

BRIEF COMMUNICATION

CONCOMITANT HIGH PREVALENCE OF HEPATITIS C VIRUS ANTIBODIES AND HEPATITIS B VIRUS MARKERS IN A SMALL VILLAGE OF THE AMAZON REGION, MATO GROSSO STATE, BRAZIL

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Most of hepatitis C virus (HCV) knowledge in Brazil arose from screening in blood donors living in large cities^{7, 10}. The mean prevalence of anti-HCV antibodies was around 1% in most of the studied cities⁷. The higher prevalence has been observed in Rio de Janeiro¹⁰. The Amazon region has been known to be a high endemic site for hepatitis B and Delta³. Few studies regarding HCV prevalence have been performed in this region^{3, 6}.

Since September 1994, an unexpected high number of consecutive cases of acute hepatitis was notified in Cotriguaçu and Juruena municipalities, in the north-western part of Mato Grosso State, Brazil, inside the Amazon area. This is a low socio-economic level community with all houses lacking sewage system. Drinking water is supplied by wells to most of the houses. Malaria is not an important health problem in the area and no cases of arbovirus infections have been detected in the last years.

In April 1995, a first visit was performed to these villages aiming to identify cases and to estimate prevalence of hepatitis markers. A physician who was based in one village (Juruena) could confirm acute hepatitis in some patients. No more records for confirmed hepatitis were available in the studied community. Therefore, we also considered as "cases" people reporting to have had jaundice or coluria during febrile illness in the same period.

We studied 28 cases, 73 of their household contacts and nine health workers involved with the community's health care. A man out of 28 cases was still icteric when he was interviewed. Among the 110 surveyed individuals, 47 (43%) were male and 63 (57%) female. The age ranged from 2 to 63 years (mean = 27). All individuals moved to the area between 1981 to 1995 and most of them (94%) were white migrants from southern States of the country.

Using an enzyme-linked immunoassay (EIA) (Bio-Manguinhos, FIOCRUZ – Rio de Janeiro) all sera were analysed for antibodies to hepatitis A virus (anti-HAV IgM); hepatitis B surface antigen (HBsAg) and antibody (anti-HBs); antibodies to hepatitis B core antigen (anti-HBc and anti-HBc IgM). These tests were performed in Department of Virology of Fundação Oswaldo Cruz, Rio de Janeiro. Serum samples were also tested for antibodies to hepatitis C (anti-HCV; EIA-II) and Delta (anti-HDV) viruses (Abbott Diagnostics[®], Illinois, USA) in the Laboratory of Viral Hepatitis of Federal University of Bahia. Reactive sera against anti-HCV by EIA were tested again by a recombinant third generation immunoblot assay (RIBA-III) (Chiron Corporation[®]). This RIBA system is able to identify *c100-3*, *c33*, *c22-3* and *NS5* region HCV antigens. Serum was considered positive in RIBA III if more than one band was detected. Sera showing only one band were recorded as undetermined.

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TABLE I
Results of HBV and HCV markers in all age groups of the 110 studied individuals.

Age group	n (%)	Presence of HBV markers n (%)	Presence of HCV markers	
			EIA	RIBA III
02-10	15 (14)	10 (67)	1	0
11-20	29 (26)	25 (86)	3	0
21-30	26 (24)	22 (85)	2	1
31-40	14 (13)	14 (100)	1	1
41-50	18 (16)	14 (78)	2	1
> 50	8 (7)	8 (100)	1	1
Total	110 (100)	93 (84.5)	10	4

Among all 110 individuals, 93 (84%) were positive for one HBV marker at least. High rates of HBV infection were recorded since the first decade of life (Table 1). Nine (8%) were positive for HBsAg and 17 (15%) for anti-HBc IgM. Serum of one HBsAg carrier was also reactive against anti-HDV. Anti-HAV IgM was found in only one (0.9%) subject. Ten (9%) sera were positive for anti-HCV, exhibiting high absorbance values in EIA. After testing by RIBA-III four of them were positive (3.6%) and the remaining reacted only for one antigen, being considered undetermined by this method (Table 1). Twenty-six (96%) out of the 28 cases were positive for one HBV marker at least. Positive anti-HBc-IgM was detected in 11 (39%) cases, two of them also positive for anti-HCV.

The present results point out that HBV plays a main role on the high incidence of acute hepatitis registered in the study area. The 15% positive results for anti-HBc IgM substantiate that the infection was transmitted throughout the study area recently. The HBV markers prevalence among household contacts attests the importance of intradomiciliary spread.

No association was found between HBV or HCV infection and factors related to parenteral-spread viral hepatitis like transfusion, surgery, hospitalization or dental treatment. Despite similar ways of transmission concomitant endemicity of HBV and HCV is not very common, except in some African countries^{1,4,9}. In the present report, the confirmed anti-HCV prevalence by RIBA-III (3.6%) was higher than others reported for the Amazon region^{3,6}. Furthermore, the six RIBA-III-undetermined sera reacted strongly by EIA. As undetermined results frequently represent a past or an ongoing HCV infection^{5,11}, the found prevalence could be even higher than that initially found.

Exposure to HCV usually occurs in older age in comparison to HBV^{1,8,9}. Similarly, in our study the mean age among the four RIBA positive individuals was 42 years, statistically different from that with any positive HBV serologic marker or from all studied subjects ($p < 0.05$). It can afford the lack of HCV carriers among children in Amazon State³. Since the HCV infection is very indolent and has a protracted evolution one can suppose these individuals have been contaminated before arriving the Amazon region. Nevertheless, more studies are necessary to evaluate the possibility of HCV transmission by the same unknown routes implicated for HBV in the tropical area^{2,8,9}.

Our present results emphasize the importance of anti-HBV vaccine for children and all migrant people considering moving to the studied region. Further studies are needed to confirm the elevated prevalence of HCV infection in some Amazon sites. Like HBV, the conflicting data in HCV prevalence reported for different Amazon places may suggest an irregular geographical distribution of the infection.

REFERENCES

- ALTER, M.J.; MARGOLIS, H.S.; KRAWCZYNSKI, K. et al. – The natural history of community-acquired hepatitis C in the USA. *New Engl. J. Med.*, 327:1899-1905, 1992.
- BENSABATH, G.; HADLER, S.C.; SOARES, M.C.P. et al. – Hepatitis Delta virus infection and Labrea hepatitis in the Amazon basin. *J. Amer. med. Ass.*, 258:479-483, 1987.
- BOTELHO, R.; CASTILHO, M.C.; BORBOREMA, C.A.T.; BRAGA, W.S.M. & BRASIL, L.M. – Prevalência da infecção pelo vírus da hepatite C em crianças: um estudo em áreas endêmicas de infecção pelo vírus da hepatite B. *Gastroent. Endosc. digest.*, 14:141, 1995.

4. FROMMEL, D.; TEKLE-HAIMANOT, R.; BERHE, N. et al. – A survey of antibodies to hepatitis C in Ethiopia. *Amer. J. trop. Med. Hyg.*, **49**:435-439, 1993.
5. GOESER, T.; MÜLLER, H.M.; SOLBACH, C. et al. – Prevalence and serological manifestation of hepatitis C virus infection in patients with hepatitis non-A, non-B: a follow-up study. *Presse méd.*, **23**:793-796, 1994.
6. GONÇALVES, M.L.C.; NOGUEIRA, C.M.; ARTEMENKO, S.R.T. & CONCEIÇÃO, M.J. – Hepatitis C virus marker among a Brazilian tribe of Yanomami Indians. In: CONGRESSO DA SOCIEDADE BRASILEIRA DE MEDICINA TROPICAL, 29, Fortaleza, 1993. **RESUMOS**, p. 311.
7. STRAUSS, E. – Hepatite C. In: FIGUEIREDO-MENDES, T. & PITELLA, A.M. – *Recentes avanços em hepatites*. São Paulo, Fundo Editorial BYK, 1993. p. 79-88.
8. SULAIMAN, H.A.; JULITASARI, I.; SIE, A. et al. – Prevalence of hepatitis B and C viruses in healthy Indonesian blood donors. *Trans. roy. Soc. trop. Med. Hyg.*, **89**:167-170, 1995.
9. TSEGA, E.; NORDENFELT, E. & HANSSON, B.G. – Hepatitis C virus infection and chronic liver disease in Ethiopia where hepatitis B infection is hyperendemic. *Trans. roy. Soc. trop. Med. Hyg.*, **89**:171-174, 1995.
10. VANDERBORGHT, B.O.M.; REIS, A.M.M.; ROUZERE, C.D. et al. – Prevalence of anti-hepatitis C virus in the blood donor population of Rio de Janeiro. *Vox Sang.* (Basel), **65**:122-125, 1993.
11. YUN, Z.B.; LINDH, G.; WEILAND, O. et al. – Detection of hepatitis C virus RNA by PCR related to HCV antibodies in serum and liver histology in Swedish blood donors. *J. med. Virol.*, **39**:57-61, 1993.

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