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KSHV seroprevalence, and blood and saliva viral loads in the HIV-infected population of south Texas

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Kaposi sarcoma (KS) is the most common neoplasm in HIV-infected subjects, and is associated with infection by Kaposi's sarcoma-associated herpesvirus (KSHV). Our previous studies have shown that KSHV epidemiology in South Texas is distinct with an increased KSHV seroprevalence in blood donors and unique distribution of KSHV genotypes in KS subjects. However, KSHV epidemiology in the HIV-infected population in South Texas remains undefined.

In this cross sectional study, we examined specific antibodies to KSHV latent nuclear antigen (LANA) by immunofluorescence antibody assay (IFA) and to KSHV lytic antigen ORF65 by ELISA in 25 HIV-infected KS subjects, 314 HIV-infected subjects, and 335 HIV-negative subjects. Relative antibody titers to ORF65 were estimated based on optical density values (O.D.). Blood and saliva viral loads were also determined in KSHV-seropositive subjects by quantitative real-time PCR. Antibodies to KSHV antigens were detected in 25 (100%) KS subjects, 114 (36%) HIV-infected subjects and 65 (19%) HIV-negative subjects. KS subjects had higher antibody titers to ORF65 compared to HIV-infected and -negative subjects (median O.D. 0.76 versus 0.47 and 0.27; p = 0.0017 and 0.0001, respectively). Antibody titers in HIV-infected subjects were also significantly higher than HIV-negative subjects (p = 0.0001).

Among the HIV-infected subjects, males had higher KSHV seroprevalence than females (42%, 95% CI: 35.6–47.4% versus 8%, 95% CI: 0.5–15.8%, $p < 0.0001$). Compared to subjects with >400 CD4+ T cell counts, those with <200 CD4+ T cell counts had higher KSHV seroprevalence (OR = 2.59, 95% CI: 1.4–4.80, p = 0.017) and higher antibody titers (median O.D. 0.48 versus 0.32; p = 0.001). KSHV blood and saliva viral loads were detected in 12 (48%) and 9 (36%) of 25 KS subjects, 16 (26%) and 12 (19%) of 62 HIV-positive KSHV-seropositive subjects, and none of the HIV-negative KSHV-seropositive subjects, respectively. Among the KS subjects, KSHV blood and saliva viral loads were detected more frequently in those with active KS than those without active KS (81.8%, 95% CI: 48.2–97.7% and 54.5%, 95% CI: 23.3–83.2% versus 18%, 95% CI: 2.2–51.7% and 45%, 95% CI: 16.7–76.6%, p = 0.004 and 0.05, respectively). Together, these results indicate that HIV infection and the status of HIV disease might modulate KSHV infection and replication, and impact the development of KS.