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Epidemiology of non-keratinocytic skin cancers among persons with AIDS in the United States

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Background

Immunosuppression may increase the risk for some skin cancers. Solid organ transplant recipients have an elevated risk for melanoma and, to a greater extent, squamous and basal cell carcinomas (two skin cancers derived from keratinocytes). The frequency and patterns of occurrence of skin cancers in HIV-infected persons have not been well documented. Ultraviolet radiation is an established risk factor for the various types of skin cancer. In the present study, we used linked AIDS and cancer registry data to examine skin cancer epidemiology among persons with AIDS. Cancer registries in the United States do not collect information on the occurrence of the two most common types of skin cancer, squamous cell and basal cell skin carcinomas, so these outcomes could not be included. Thus, our study focuses on the occurrence of melanoma, Merkel cell carcinoma, and appendageal carcinomas among persons with AIDS.

Methods

The HIV/AIDS Cancer Match Study links population-based HIV and AIDS and cancer registry databases in nine states and five metropolitan areas of the United States. We evaluated risk of the major non-keratinocytic skin cancers (melanoma, Merkel cell carcinoma, and appendageal carcinomas, including sebaceous carcinoma) for the period from 60 months before until 60 months after AIDS onset. Standardized incidence ratios (SIRs) were calculated to

relate skin cancer risk in people with AIDS to that in the general population. We also used logistic regression to compare risk according to demographic factors, CD4 count, and a geographic index of ultraviolet radiation exposure.

Results

The study included 497,142 people with AIDS diagnosed from 1980 through 2004. From 60 months before to 60 months after AIDS onset, persons with AIDS had elevated risks of melanoma (SIR = 1.3, 95% CI 1.1–1.4, n = 292 cases) and, more strongly, of Merkel cell carcinoma (SIR = 11, 95% CI 6.3–17, n = 17), appendageal carcinomas (SIR = 4.2, 95% CI 2.5–6.7, n = 17), and specifically sebaceous carcinoma (SIR = 8.1, 95% CI 3.2–17, n = 7). Risk for appendageal carcinomas increased with progressive time relative to AIDS onset (p-trend = 0.03), but this trend was not significant for melanoma (p = 0.10) or Merkel cell carcinoma (p = 0.66). Based on data for 308,152 subjects, melanoma risk was unrelated to CD4 count at AIDS onset (p-trend = 0.32). Risk of each of these skin cancers was higher in males than females and higher in non-Hispanic whites compared with other racial and ethnic groups. Across HIV risk groups, only men who had sex with men manifested an elevated risk for melanoma (SIR = 1.6). Risks for melanoma and appendageal carcinomas rose with increasing ultraviolet radiation exposure (p-trend < 10⁻⁴ and p-trend = 10⁻³, respectively).

Conclusion

Among persons with AIDS, there is a modest excess risk of melanoma that is not strongly related to immunosuppression and may instead relate to ultraviolet radiation exposure. In contrast, the greatly increased risks for Merkel cell carcinoma and sebaceous carcinoma in people with AIDS suggest an etiologic role for immunosuppression and the possibility that these cancers arise, at least in part, from loss of immune control of oncogenic viruses. The recent discovery of a novel polyomavirus in Merkel cell carcinoma tumors is consistent with this hypothesis. The modestly elevated risk of a common skin cancer (melanoma) and the greatly elevated risk of two rare non-keratinocytic skin cancers (as well as reports of aggressive squamous cell skin cancers in HIV-infected persons) suggest a need for guidelines aimed at prevention and early detection of skin cancers in HIV-infected individuals.

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