Laboratory and Epidemiology Communications

Seroprevalence of Human Herpesvirus 8 in the Vanuatu Islands in Eastern Melanesia

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Communicated by Ichiro Kurane
(Accepted December 8, 2005)

Human herpesvirus 8 (HHV-8), also known as Kaposi’s sarcoma (KS)-associated herpesvirus (KSHV), is a lymphotropic oncogenic gammaherpesvirus that is closely related to Epstein-Barr virus (EBV). It was first identified in the KS lesions of acquired immunodeficiency syndrome (AIDS) patients (1). The HHV-8 DNA sequence has been demonstrated in all forms of KS in patients with or without AIDS (2). It was also shown that the virus is encoded with several genes homologous to cell cycle-associated genes and cytokines, suggesting that HHV-8 infection is necessary for the development of KS (3). The worldwide geographic distribution of HHV-8 infection appears to vary greatly. HHV-8 infection is uncommon in the general population of Japan (seroprevalence: 0.2 - 1.4%) (4,5) and western countries, such as the United States (5.2%) (6) and Britain (1.7%) (7), but is more common in some Mediterranean countries, including Italy (13.8%) (8) and Greece (16.7%) (9), and is widespread in some parts of Africa (38.7% in Uganda, 37.5% in Zambia, and 41.9% in Ghana) (6) and China (46.6% in Xinjiang area) (10).

Vanuatu consists of 80 islands in Melanesia, in the South-
In conclusion, HHV-8 infection appears to be uncommon in the populations of Vanuatu. However, the reason for the different prevalence of seropositivity compared with that of PNG remains unclear.

REFERENCES


10. Dilnur, P., Katano, H., Wang, Z. H., Osakabe, Y., Kudo, M., Sata, T. and Ebihara, Y. (2001): Classic type of Kaposi’s sarcoma and human herpesvirus 8 infection in the west Pacific (Fig. 1). No information is available about the distribution of HHV-8 infection in indigenous populations of this area. To verify whether HHV-8 infection is endemic in Vanuatu and to determine seroprevalence rates, we studied sera from residents of four representative islands in Vanuatu: Anetitum Island, Etafe Island, Pantecost Island, and Santo Island, obtained between 1998 and 1999. Subject ages (mean ± SD) were 15.6 ± 15.3 (65 males) and 20.0 ± 15.9 (75 females) on Anetitum Island, 9.77 ± 0.91 (26 males) and 9.63 ± 0.77 (24 females) on Etafe Island, 18.9 ± 20.0 (31 males) and 20.2 ± 17.1 (39 females) on Pantecost Island, and 7.32 ± 2.89 (37 males) and 6.52 ± 2.82 (33 females) on Santo Island. Informed consent was obtained from all individuals or their guardians prior to participation in the study. A finger prick blood sample was collected on chromatography filter paper (ET31CHR; Whatman Ltd., Kent, UK), then stored at –20°C until analysis. Serum was extracted from the filter papers by placing them singly in tubes containing phosphate-buffered saline (PBS) with 0.05% Tween 20 and incubated for 2 h at room temperature. The serum was withdrawn by a pasteur pipette. All sera were heat inactivated at 56°C for 30 min before use. The presence of anti-HHV-8 antibodies was determined by a mixed-antigen enzyme-linked immunosorbert assay (using K 8.1, ORF 59, ORF 65, and ORF 73 proteins as mixed antigens) and an indirect immunofluorescence assay using acetone-fixed TY-1 cells (HHV-8-positive primary effusion lymphoma cell line) (5,12).

Only one positive female was found among 70 individuals (1.43%) on Santo Island, and there were no positive findings on the other three islands. This seropositivity rate was found to be much lower than that (30.4% in Bensbach and 21.3% in Port Moresby) of the population of Papua New Guinea (PNG) in the west of Melanesia (13). The islands of Vanuatu were settled less than 4,000 years ago during a rapid population expansion from Island Southeast Asia that continued into western Polynesia (14). PNG had then already been occupied for at least 35,000 years (15). There continues to be discussion about possible interaction between these two populations when the second group colonized. Diamond (16) believed that this interaction was limited and called it “Express Train”. In contrast Terrell (17) believed it was multiple and called it “Entangled Bank”. Our results may suggest that HHV-8 prevalence was low in the founder population of Vanuatu, which was distinct from the PNG population, or that the latter was infected with HHV-8 rather recently. No definite differences in social or behavioral activities that may have affected the seropositivity of HHV-8 infection have been observed between the population of Vanuatu and PNG.


