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BRIEF COMMUNICATION

LOW INTRAFAMILIAL TRANSMISSION OF HEPATITIS C VIRUS IN CENTRAL BRAZIL

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Hepatitis C virus (HCV) is the main agent responsible for parenterally transmitted forms of non-A, non-B hepatitis (NANBH) in the world, and for a large number of sporadic or community-acquired NANBH cases whose transmission routes remain unclear [1, 5]. HCV transmission by sexual intercourse and by non-sexual household contact has been reported [3, 4, 6-8, 10-12]. Mother-to-infant transmission of HCV has also been suggested [2, 9, 14].

We tested sera from 2,350 voluntary blood donors at the Goiás State Blood Bank in Goiânia, Central Brazil. Fifty-three (2.2%) samples were anti-HCV positive in the screening test (ELISA), and 33 were subsequently confirmed positive by line immunoassay (Inno-LIA HCV Ab II, Innogenetics, Belgium), resulting in an anti-HCV prevalence of 1.4% (submitted for publication). The aim of this study is to evaluate the an anti-HCV prevalence in family members of the anti-HCV-positive blood donors.

Index cases were represented by 13 donors who were positive only in the screening assay, and 27 who were LIA anti-HCV-positive. HCV RNA was detected in 75% (18/24) of the LIA anti-HCV-positive donors. A total of 121 family members were evaluated in this study, including 32 partners (31 wives, 1 husband), 66 offspring (35 sons, 31 daughters), 5 mothers, 14 siblings (7 brothers, 7 sisters) and 4 other members (3 nieces, 1 nephew). Their ages ranged from 3 months to 72 years. They were interviewed for possible risk factors (blood transfusion, intravenous drug use, tattoos, acupuncture, injections with nondisposable needles and syringes, occupational or other exposure to blood, sexual or household contacts with persons having hepatitis, number of partners and history of sexually transmitted diseases). Sera were obtained and stored at -20°C until tested for anti-HCV.

For screening purpose, anti-HCV antibodies were detected by two assays: one using a mixture of core, NS4 and NS5 antigens (Innotest HCV Ab, Innogenetics, Belgium), while the other was a direct home-made ELISA using core, NS3, and NS5 recombinant antigens of HCV [15]. These antigens were produced at the Research Foundation for Microbial Disease of Osaka University, Japan and were kindly supplied. Positive samples were retested for confirmation with the Inno-LIA HCV Ab II (NS4, NS5 and core antigens) and Inno-LIA HCV Ab III (core, E_2, NS1, NS3, NS4 and NS5 antigens; Innogenetics, Belgium) assays.

Table 1 shows anti-HCV prevalence in family members of anti-HCV-positive (ELISA and/or LIA) donors. There was no person with anti-HCV antibody in the families of ELISA-positive index cases. Among

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TABLE 1

Anti-HCV prevalence in 121 family members of ELISA or/and LIA anti-HCV-positive blood donors, Central Brazil.

	ELISA anti-HCV + (13)		LIA anti-HCV + (27)	
	No. tested	ELISA +	No. tested	ELISA +
Mothers	2	0	3	0
Partners	11	0	21	0
Offspring	23	0	43	4*
Siblings	5	0	9	0
Nephews	0	0	4	0

Values in parentheses are the numbers of index cases
* 3 negative and 1 indeterminate in Inno-LIA HCV Ab.

80 family members of LIA anti-HCV-positive donors, 4 offspring (2 sons and 2 daughters) had antibodies against HCV in the screening assays. However, when they were additionally confirmed by Inno-LIA tests, only one sample gave indeterminate result (son with previous history of blood transfusion); the others were negative.

This study shows that the prevalence of anti-HCV is low among family members of anti-HCV-positive blood donors in Central Brazil. By contrast, other studies have demonstrated high anti-HCV prevalence rates in family members of patients with chronic liver diseases and/or in household contacts of anti-HCV-positive individuals in Japan [4, 8, 10, 12], Spain [6, 11], Italy [7], and Taiwan [3].

These contradictory results again point out the unclear route and mechanism of HCV transmission. Previous studies reported that the anti-HCV prevalence in spouses was higher than that in nonsexual household contacts, suggesting sexual transmission as one of the routes of intrafamilial transmission of HCV [3, 10, 12]. Furthermore, anti-HVC prevalence increased with both the age of the relatives and with the duration of contact with the index case [3, 6, 7, 10, 11]. In spite of the relatively small number of individuals examined in this study, about 70% of family members reported more than ten years of contact with the LIA anti-HCV-positive index cases, and none of them had anti-HCV antibodies.

Finally, HCV-RNA has been detected in body fluids such as saliva but the efficiency of HCV transmission was low among spouses [13]. Studies are required to elucidate the non-parenteral routes of HCV transmission in the community.

In conclusion, the data in this study show a low anti-HCV prevalence in household contacts of the anti-HCV-positive blood donors, suggesting that intrafamilial transmission of HCV is low in Central Brazil.

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