HEPATITIS C - THE MALAYSIAN STORY

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ABSTRACT

We studied the presence of Hepatitis C Virus (HCV) antibodies in a defined Malaysian population and examined the association, if any, between HCV and the Hepatitis B Virus (HBV), using sensitive recombinant DNA second generation Enzyme Immunoassay (EIA) test kits. This sero-prevalence study comprised 1,434 sera from eleven distinct groups comprising intravenous drug users (IVDU), haemophiliacs, male homosexuals, female prostitutes, healthy blood donors, staff of dialysis unit and laboratory personnel, chronic renal failure patients undergoing dialysis (CRFD), patients with liver cirrhosis, chronic active hepatitis, chronic persistent hepatitis and primary liver cancer. Except in laboratory personnel and dialysis staff, HCV antibodies were detected in each group of patients ranging from 3% in blood donors to 85% in IVDU. The main modes of HCV transmission identified were parenteral drug use, transfusion and/or dialysis related. The HBV was found to be the major viral etiological agent in 75% of chronic liver disease (CLD); while in 10% of cases both HCV and HBV were detected. HCV was implicated as the sole viral agent in only a small proportion (1.5%) of patients with chronic liver disease.

Keywords: *Hepatitis C Virus, HCV antibodies, seroprevalence, Malaysia.*

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INTRODUCTION

Hepatitis C Virus (HCV), is an RNA virus related to Flavivirus and has been implicated to be the major cause of transfusion viral hepatitis[1]. HCV infection is serious because 40 - 50% of all patients exposed to HCV go on to develop chronic liver disease[2] with its attendant high morbidity and mortality in contrast to Hepatitis B Virus (HBV) infection in adult where spontaneous recovery is the rule with only 10% of patients developing chronic sequelae.

Although the major mode of transmission of HCV has been confirmed to be via parenteral routes namely via blood and blood products and sharing of needles[3], evidence for sexual route of transmission of HCV is provided by reports of HCV transmission between spouses[4] and reports by Alter MS et al in 1989[5], that there is an increased risk for HCV disease associated with contact with multiple heterosexual partners, and household contact or sexual contact with a person who had hepatitis. The successful sequencing and cloning of the HCV by Choo QL et al in 1989[1] was followed by the availability of an assay[6] which has now made it possible to screen for the presence of circulating HCV antibodies.

MATERIALS

One thousand four hundred and thirty-four sera collected between early 1985 and September 1991 were screened for HCV antibodies and HBV serum markers. All sera were collected aseptically and stored at -20°C prior to testing which was carried out in early 1991.

Sera were from eleven distinct groups, including intravenous drug users (IVDU) (190), haemophiliacs (14), male homosexuals (37), female prostitutes (100), healthy asymptomatic blood donors (363), health care workers (HCW) of the Nephrology Unit in the General Hospital Kuala Lumpur (53), laboratory personnel of the Institute for Medical Research who handled blood and sera (123); chronic renal failure patients on dialysis (CRFD) (356), patients with liver cirrhosis (25), chronic liver disease (chronic active (CAH) or chronic persistent (CPH) hepatitis) (108) and primary liver carcinoma (HCC) (65).

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METHODS

Sera were screened for HCV antibodies using commercially available HCV EIA second generation test kits by ABBOTT (Chicago, Illinois). Repeatedly reactive sera were recorded as positive for HCV Ab.

The Hepatitis B serum markers tested were Hepatitis B surface antigen (HBsAg), Hepatitis B core total antibody (HBcAb) and Hepatitis B surface antibody (HBsAb) using commercial ABBOTT AUSYME, CORZYME and AUSAB test kits.

The detection of HBcAb alone or in association with either HBsAg or HBsAb was indicative of previous HBV exposure/infection.

RESULTS

Overall HCV antibody was detected in 410 of the 1,434 (28.6%) sera samples. The HCV antibody prevalence in the different groups of Malaysian population were: IVDU (85.3%); haemophiliacs (64.3%); CRFD (53.9%); liver cirrhosis (28%); HCC (13.8%); CAH/CPH (6.5%); male homosexuals (10.8%) female prostitutes (9%); blood donors (3%), HDU staff (0%); laboratory personnel (0%). (Table I)

The association of HBV markers with HCV Ab in 184 Intravenous Drug Users were: 145 (78.8%) had at least one HBV serum marker to indicate past HBV infection; and of these, 112 (77.2%) had both HBV and HCV infections. Of 39 IVDU who were HBV negative, 27 (69.2%) had HCV antibodies. (Table II)

Hepatitis B Virus markers were detected in the majority of patients (85%) with various forms of chronic liver disease such as CAH/CPH/cirrhosis and HCC. In 10% of these, HBV was associated with HCV-antibodies. The HCV appeared to play a minor role in our patients with Hepatocellular carcinoma and chronic liver disease being responsible as a sole agent in only 4% of cirrhotics and 1.8% of CPH/CAH. (Table III)

DISCUSSION

The groups at high risk for HCV infection in Malaysia were

Table I - Prevalence of HCV Antibodies In Malaysian Population
(2nd gen ABBOTT tests)

Groups	Numbers Screened	Positive For Anti-HCV	
		Number	%
Intravenous Drug Users (IVDU)	190	162	85.3
Haemophiliacs	14	9	64.3
Dialysis Patients (CRFD)	356	192	53.9
Liver Cirrhosis	25	7	28.0
Hepatocellular Carcinoma (HCC)	65	9	13.8
Homosexuals (Males)	37	4	10.8
Prostitutes (Females)	100	9	9.0
Chronic Liver Disease (CLD)	108	7	6.5
Blood Donors	363	11	3.0
Staff of HDU	53	0	0.0
Laboratory Personnel	123	0	0.0
Total	1434	410	28.6

Table II - Association of Hepatitis C Virus and Hepatitis B Virus in Malaysian Intravenous Drug Users

Group		HCV Ab positive No. (%)
Intravenous Drug users n = 184	*HBV positive n = 145	112 (77.2)
	HBV negative n = 39	27 (69.2)

* = Positive for HBsAg and HBcAb or HBsAb and HBcAb or HBcAb alone

Table III - The Seroprevalence of Hepatitis B Virus and Hepatitis C Virus in Chronic Liver Disease/HCC in Malaysian Patients

Group	Total number screened	No. having HBV markers	HBV + ve alone	HCV and HBV	HCV alone	Neither HBV or HCV markers
Cirrhosis	25	19 (76%)	13 (52%)	6 (24%)	1 (4%)	5 (20%)
CPH/CAH	108	88 (81.5%)	83 (77%)	5 (4.6%)	2 (1.8%)	18 (17.0%)
HCC	65	62 (95.4%)	53 (81.5%)	9 (13.8%)	0 (0%)	3 (4.6%)
Total	198	169 (85.4%)	149 (75.3%)	20 (10.1%)	*3 (1.5%)	26 (13%) Etiology unknown

* = 3/29 = 10.3% ie 10.3% of all (HBV - ve) chronic liver disease is due to HCV.

found to be IVDUs, transfusion product dependent haemophiliacs and dialysis patients. This situation is similar to that in other countries world-wide.

The HCV Ab prevalence rates for Malaysian IVDU and CRFD groups were higher than those reported for IVDUs in Thailand (64%)[7] and for Singaporeans CRFD patients (20%)[8]. The HCV Ab prevalence rate of 3% in Malaysian blood donors is higher than figures from developed countries reported in American Blood Transfusion Centres (1.4%)[9] and in Japanese blood donors (1.1%)[10].

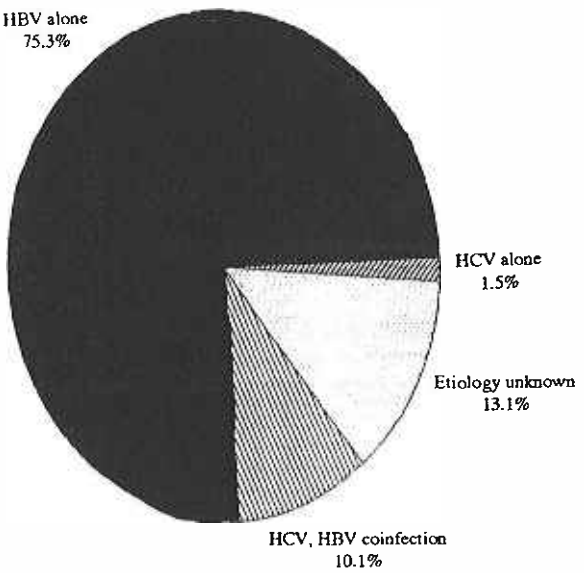
HCV Ab prevalence in Malaysian HCC (13.8%) and haemophiliacs (64%) was comparable to that reported in Singapore HCC cases (13%) and haemophiliacs (66.7%)[11]. HDU staff and laboratory personnel in our study who were expected to be at a high risk for HCV on account of occupational exposure, surprisingly showed no evidence of previous exposure to HCV. This, we believe, may be due to the strict adherence to standard clinical and laboratory practices among the staff of the General Hospital Nephrology Unit and the Institute for Medical Research.

It is clear from this study that HCV is prevalent in Malaysia and the risk factors for HCV transmission are sharing of needles in parenteral drug users, unscreened blood/blood product transfusion and perhaps also the sexual routes. There was no difference in the HCV Ab prevalence in HBV positive IVDU as compared to HBV negative IVDU, indicating perhaps that although HCV and HBV are both blood borne viral infections, their transmission is different locally as majority of HBV infection occurred perinatally or during childhood.

In Malaysia, HCV plays an etiological role in the development of chronic liver disease. But this role is perhaps less important than HBV in our populations.

A large proportion (85%) of all cases of chronic liver disease in this study including CAH, CPH, cirrhosis and HCC were associated with the HBV. In 75% of these cases HBV was the sole agent detected while another 10% of the cases were due to both HBV and HCV. In endemic region like Malaysia, routine screening for HCV antibodies on chronic viral liver disease patients should be recommended especially in the absence of HBV markers. However, HCV was implicated as the sole viral agent in only 1.5% of those cases. (Fig 1)

Fig 1 - Association of HCV and HBV in Malaysian chronic liver disease patients



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