

Type B Hepatitis in Iran

M.Tabarestani*, J.H.Hoofnagle**, A.Afkari*

Abstract

Hepatitis B surface antigen (HBsAg) was found in 1% of controls, 2.1% of professional blood donors, 2.0% of leprosy patients and 76.1% of acute hepatitis in Tehran and Mashhad, Iran. All HBsAg positive samples also possessed antibody to the hepatitis B core antigen and all were sub-type ayw. Type B hepatitis and the HBsAg state are frequent in Iran, but most must be accounted for by "non-parenteral" or "inapparent" parenteral exposure.

Introduction

Viral hepatitis, type B, is a disease of world-wide distribution which poses important and as yet unanswered health problems. The association of the hepatitis B surface antigen (HBsAg, also known as Australia antigen and hepatitis-associated antigen) with the infectious agent of type B

* From Shah, Reza Medical Center, Ferdowsi university, Mach'had, Iran.

** and the medical service, Washington veterans administration hospital, Washington, DC.U.S.A.

hepatitis has provided the means to identify both the patient with acute type B hepatitis and the chronic carrier of the virus (1,2). In Iran, we have screened four groups of patients for HBsAg.

Materials and Methods:

Patients tested included: (1) One hundred asymptomatic, healthy control individuals* (2) 1400 asymptomatic, professional blood donors, (3) 67 sera from in-patients with the clinical picture of acute viral hepatitis were tested consecutively, and (4) 200 patients with leprosy residing in the 'Mehrab Khan' leprosarium.

Sera were collected both in Tehran and Mash'had, Iran during the period 1969-1974, HBsAg testing was done by agar gel diffusion(1-3).

Sixty samples of sera including 42 sera belonging to patients with acute viral hepatitis, 11 sera from blood donors, 2 lepers and 5 miscellaneous diseases have been sent to N.I.H. (National Institute of Health**) for anti-HBc, anti-HBs, subtype and e antigen and anti-e testing.

Antibody to HBsAg by radio-immunoassay (5), antibody to hepatitis B Core antigen counter electrophoresis (6), subtype and the hepatitis B "e" antigen antibody by agar gel diffusion(4-7).

RESULTS

The results of screening the four groups for HBsAg are shown in the table 2. One percent of controls and 2.1% of blood donors were HBsAg positive. The population of leprosy patients studied possessed a similar prevalence of this antigen. On the other hand, 76.1% of patients with

*- Compose of students and young people for employment.

** - National Institutes of Health, Bethesda, Maryland U.S.A

acute viral hepatitis were HBs Ag positive on presentation to their physician. Only 3 of these 67 patients with HBsAg positive hepatitis and a history of parenteral exposure to blood or serum products.

All HBsAg - positive sera tested from each group were subtype ayw (Table 1). Furthermore, all HBsAg positive individuals possessed antibody to hepatitis B Core antigen, frequently in titre. Two sera possessed anti-HBs as well as high titres of HBsAg. Both were from patients with acute hepatitis and both possessed anti-HBs in low titre only. The 'e' antigen was detected in only one of 33 patients with acute type B hepatitis and anti-'e' in another, but neither 'e' nor anti-e was found in 10 HBsAg positive blood donors or 2 HBsAg positive patients with leprosy.

Table 1: Prevalence of subtype and anti-HBc in HBsAg positive sera

| group | no. tested | HBsAg + | Anti-HBc+ | Subtype | 'e'Antigen | Anti-e |
|-----------------------|------------|---------|-----------|---------|------------|--------|
| Acute viral hepatitis | 42 | 33 | 33 | ayw | 1 | 1 |
| Blood donors | 11 | 8 | 6 | ayw | - | - |
| Lepers | 2 | 2 | 2 | ayw | - | - |
| Miscellaneous | 5 | 2 | 2 | ayw | - | - |

TABLE (2)
Prevalence of Hepatitis B Surface Antigen (HBsAg) in Iran

| Group* | No. Tested | No. (Percent) HBsAg Positive** |
|-----------------------|------------|-----------------------------------|
| Controls | 100 | 1 (1.0%) |
| Blood Donors | 1400 | 29 (2.1%) |
| Acute viral Hepatitis | 67 | 50 (76.1%) |
| Leprosy Patients | 200 | 4 (2.0%) |

* Collected in Tehran and Mashhad, Iran.

** HBsAg testing by agar gel diffusion.

Discussion

These data indicate that type B hepatitis accounts for much of the sporadic acute hepatitis in Iran and that at least 1-2% of Iranians are chronically infected with the hepatitis B virus. The subtype of HbsAg in all patients has been found to be exclusively ayw. This prevalence of the chronic HBsAg carrier state and predominance of the ayw subtype agrees with findings in other Mediterranean and Middle-Eastern countries (4,8,9). The prevalence of the HBsAg carrier state among institutionalized leprosy patients was similar to that among professional blood donors which probably reflect the relatively adequate sanitary conditions in this leprosarium.

Among patients with HBsAg-positive acute hepatitis, few had in elicitable history of parenteral exposure to serum, blood or blood products. This fact again supports the importance of "non-parenteral" or possibly inapparent parenteral exposure in the spread and epidemiology of type B hepatitis (10). While post-transfusion, type B hepatitis can be decreased by routine screening and exclusion of HBsAg-positive blood donors (11), the incidence of acute type B hepatitis in most areas of the world will be only scantily by such measures. The elimination of type B hepatitis awaits means of protecting close contacts (family) members, sexual contacts, health care workers of individuals who are acutely or chronically infected with the hepatitis B virus.

References

1. *Blumberg BS, Stunick AI, London, WT: Hepatitis and leukemia: Their relation to Australia antigen. Bull NY Acad Med 44: 1566-1586, 1968.*

2. Prince AM: An antigen detected in the blood during the incubation of serum hepatitis. *Proc. Nat Acad Sci USA* 60: 814-821, 1968.
3. Tabarestani M: Australia antigen in viral hepatitis and blood donors in Iran. Thesis, School of Medicine, Tehran University, 1972.
4. Le Bouvier GL: Subtypes of hepatitis B antigen: Clinical relevance. *Ann Intern Med* 79: 894-896, 1973.
5. Barker LF, Peterson MR, Schulman R, et al: Antibody responses in viral hepatitis, type B. *JAMA* 223: 1005-1008, 1973.
6. Hoofnagle JH, Gerety RJ, Barker LF: Antibody to the hepatitis-B-virus core in man. *Lancet* ii: 869-873, 1973.
7. Magnus LO, Espmark JA: New specificities in Australia antigen positive sera distinct from the Le Bouvier determinants. *J. Immunol* 109: 1017-1021, 1972.
8. Hadziyannis S, Le Bouvier GL: Australia antigen subtypes in Greece. *Iatriki* 22: 453-457, 1972.
9. Courouce-Panty AM, Soulier JP: Further data on HBs antigen subtypes: Geographical distribution. *Vox Sang*
10. Villarejos VM, Visona KA, Gutierrez A, et al: Role of saliva, urine and feces in the transmission of type B hepatitis. *N Engl J Med* 291: 1375-1378, 1974.