section, State Developmental Research Institute, 2501 Harbor Boulevard, Costa Mesa, CA 92626. Dr. S. Lohiya is with the Department of Pathology, University of California, Irvine, CA 92717, and Ms. Caires is a Public Health Nurse, both with the Fairview Developmental Center, Costa Mesa. This paper, submitted to the Journal February 25, 1985, was revised and accepted for publication December 5, 1985.

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TABLE 2—Prevalence of HBsAg and anti-HBs among Clients Stratified by Sex and Diagnosis of Down Syndrome

	Number Tested	HBsAg Positive, Anti-HBs Negative No. (%)	HBsAg Negative, Anti-HBs Positive No. (%)	HBsAg Negative, Anti-HBs Negative No. (%)
With Down Syndrome				
Total	73	37(51)	26(36)	10(14)
Male	38	25(66)	10(26)	3(8)
Female	35	12(34)	16(46)	7(20)
Without Down Syndrome				
Total	1076*	96(9)	586(53)	413(38)
Male	616*	75(12)	352(57)	190(31)
Female	460	21(5)	216(47)	223(48)

*One client was positive for both HBsAg and anti-HBs.

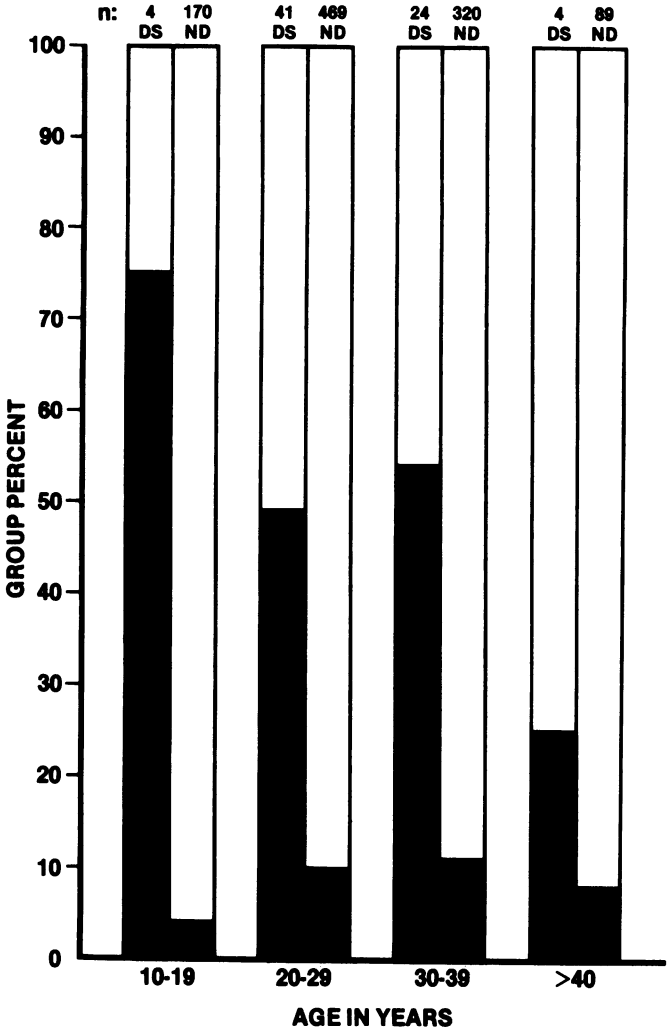
TABLE 3—Prevalence of HBsAg and anti-HBs among All Clients Stratified by Length of Institutionalization

Length of Institutionalization (years)*	Number Tested	HBsAg Positive, Anti-HBs Negative No. (%)	HBsAg Negative, Anti-HBs Positive No. (%)	HBsAg Negative, Anti-HBs Negative No. (%)
<1	28	0(0)	6(21)	22(79)
1–2	51	3(6)	20(39)	28(55)
3–4	51	3(6)	17(33)	31(61)
5–9	151	12(8)	58(38)	81(54)
10–14	193**	23(12)	90(47)	81(42)
15–19	317	44(14)	176(56)	97(31)
≥20	358	58(13)	227(63)	83(23)

*Rounded off to the nearest complete year.
**One client was positive for both HBsAg and anti-HBs.

36 positive for anti-HBc alone) or 66 per cent of all clients were positive for an HBV marker.

HBsAg prevalence in male clients (100/654, 15 per cent) was greater than in females (33/495, 7 per cent); relative risk was 1.4, 95 per cent confidence intervals 1.2, 1.5.



Note: Age was rounded off to the nearest full year. Of 28 clients aged under 10 years none was a carrier.

DS: Down's Syndrome
ND: Non-Down's Syndrome

■ **HBsAg positive**
□ **HBsAg negative**

FIGURE 1—Prevalence of HBsAg in All Clients Stratified by Diagnosis and Age

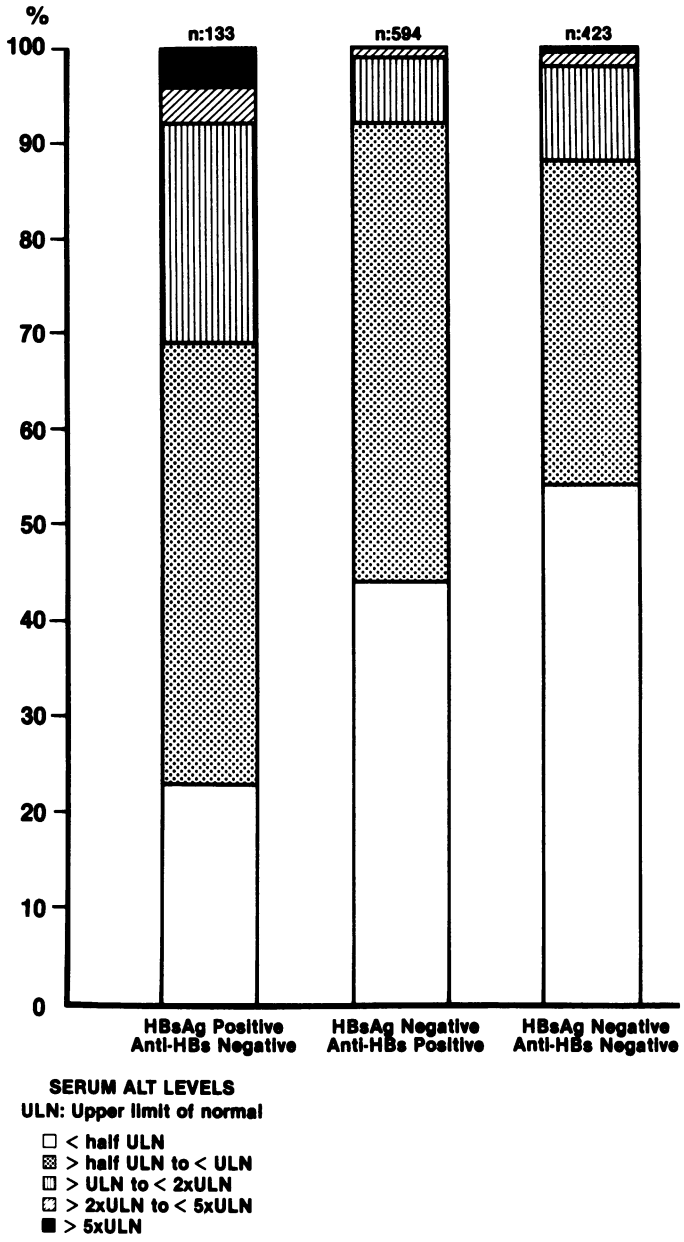


FIGURE 2—Serum Alanine Aminotransferase (ALT) Levels among All Clients Stratified by HBsAg/anti-HBs Status

HBsAg prevalence in clients with Down syndrome (DS) (37/73, 51 per cent) was more than five times greater than in clients without Down syndrome (ND) (96/1076, 9 per cent); relative risk was 8.0, 95 per cent confidence intervals 5.3, 12.2. It was 66 per cent in male DS clients compared to 5 per cent in female ND clients (Table 2). HBsAg prevalence was higher in clients aged 20 and over (124/947, 13 per cent) compared to those under age 20 (9/202, 4 per cent; (Figure 1). HBsAg prevalence was also greater in clients institutionalized for more than 10 years (115/868, 13 per cent) compared with those institutionalized for less than 10 years (18/281, 6 per cent) (Table 3).

Serum ALT levels were more abnormal in HBsAg positive clients (41/133, 31 per cent) than HBsAg negative clients (97/1016, 10 per cent) (Figure 2). Proportion ofHBsAg carriers, among all clients with a given serum ALT level, increased progressively with higher serum ALT levels.

Discussion

In this study, the HBsAg and HBV marker prevalences, 12 per cent and 66 per cent, respectively, are similar to those reported for clients in other IMRs[1–4] but considerably higher than those in the US general population (0.3 per cent and 3 per cent to 5 per cent, respectively); they equal or exceed those observed in intravenous drug users, homosexual men, hemodialysis patients, and immigrants from Asia.[5] IMR clients thus belong to a group at the highest risk of HBV infection and HBsAg carriage.

Szmuness attributed a higher prevalence in males to increased risk of infection through intravenous drug use or homosexuality.[1] Since these factors are not applicable to IMR clients, the underlying cause of higher HBsAg prevalence in males remains unknown.

The reasons for high HBsAg prevalence in DS clients also remains obscure. It may be secondary to impaired humoral immunity,[1,2] but DS clients do produce anti-HBs (in low titers) and respond normally to seven microbial antigens.[3] Since DS clients tend to be more affectionate, interpersonal activities such as kissing may facilitate infection from other carriers by exchange of saliva and other body fluids that may contain HBsAg.[8]

The higher HBsAg prevalence in clients 20 or more years of age is similar to Szmuness' finding in New York City blood donors.[1]

The abnormal serum ALT levels in HBsAg carriers suggests chronic hepatitis. Clinical examination of all carriers revealed few positive findings, although in some it was difficult to thoroughly palpate for hepatomegaly due to lack of cooperation on the clients' part.*

Although 69 per cent of HBsAg carriers had serum ALT levels within the conventional normal range, more of them had "high-normal" values than HBsAg negative clients (Figure 2). This indicates presence of milder degrees of chronic hepatitis as described by Sutnick.[9] Serum ALT values were also abnormal in 10 per cent of non-carriers which may reflect chronic non-A, non-B hepatitis.

In this IMR, 34 per cent of all clients were serosusceptible to HBV and at a high risk of HBV infection. HBV vaccination was recommended for their protection along with general measures for the control of HBV transmission.[10]

*Barry Donner, MD, Hepatology Fellow, Personal Communication, March 1985.

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