Risk of Occupational Human Herpesvirus 8 Infection for Health Care Workers

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Human herpesvirus 8 (HHV-8), or Kaposi's sarcoma-associated herpesvirus, is highly prevalent in certain risk groups (human immunodeficiency virus-infected patients, transplant recipients, and patients on hemodialysis). Health care workers caring for these patients were found to be more frequently infected with HHV-8 than staff caring for other patients ($P < 0.01$).

Human herpesvirus 8 (HHV-8), or Kaposi's sarcoma-associated herpesvirus, is consistently associated with Kaposi's sarcoma, as well as with two rare lymphomas: body cavity-based lymphoma (BCBL), or primary effusion lymphoma, and the plasmacytic form of multicentric Castleman's disease. The high-risk groups for HHV-8 infection comprise human immunodeficiency virus (HIV)-infected individuals, transplant recipients, patients on hemodialysis, and individuals from areas of high endemicity, such as Africa or the Mediterranean (2). Sexual contact and, in areas of endemicity, perinatal infection are regarded as the main routes of infection. Transmission by blood contact or via transplantation has been documented; moreover, horizontal transmission—probably by infected saliva—has been suggested (3, 4). To date, no data on occupational infections by HHV-8 in health care workers are available. Our study investigated the HHV-8 immunoglobulin G (IgG) seroprevalence rates for health care workers caring for patients with a high risk for HHV-8 infection in an area of nonendemicity.

The prevalences of IgGs directed against HHV-8 latent and lytic antigens were determined by indirect immunofluorescence using the HHV-8-positive, Epstein-Barr virus-negative BCBL-1 cell line (5). Lytic antigens were induced by 20 ng of tetradecanoyl phorbol acetate/ml for 48 h. Briefly, for both assays, a suspension of induced or noninduced BCBL-1 cells was spotted onto 10-well slides, and the cells were air dried and fixed with ice-cold acetone for 5 min. For indirect immunofluorescence, the slides were first incubated with a 50- μ l serum dilution at 37°C for 60 min and then extensively washed with phosphate-buffered saline and exposed to a fluorescein isothiocyanate-conjugated goat anti-human IgG antibody (DiaSorin, Saluggia, Italy) for 30 min at 37°C. Samples with titers of at least 1:16 were considered positive. Eight sera from patients with histologically proven Kaposi's sarcoma were all positive for IgG against both antigens. Statistical analysis was done by Fisher's exact test.

The prevalence of antibodies against latent and lytic antigens is shown in Table 1. As expected in an area of nonendemicity, the HHV-8 prevalence in controls was low (4.7% for IgG against lytic antigens). In contrast, HIV-infected patients and transplant recipients were frequently infected (31.6 and 29.0%, respectively, for IgG against lytic antigens). In seropositive individuals, the median HHV-8 IgG titer was 1:128 for lytic and latent antigens in all nonimmunosuppressed subjects (controls, health care workers, and patients on hemodialysis). In contrast, the median antibody titer against both antigens increased to 1:512 in the immunosuppressed patients (transplant recipients and HIV-infected individuals). Reactivity to lytic antigens was observed more frequently than reactivity to latent antigens in all study groups. Nearly all individuals with antibodies against latent antigens also had antibodies against the lytic antigens; thus, the number of individuals with evidence of infection (IgG against latent or lytic antigens) was similar to the number of subjects with IgG against lytic antigens. IgG against latent antigens was detected in only two transplant recipients without evidence of IgG against lytic an-

TABLE 1. Prevalence of antibody to HHV-8 lytic or latent antigens in high-risk groups, health care workers with and without contact with risk groups, and controls^a

Group	No.	No. (%) HHV-8 IgG positive	
		Latent antigens	Lytic antigens
Controls (blood donors)	236	1 (0.4)	11 (4.7)
Health care workers			
Without contact with risk groups	152	1 (0.7)	3 (2.0)
With contact with risk groups	72	5 (6.9) ^{b,c}	9 (12.5) ^{b,d}
Risk groups			
HIV-infected patients	136	20 (14.7)	43 (31.6)
Transplant recipients	107	22 (20.6)	31 (29.0)
Patients on hemodialysis	101	5 (4.9)	16 (15.8)

^a HHV-8 IgG prevalence was significantly higher in medical personnel caring for risk groups than in blood donors or health care workers without contact with risk groups.

^b $P = 0.03$ versus blood donors.

^c $P = 0.01$ versus health care workers without contact with risk groups.

^d $P < 0.01$ versus health care workers without contact with risk groups.

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tigens. Thus, a total of 33 individuals (30.8%) with evidence of HHV-8 infection were found in this group.

Health care workers in contact with risk group patients were infected more frequently than controls ($P = 0.03$) or health care workers without contact with risk groups ($P < 0.01$), while medical staff without contact with risk groups were infected no more frequently than the controls (Table 1).

Importantly, none of the six HHV-8 IgG-positive health care workers caring for risk group patients belonged to one of the established risk groups. Due to the high prevalence of HHV-8 in men who have sex with men, the majority of HHV-8-infected individuals in areas of nonendemicity are males. Here, five of six HHV-8-positive health care workers were females.

Combined, these numbers clearly indicate that HHV-8 plays a role as an occupational infectious agent in medical staff. However, the relative risk for acquiring an HHV-8 infection when caring for high-risk patients (2.5; 95% confidence interval, 1.7 to 3.7) seems to be limited. One can only speculate about the routes of transmission. Although one obvious route for several viruses may be parenteral transmission, different reports by us and others suggest that infection by saliva may, in fact, be a relevant route (4). Dialysis staff showed a high prevalence of hepatitis G infection but not of hepatitis C infection;

in contrast to hepatitis G, hepatitis C is exclusively transmitted via infected blood (1).

In conclusion, medical staff caring for HHV-8 risk group patients are at risk for acquiring an occupational HHV-8 infection. Strict adherence to universal hygienic precautions, especially when dealing with risk group patients, is essential to reduce HHV-8 transmission to health care workers.

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