Contribution of HIV to the burden of Merkel cell carcinoma in the US

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BACKGROUND

- *Objective*: To quantify the burden of Merkel cell carcinoma (MCC) attributable to HIV in the US during 2001-2019.
  - MCC is an aggressive form of skin cancer with a 5-year survival rate of approximately 65%.
  - Risk factors of MCC include advanced age, immunosuppression, Merkel cell polyomavirus, and ultraviolet radiation.
  - Prior studies regarding HIV and MCC had few patients and did not estimate the burden attributable to HIV.

METHODS

- The HIV/AIDS Cancer Match (HACM) Study is a linkage of US HIV and cancer registries. We used these data to identify MCC (ICD-O3: 8247 C44.0-C44.9) patients in US cancer registries and determine which cases were in PWH.
- We calculated standardized incidence ratios (SIRs) comparing MCC incidence in PWH to the general population
- To estimate the population attributable fraction (PAF) of HIV to the MCC burden, we used the formula:
  - Pc*[(RR-1)/RR]
    - Pc is the prevalence of HIV among MCC patients
    - RR (approximated by the SIR) is the relative risk of MCC associated with HIV
- We report HIV viral load and CD4 counts in the year before MCC diagnosis

While PWH have *three times higher* risk of Merkel cell carcinoma than the general population, only *0.2%* of Merkel cell carcinoma cases are attributable to HIV.

Results

- 13,126 MCC cases were diagnosed in HACM cancer registries during 2001-2019
  - 46 (0.4%) were among PWH
- The median age of MCC diagnosis was
  - 56 years (IQR: 50–67) in PWH
  - 77 years (IQR: 68–84) in those without HIV
- The risk of PWH developing MCC was ~3 times higher than the general population (SIR=2.78, CI: 2.01–3.75)
  - PWH age 20-59 had especially elevated risk (SIR: 4.83 CI: 3.18–7.03)
- 0.2% of MCC cases were attributable to HIV (n=86). The PAF was notably higher in people 20-59 years old (2.0) and among non-Hispanic Black individuals (0.9).

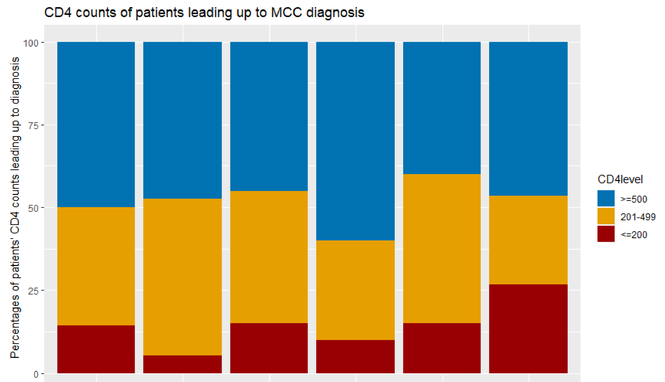
Burden of Merkel cell carcinoma among PWH in the US (2001-2019)

Demographic characteristics[a]	People with HIV n (%)	People without HIV n (%)	MCC in PWH %	SIR (95% CI)	PAF %
Overall	46	13,080	0.4	2.78 (2.01–3.75)	0.2
Sex: Male	41 (89)	8395 (64)	0.5	2.88 (2.05–3.94)	0.3
20 to 59 years old	30 (65)	1160 (9)	2.5	4.83 (3.18–7.03)	2.0
60+ years old	16 (35)	11,920 (91)	0.1	1.72 (0.99–2.80)	0.1
Hispanic or Latino	7 (15)	749 (6)	0.9	2.03 (0.75–4.42)	0.5
Non-Hispanic Black	4 (89)	213 (2)	1.8	1.87 (0.51–4.78)	0.9
Non-Hispanic White	34 (74)	11,909 (91)	0.3	3.18 (2.19–4.47)	0.2

a. 1 MCC patient with HIV and 209 MCC patients without HIV have an unknown or other race and ethnicity.

Results

- Among 24 individuals with a HIV viral load measure in the year before MCC diagnosis
  - 5 had <20 copies/mL (undetectable)
  - 16 had 20-99,999 copies/mL
  - 3 had >100,000 copies/mL
- Among 25 individuals with a CD4 count in the year prior to MCC diagnosis
  - 4 had <200 cells/mm^3
  - 10 had 201–499 cells/mm^3
  - 11 had >500 cells/mm^3



CONCLUSIONS

- PWH have a higher risk of MCC compared to the general population. While the overall contribution of HIV to the MCC burden is minor, a larger PAF was observed among younger and non-Hispanic Black individuals.
- The majority of PWH and MCC had disease markers indicating moderate to severe immunosuppression and lack of viral control leading up to MCC diagnosis.

ADDITIONAL KEY INFORMATION

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