

HEALTH PROBLEMS OF FOREIGN WORKERS - MICROBIOLOGICAL INVESTIGATIONS

Ngeow Yun Fong, Ng Kee Peng, Savithiri Devi Puthuchery, Lam Sai Kit

Department of Medical Microbiology, Faculty of Medicine, University of Malaya, 50603, Kuala Lumpur, Malaysia

ABSTRACT: Foreign workers in Malaysia are screened for certain infectious diseases prior to their entry to the country but some escape medical screening and others acquire infection during their stay in the country. The Faculty of Medicine, University of Malaya was commissioned to study the impact of foreign labour on the local health system and, as part of the investigations, 584 foreign workers attending local outpatient clinics were examined for serological evidence of syphilis, HIV infection, viral hepatitis B, C and E, as well as for enteric infections by *Salmonella*, *Shigella* and *Vibrio cholerae*.

The results showed that apart from viral hepatitis E, the prevalence rates of the infections looked for were not notably higher than those for the general Malaysian population. The seroprevalence rates obtained were 2.6% for syphilis, 0.2% HIV infection, 3.8% viral hepatitis B, 1.0% viral hepatitis C, 14.4% viral hepatitis E. The detection of HEV IgM in 7.7% of the workers screened indicates that these infections could have been acquired during their stay in Malaysia. (JUMMEC 2002; 1:67-69)

KEYWORD: Foreign workers, syphilis, HIV, hepatitis, enteric bacterial pathogens

Introduction

One of the many perils ascribed to population movement is disease transmission from infected or carrier migrants to the non-immune local population. In Malaysia, foreigners and travelers returning to the country have been suspected of causing outbreaks of cholera by the 0139 Bengal strain, chloramphenicol-resistant typhoid and W135 meningococcal disease. Migrant workers have to undergo health checks before gaining entry to the country and the majority is expected to be clear of infectious diseases. However, screening tests may not detect all infections, especially early or inactive infections which may develop into overt disease later on. Thus, migrant workers are seen as potential reservoirs of infection for the local population; but, these individuals are also at risk of contracting infections during their stay in the country. Male workers away from their families may turn to local brothels for recreation and thus expose themselves to sexually transmitted diseases. Enteric infections may result from frequent eating at hawkers' stalls.

When the Faculty of Medicine, University of Malaya was commissioned to investigate the impact of foreign labour on the local health system, an opportunity arose for the testing of foreign workers to determine the prevalence of syphilis, hepatitis, human immunodeficiency vi-

rus (HIV) infection and major intestinal infections among those who seek treatment at local outpatient clinics.

Materials and Methods

The study population consisted of foreign workers who presented to the Primary Health Care outpatient clinics at the University Malaya Medical Centre (UMMC) for treatment of a variety of ailments. From each foreign worker who agreed to participate in the study, about 8 ml of blood was obtained by venepuncture and sent to the Department Medical Microbiology laboratory via the Centre for Immigrant Studies, Faculty of Medicine, University of Malaya. Serum was separated and kept at -20°C until used for serology. From some of the workers, stool samples were also collected for bacteriological examination.

Serum samples were tested for evidence of syphilis by the rapid plasma reagin (RPR) test (Becton Dickinson, USA) and the *Treponema pallidum* Haemagglutination (TPHA) test (Fujirebio, Japan). Viral hepatitis B (HBV), C (HCV) and Human Immunodeficiency Virus infections

Correspondence:

Professor Ngeow Yun Fong
Department of Medical Microbiology, Faculty of Medicine
University of Malaya, 50603 Kuala Lumpur,
Malaysia

were detected by the AxSYM MEIA (Abbott Laboratories, Abbott Park, IL, 60064, USA). Sera showing positive HBsAg (hepatitis B surface antigen), anti-HCV antibodies or anti-HIV 1 / 2 antibodies were tested again and only repeatedly reactive sera were considered true positives. Viral hepatitis E (HEV) IgG was detected by an *in vitro* qualitative EIA (Abbott Laboratories, Abbott Park, IL, 60064, USA) while the HEV IgM was detected by the HEV IgM ELISA (Genelabs Diagnostics, Singapore).

Stool samples collected in stool cups were inoculated into Selenite broth and alkaline peptone water as well as onto DCA and TCBS agar plates for incubation at 36°C for up to 48h, for the isolation of *Salmonella* and *Shigella* species and *Vibrio cholerae*.

Results

A total of 584 serum samples were examined by the RPR, TPHA, and tests for anti-HIV 1 / 2 antibody, HBsAg and anti-HCV antibodies, while only 104 were tested for HEV IgG and IgM antibodies. The results are shown in table 1.

Table 1. Results of serological tests for syphilis, HIV infection and hepatitis B, C and E

Test	No. Tested	No. (%) Positive
RPR	584	28 (4.8)
TPHA	584	15 (2.6)
HIV	584	1 (0.2)
HBsAG	584	22 (3.8)
HCV ab	584	6 (1.0)
HEV IgG	104	15 (14.4)
HEV IgM	104	8 (7.7)

The interpretation of syphilis serology depends very much on clinical history that, unfortunately, is not available in this study. The RPR is a non-specific test that can be falsely positive in various clinical conditions. It can also spontaneously become negative in late syphilis. The TPHA test detects *Treponema pallidum*-specific antibodies and usually remains positive in established infection even long after adequate treatment. However, it is relatively insensitive in early syphilis. In this study, the prevalence of syphilis is 2.6% by the TPHA test and 4.8% by the RPR test. The true prevalence is likely to be closer to 2.6% since biological false positives are more probable than early syphilis as causes of RPR-positive, TPHA-negative results. This prevalence is slightly higher than that reported for Malaysian blood donors (1-1.5%) but very much lower than the rates reported for local STD clinic attendees (14-30%).¹

HIV infection was detected in only one subject, giving a prevalence of 0.2% that is similar to the 0.1-0.2% de-

tection rate among Malaysian blood donors.² Similarly, the HBsAg positive rate of 3.8% is about the same as the average 4% HBV carriage rate for Malaysians.³ Anti-HCV antibodies (1.0% prevalence) are less frequently seen among foreign workers than among Malaysian blood donors (1.9%) and intravenous drug-users (30%)⁴. HEV which has an oral-fecal route of transmission, was seen in 14.4% of the workers, half of whom appeared to have a recent infection as indicated by positive IgM tests. Only 79 stool samples were examined for *Salmonella* and *Shigella* and only 53 for *V. cholerae*. All were culture-negative for these enteric pathogens.

Discussion

The foreign workers examined in this study came from Bangladesh, Pakistan, Myanmar and Indonesia, where, as in many other countries in Asia, behaviour patterns and extensive risk factors exist to facilitate the spread of HIV and other sexually transmitted infections (STI).⁵ Official reports indicate very low overall prevalence rates (HIV infection in 0.03% and 0.10% of the adult population in Bangladesh⁶ and Pakistan⁷, respectively) but smaller studies on selected populations found large reservoirs of infection among specific at risk groups (HIV among 53% drug-using prisoners tested in Bali; syphilis among 43% of female sex workers and 18.2% of male sex workers in Bangladesh)⁵. Migrant workers have been cited as important vehicles of STI transmission within each country but there is little evidence that the migrant workers to Malaysia have increased the incidence of these infections in this country.

The relatively low rates of HIV infection and syphilis obtained in this study could be due to 1) effective screening at the country of origin and on entry to Malaysia, 2) infrequent contact with local commercial sex workers and intravenous drug abusers and 3) biased sampling caused by the selection of the more health conscious and legally-employed workers who attend government clinics. It is possible that foreign workers with suspected STIs prefer to be treated by general practitioners or self-medicate.

Intestinal infection with *Salmonella*, *Shigella* and *Vibrio* appears to be uncommon among foreign workers although these infections are endemic in their countries of origin. The low isolation rate obtained is most likely to be due to the small numbers examined and the fact that not all samples were from subjects with gastrointestinal symptoms. Although salmonellae may be isolated from asymptomatic individuals, *Shigella* species and *V. cholerae* are almost never isolated from those not suffering from gastrointestinal disorders. Unlike hepatitis B, hepatitis C and E are not routinely tested for in the screening of foreign workers. Hence, workers infected with HCV or HEV would have been allowed into the country. The high HEV antibody prevalence among the

workers examined is not entirely unexpected as HEV is believed to be spread by fecal contamination of drinking water; and major waterborne epidemics have occurred in North and East Africa and in Asia, including Myanmar.⁸ It is probable that most of the HEV seropositivity is the result of past exposure in the workers' country of origin, but, 7.7% of the workers had HEV IgM antibodies, indicating the possible acquisition of infection after arrival in this country. In Malaysia, HEV is not a common etiologic agent among patients presenting with clinical hepatitis (KP Ng, unpublished data). In a study of 200 antenatal women at the University Malaya Medical Centre, anti-HEV antibodies (both IgG and IgM) were not detected among the women screened (KP Ng, unpublished data). In contrast, anti-HEV IgG and anti-HEV IgM were detected in 10.3% and 4.1% respectively, of individuals infected with HIV.⁹

References

1. Epidemiology of STDs in Malaysia. YF Ngeow. Proceedings of the Workshop on the Epidemiology of HIV and AIDS: Methods, Approaches and Applications. Eds SK Lam, KP Ng, YF Ngeow. 1996. p.35-40.
2. INg Kee Peng, Rahman B Ismail, Saw Teik Leong. Evaluation of a rapid whole blood test for antibodies to HIV-1 and HIV-2. *Asia Pacific J Mol Bio & Biotech* 2 (3):217-220 (1994).
3. Ng KP, Saw TL, Nor Hayati AA, et al. Viral hepatitis B and HIV infection in the University Hospital Kuala Lumpur – A two years prospective study. Presented in Malaysia-Singapore 29th Congress of Medicine, 10-13 August 1995, Kuala Lumpur.
4. K P Ng, T L Saw, Wong NWD, Chuah SY, Nagaratnam. The prevalence of anti-HCV antibody in risk groups and blood donors. *Med J Malaysia* 1995, 50(4):302-305.
5. UNAIDS — AIDS Epidemic Update: December 2001 — Asia and the Pacific UNAIDS
6. National behavioral and serological surveillance 2001. World Bank March 2002.
7. National behavioral and serological surveillance 2001. World Bank April 2002
8. *American Journal of Tropical Medicine and Hygiene* 1999;61:331-335
9. K P Ng, T L Saw, A Baki, J He, N Singh, CM Lyles . A seroprevalence study of viral hepatitis E infection in Human Immunodeficiency Virus type 1 infected patients in Malaysia. *Med J Malaysia* 2000, 55(1):58-63.