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Knowledge about hepatitis and previous exposure to hepatitis viruses in immigrants and refugees from the Mekong region

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Knowledge about hepatitis and previous exposure to hepatitis viruses in immigrants and refugees from the Mekong Region

Abstract

Objective: Infection with hepatitis B (HBV) and hepatitis C (HCV) viruses is relatively common throughout South-East Asia and chronic infection can lead to severe consequences. This study assesses knowledge about HBV and HCV and estimates the seroprevalence of markers for these viruses in immigrants from Laos and Cambodia.

Methods: Ninety-five Laotian (aged 18-82 years) and 234 Cambodian (15-92 years) immigrants participated in separate community-based surveys conducted during 1998 and 2002, respectively. Participants completed a questionnaire on health status and level of knowledge about viral hepatitis. Blood samples were collected and tested for the presence of HBV and HCV markers.

Results: Nine per cent of Laotian and 8% of Cambodian participants were infected with HBV. While 49% of Laotian and 64% of Cambodian participants showed evidence of previous exposure to HBV, 30% and 9%, respectively, were vulnerable to infection. The seroprevalence of antibodies to HCV was 3% in the Laotian and 8% in the Cambodian participants. Between one-fifth and one-third of the Laotians and Cambodians who had heard of HBV and HCV knew of possible transmission routes for the viruses. Most of those with HBV or HCV infection were unaware they were infected.

Conclusions: These findings indicate a significant prevalence of undetected HBV and HCV infections and an urgent need for the provision of culturally relevant information about viral hepatitis in immigrants of South-East Asian origin.

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Hepatitis B (HBV) and hepatitis C (HCV) viruses affect millions of people worldwide and are of major public health importance as both cause persistent infections that may have severe consequences. The most important of these is the development of chronic liver disease, including cirrhosis, and hepatocellular carcinoma. It is estimated that up to 40% of those chronically infected with HBV and 20% of those infected with HCV will go on to develop liver cirrhosis over a 10 to 30-year period.[1-3] The annual incidence of hepatocellular carcinoma in the cirrhotic patient ranges between 1.5-6.6% for HBV and 1.4-2.5% for HCV.[3] While vaccination against HBV is available, efforts to control HCV infection are limited to activities that prevent infection, and the identification and appropriate management of infected people.[4]

Rates of infection with HBV and HCV are higher in developing countries, particularly those in South-East Asia and sub-Saharan Africa, than in Australia. Most HBV infections in Asia occur either at birth or in early childhood through vertical and child-to-child transmission.[5] A substantial proportion of HCV infection is thought to result from the use of unsafe therapeutic injections.[6] In contrast, the transmission of HCV in Australia and other low-prevalence countries occurs predominantly through

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injecting drug use and HBV transmission through sexual contact.[5-7] Many developing countries have incorporated the hepatitis B vaccine into their national infant and childhood immunisation programs,[8] but an impact on transmission will not be immediate. HCV infection is likely to be an increasing problem in many developing countries as there is no vaccine and there are few public education programs.

During the late 1970s and 1980s, approximately 150,000 people (largely refugees) from Vietnam, Cambodia and Laos were resettled in Australia.[9,10] Post-arrival medical screening of refugees was established during this period, but screening was not universal nor management completely effective. The closure of these screening clinics by 1991,[11] and lack of any formal post-arrival health care process for new arrivals thereafter (with the exception of tuberculosis clinics), has meant that limited information about the health status of these people is available. Follow-up studies in Australia, Canada and other countries to assess the burden of illness in immigrant populations many years after resettlement have shown that some important infections are still common in people from Cambodia and Laos.[12,13]

We aimed to estimate the prevalence of serological markers of HBV and HCV exposure and examine knowledge and attitudes about viral hepatitis among Laotian and Cambodian settlers in Melbourne, Australia.

Methods

Cross-sectional surveys were undertaken in the Laotian and Cambodian communities in Melbourne using convenience samples. The Laotian survey was conducted over a two-week period in June and July 1998 and the Cambodian survey over a four-week period in July and August 2002. The surveys were conducted in collaboration with a general practitioner (GP) who spoke Laotian and two Khmer-speaking GPs. Approval for the surveys was granted through the Royal Melbourne Hospital Research Foundation Clinical Research Ethics Committee.

Recruitment

Letters of invitation translated into Laotian or Khmer, with an accompanying covering letter signed by each participating GP, were posted to 216 Laotian and 250 Cambodian households. The household addresses were selected from the patient databases maintained by the participating GPs. Family members were eligible for the study if they were 18 years or older in the Laotian community and 16 years or older in the Cambodian community. One 15-year-old from the Cambodian community was also included at his request and that of his parents. Those interested were invited to make direct contact with the participating GP surgeries.

In addition, the studies were promoted in the media, including community radio and print media, and at one of the local Buddhist temples serving many in the Cambodian community. Study posters and pamphlets in Laotian, Khmer and English were made available in the waiting rooms of participating GP surgeries and elsewhere. Access to further information was available through the general practices and from dedicated project officers. Prior to enrolment in the surveys, a plain language statement in Laotian, Khmer or English was provided and written informed consent was obtained from each participant.

Implementation of surveys and laboratory testing

The survey questionnaires were piloted in a small group of people from each community and refined prior to commencement of the study. Questions were asked about potential previous exposure to HBV and HCV, level of knowledge about viral hepatitis and current utilisation of health services.

The surveys were conducted in the surgeries of the participating GPs and involved the completion of questionnaires by face-to-face interview and the collection of blood samples. Participants were given the choice of completing only the questionnaire and/or having blood collected. Laotian and Khmer-speaking registered nurses were employed for the duration of each survey. When needed, the nurses also acted as interpreters. Blood samples were collected into plain blood tubes, separated, and the serum stored at –20°C.

Serum specimens were tested in batches at the Victorian Infectious Diseases Reference Laboratory (VIDRL) for the presence of hepatitis B surface antigen (HBsAg), hepatitis B core antibody (HBcAb), hepatitis B surface antibody (HBsAb) and hepatitis C virus antibodies (anti-HCV), using standard diagnostic kits from Abbot and/or Murex (Abbott Australasia, Murex Diagnostics Australia). Antibodies to the hepatitis A virus (anti-HAV) were only assayed in the Cambodian survey. VIDRL is the State's largest accredited public health reference laboratory.

Patient follow-up

Participants found to be positive for HBV and HCV were followed-up by the participating GPs with appropriate clinical information, management and/or referral to specialist services. Vaccination was recommended for participants with inadequate levels of HBsAb and family members of those who were HBsAg positive. Feedback on survey findings was provided to the respective communities through community leaders, community radio and the provision of health messages at the 2003 Khmer New Year celebration.

Statistical analysis

Participants whose HBsAb result was low positive and those with equivocal HBcAb and equivocal anti-HCV were coded as positive. Age was analysed in groups reflecting adolescence and young adults, working age adults, and older people. Statistical analysis was performed using Stata software, version 8.[14] For comparisons within groups, the chi-square (χ^2) test or Fisher's exact test was used for univariate analyses of categorical variables. For various outcome variables, explanatory variables found to have a significant association in univariate analysis (p=0.05) were included in a logistic regression model to allow adjustment for potential confounders. The Mann-Whitney test was used to compare median ages for males and females.

Results

Laotian participants

Demographics. Ninety-five participants were recruited into the study and demographic and resettlement details are shown in Table 1. Ninety-three participants were born in Laos, one in Thailand and another in Australia. The majority (n=86, 91%) nominated Laotian as their first language, and more than half (n=53, 56%) spoke only Laotian at home.

Knowledge of hepatitis. Seventy participants (74%) had heard of 'hepatitis', a result that was not influenced by gender, age group or year of arrival in Australia (p=0.88, 0.13 and 0.75, respectively). Of these, almost two-thirds did not know of any symptoms (n=43, 61%) or complications (n=46, 66%) associated with hepatitis. Fifty-six per cent of those who had heard of hepatitis knew specifically of HBV (39/70) and 47% knew of HCV (33/70). However, only 44% (17/39) and 27% (9/33) of those who had heard of HBV and HCV respectively could identify possible modes of transmission.

Hepatitis serology. Nine participants (9.5%) were identified as HBV chronic carriers (HBsAg and HBcAb positive), three of whom were female (see Table 2). Seven of the nine (78%) were previously unaware of their HBV status. There was no association between age group and HBsAg status (p=0.49). Thirty-three male and 23 female participants (59% of the total tested), including chronic carriers, had evidence of past HBV exposure (HBcAb positive). Their median age was 44 years (range 24-82) compared with 36 years (18-73) in those without evidence of past exposure (p=0.72). Females were less likely to have been previously exposed to HBV than males (OR=0.27, p=0.003). Participants with evidence of past HBV exposure were no more likely to be aware of the symptoms and complications of the disease than those not exposed (p=0.68). Of the 39 participants with no evidence of current or past HBV infection, six males and five females were presumed vaccinated (HBsAb only detected).

Two females and one male (3% of those tested) had evidence of previous exposure to HCV (anti-HCV detected). None of the three were aware of this, nor had they previously heard of hepatitis C. None reported a past history of intravenous drug use.

Cambodian participants

Demographics. Two hundred and thirty-four individuals participated in the study but not all responded to every question on the questionnaire or provided blood samples for testing. Demographic and resettlement details are shown in Table 1. Participants were born in Cambodia (n=224), Thai refugee camps (n=8) or in Australia (n=2). Sixty-one per cent (139/229) arrived in Australia when formal refugee medical screening clinics were in operation. Khmer was spoken at home by 96%, although 39% (88/232) acknowledged that they could not read their spoken language. Only 59 (25%) considered themselves proficient in English. There was a low level of education among participants (see Table 1) and more than two-thirds (159/232) were unemployed.

Knowledge about hepatitis. Ninety-four per cent of participants (217/232) had heard of 'hepatitis', and this was not dependent upon age group, gender, or year of arrival in Australia (p=0.62, 0.30 and 0.90, respectively). There was a significant association between knowing about hepatitis and previous exposure to HBV (p=0.01), which was not seen among those exposed to HAV or HCV (p=0.61 and 0.76, respectively). About half (124/232, 53%) the participants had heard specifically of hepatitis A, B and C but 67% (155/232) were unsure of the possible transmission pathways for these viruses.

Hepatitis serology. Four participants did not have tests for detection of anti-HAV and HBV infection because they had recently been tested or already knew their immune or infection status. Permission was given for the investigators to confirm test results with the treating GP for two of these participants. Three participants were not tested for anti-HCV.

Prevalence of HBV markers is shown in Table 2. Ten female and nine male participants (8% of those tested) were found to be chronic HBV carriers. Of these, 15 (79%) were unaware of their carrier status. All chronic HBV carriers were born in Cambodia. The median age of HBV carriers was 37 years (range 20-57) for males and 39 years (range 23-67) for females, and seven of the

Table 1: Characteristics of participants involved in Laotian and Cambodian prevalence surveys undertaken in Melbourne, Victoria.

Survey and participants	Laotian participants	Cambodian participants
Survey date conducted	June-July 1998	July-August 2002
Participant number, n	95 (54% female)	234 (54% female)
Age range at testing (median)	18-82 years (43)	15-92 years (45.5)
Males	18-82 years (43)	15-78 years (45.5)
Females	19-74 years (39)	18-92 years (45.5)
Age range at arrival in Australia	Not recorded	1-70 years
Number (%) participants born in:	Laos 93 (98%)	Cambodia 224 (96%)
Years of arrival in Australia	1976-91	1974-2002
Median time since resettlement	12 years	14 years
First language	Laotian (91%)	Khmer (96%)
Number (%) participants living in households occupied by:		
1-2 persons	0	26 (11%)
3-4 persons	43 (45%)	67 (29%)
5 or more persons	52 (55%)	139 (60%)
Education level:		
No formal schooling	Not recorded	14 (6%)
Some schooling		105 (45%)
Completed primary		46 (20%)
Completed secondary		49 (21%)
Tertiary		18 (8%)
Contact with health care provider (most frequently GP) in last 12 months	56%	95%

female carriers were of childbearing age (18-45 years). There was no effect of gender or age group on HBV carriage (p=0.94 and 0.17, respectively).

Seventy-one per cent of participants (165/232) had evidence of past exposure to HBV (i.e. HBcAb detected). Using univariate analysis, detection of HBcAb was associated with being male, being aged 40 and over, increasing age on arrival in Australia, being born in Cambodia, and travel to and frequency of travel to Cambodia. When combined in a logistic regression model, only gender, age group and country of birth remained independently associated with the outcome variable (p=0.046, <0.001, 0.044, respectively). There was also no indication of vaccination in 21 of the 64 participants who had not been exposed to HBV (see Table 2).

Fourteen females and four males (8% of all tested) aged between 21 and 67 years (median 48.5 years) had evidence of exposure to HCV. All were born in Cambodia and had been in Australia for a median of 14 years (range 1-23 years). Twelve were unaware that they were potentially infected. Three participants with anti-HCV detected were also chronic HBV carriers. There was no reported history of blood transfusion or injecting drug use among those with exposure to HCV.

One hundred and twenty female and 103 male participants (97% of those tested) had evidence of exposure to HAV (see Table 2). Of the seven without evidence of exposure, five were born outside Cambodia (two in Australia, three in Thailand), four were female, and all were aged younger than 24 years.

Discussion

This study reports the prevalence of markers for viral hepatitis in immigrants and refugees from Laos and Cambodia who resettled in Melbourne, Australia, up to 28 years ago. It strengthens the findings of earlier studies that settlers from Indochina are at continued risk from undiagnosed infectious diseases many years after resettlement in a new country.[12,13]

Since ethnic communities are not well enumerated and are difficult to access, this study was conducted using convenience samples. This is a common approach in studies of immigrant and refugee communities.[15-17] Moreover, due to the lack of standardised collection of country of birth and ethnicity for hepatitis B and C notifications nationally, hepatitis infections in immigrants are not well documented.[18] Given the sampling approach, the results are only representative of the groups from which they were drawn. However, there are findings common to both surveys that are indicative of potential language problems, poor knowledge about hepatitis, and unrecognised HBV and HCV infection in the wider Laotian and Cambodian communities.

The low proficiency in English in both the Laotian and Cambodian participants is of concern as health promotion information in Australia is more widely available in English. As a majority of the study participants from both communities speak predominately in their native tongue or have a limited ability to read English and even their own language, it is likely that most will not have access to many types of health information. Previous studies have also stressed the need for health information to be both linguistically and culturally appropriate as settlers are generally unfamiliar with standard Western medical terminology and have a poor comprehension of translated health information.[15,19,20]

Although a majority of participants in both surveys had heard of hepatitis, fewer than half were aware of the different viruses causing hepatitis and very few understood how the different forms of hepatitis were transmitted. Lack of understanding of potential transmission risks may have some bearing on the reported spread of HBV within households of settlers from South-East Asia.[21] Lack of knowledge of infection status and, in the case of HBV, lack of vaccination of family members, would compound the problem.

The prevalence of chronic HBV infection in both studies was lower than that reported in previous surveys of similar communities,[22,23] but was significantly higher than the recent estimate of between 0.4% and 0.8% reported in Australia.[18] The prevalence of HBV carriage among the participants surveyed is consistent with the prevalence reported in Cambodia and Laos.[24,25] Seventy-nine per cent of HBV carriers from both participant groups were unaware that they were potentially infectious, highlighting the need for immigrant and refugee health assessments and vaccination of non-immune family members. In addition, frequent visits to health care providers (largely GPs) suggests missed opportunities to diagnose HBV, provide

Table 2: The prevalence of hepatitis A, B and C serological markers among Laotian and Cambodian survey participants in Melbourne, Australia.

Infection status	Serological marker(s)	Laotian participants	Cambodian participants
Previous exposure to, or vaccination against, HAV	anti-HAV	Not tested	223/230 (97%)
Current chronic infection with HBV	HBcAb & HBsAg	9/95 (9%)	19/232 (8%)
Previous exposure to HBV but no evidence of chronic infection	HBcAb & HBsAb	47/95 (49%)	149[a]/232 (64%)
Vaccination against HBV	HBsAb only	11/95 (12%)	43/232 (19%)
No previous exposure to, or vaccination against, HBV	No HBV markers	28/95 (30%)	21/232 (9%)
Previous exposure to HCV	anti-HCV	3/95 (3%)	18[b]/231 (8%)

Notes:
(a) Thirteen participants had a low positive HBsAb result and three participants had equivocal HBcAb.
(b) An equivocal result was recorded for three participants.

appropriate clinical management, and protect those at risk of infection.

It is likely that infection with HCV among participants occurred in Asia as none reported any of the common modes of transmission in Australia. However, it is possible that participants may have withheld information on some types of exposure. The 8% prevalence of anti-HCV in Cambodian settlers in this survey was twice that reported for Cambodia.[26] Although we found the anti-HCV prevalence in Laotian participants to be lower than in Cambodian participants, this may have been due to sampling variation in the two convenience samples. Risk factors for HCV infection among people from South-East Asia include exposure to unsafe injections, cosmetic and other tattooing, and traditional medical folk remedies such as acupuncture and suidama/cupping.[27,28] However, we have been unable to find evidence of differential risk, comparing people from Cambodia and Laos.

As infection with HAV is common in countries with poor sanitary and hygienic conditions, we therefore assume that the detection of HAV-IgG in most of the participants is due to previous exposure in Cambodia.[29] The finding of anti-HAV in 97% of the Cambodian participants in the current study is consistent with earlier findings in Cambodia and other neighbouring countries.[24,30] This would suggest that HAV infection occurs primarily during childhood and almost universally.

Conclusion

The high prevalence of hepatitis B and C infections found in this study highlights the risk of later development of chronic hepatitis and its complications among immigrants and refugees from South-East Asia. Consequently, a greater effort is needed to raise awareness among primary health care providers of the health needs of these communities. New settlers should have easy access to comprehensive health assessments and every opportunity should be taken to provide hepatitis B vaccination to non-immune individuals, particularly if a family member is known to be infected. Settlers diagnosed with chronic HBV or HCV should have access to regular monitoring for complications and antiviral therapy if appropriate. There is also a need for the provision of culturally and linguistically appropriate information and education programs about viral hepatitis and its transmission to settlers from high prevalence countries.

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