

Research Note

High Seropositivity for *Entamoeba histolytica* Infection in Japanese Homosexual Men Including Male Prostitutes

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Previous investigations in our laboratory disclosed that Japanese homosexual men were highly seropositive for *Entamoeba histolytica* infection as examined by the gel diffusion precipitin test (GDP) and enzyme-linked immunosorbent assay (ELISA) (Takeuchi *et al.*, 1989; 1990). On the basis of the view proposed by Jackson (1987), we envisaged, from these observations, that pathogenic strains of *E. histolytica* were spread among Japanese male homosexual population, which seemed in contrast to the epidemiology of sexually transmitted amebiasis in western countries reported, for instance, by McMillan *et al.* (1984) and Goldmeier *et al.* (1986). Occurrence of pathogenic *E. histolytica* in such a biased population was further supported by our zymodeme analysis of the ameba isolates from Japanese homosexual men, which enabled us to detect pathogenic zymodemes like II, XIV and

XIX (Nozaki *et al.*, 1989; Kobayashi *et al.*, 1990). This was also confirmed by our recent observation that the ameba isolates from Japanese homosexual men with invasive amebiasis showed a positive reactivity to a monoclonal antibody specific for pathogenic *E. histolytica* (Kobayashi *et al.*, submitted for publication). Thus, there seems little doubt that pathogenic *E. histolytica* is at least partially responsible for the occurrence of a large number of individuals with invasive sexually transmitted amebiasis in Japan. However, detailed epidemiological analysis on the amebic infection in such a biased population on the basis of their backgrounds, e.g., sexual behavior, has not been attempted. It seems worthy, therefore, to know the prevalence in male prostitutes, since they might be one of the sources of pathogenic ameba infection in Japanese male homosexual population.

We could recruit 87 homosexual men in Nagoya City, the 4th largest city in Japan. Sera were isolated and examined for anti-amebic antibody by GDP (Takeuchi and Kobayashi, 1983), ELISA (Takeuchi *et al.*, 1988) and Western blotting (Okuzawa *et al.*, 1988). Western blotting was done only for the ELISA-positive individuals. Criteria for the positive reactions in these procedures were also given in the same literatures. Their sexual history was also investigated to find male prostitutes for biased men.

Among these 87 homosexual men, 27 were found to be male prostitutes (average age; 21.3

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years), and the remainings simple male homosexuals (average age; 46.2 years). As shown in Table 1, of the 27 male prostitutes, only 1 was judged positive by GDP, ELISA and Western blotting, whereas none of the remaining 26 individuals were positive by GDP and ELISA. On the other hand, 4 out of the 60 simple male homosexuals were positive by all of these three methods, while 3 of the remainings were judged positive by ELISA and Western blotting but not by GDP. Another 1 was positive only by ELISA. Fifty sera from heterosexual males of comparable ages were employed as the control, which showed that none of them were positive by GDP and ELISA.

Our present investigation indicated that Japanese homosexual men as a whole have a high seropositivity for amebic infection. This is consistent with our previous data (Takeuchi *et al.*, 1989; 1990). The rate of positive amebic serology of simple male homosexuals appeared to be higher than that of male prostitutes, which does not support the idea that male prostitutes are primarily responsible for distribution of pathogenic *E. histolytica* among Japanese biased population. However, the observation that we could find a serologically positive male prostitute may suggest that such a prostitute would be a source of further widespread infection of pathogenic *E. histolytica* in the biased population. The

higher positive rate by ELISA or Western blotting seems reasonable, as the sensitivity of GDP is lower than that of these two methods (Takeuchi *et al.*, 1988; Okuzawa *et al.*, 1988).

Although the impact of sexually transmitted amebiasis to the public health in western countries has been decreasing (Druckman and Quinn, 1988), occurrence of pathogenic *E. histolytica* in Japanese male homosexual population, as evidenced by our series of studies, apparently strengthens necessity of further efforts for detailed investigations on this unusual sexually transmitted disease. Moreover, the fact that virtually none of such epidemiological studies have been done in developing countries where homosexuality is one of the risk factors of HIV infection also supports our view.

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Table 1 Seroprevalence of *Entamoeba histolytica* infection of Japanese homosexual men including male prostitutes

	No. examined	GDP(+) ELISA(+) WB(+)	CDP(-) ELISA(+) WB(+)	GDP(-) ELISA(+) WB(-)	GDP(-) ELISA(-)
Male prostitute	27	1	0	0	26
Homosexual males	60	4	3	1	52
Heterosexual males	50	0	0	0	50

GDP: gel diffusion precipitin test

ELISA: enzyme-linked immunosorbent assay

WB: Western blotting

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