

Risk of Kaposi Sarcoma in HIV-Positive Adults on ART: a Global Analysis

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Abstract
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Background

Kaposi sarcoma (KS) is one of the most common tumors in HIV-positive persons. Epidemic KS is caused by human herpesvirus 8 (HHV-8) infection and HIV-related immunosuppression. The prevalence of HIV and HHV-8 varies between different geographic regions. HHV-8 prevalence in the general population is much higher in sub-Saharan Africa than in Europe and North America, for example.

Objectives

- To compare KS incidence rates in HIV-positive adults on combination antiretroviral therapy (ART) globally
- To examine risk factors for developing KS in HIV-positive adults on ART

Methods

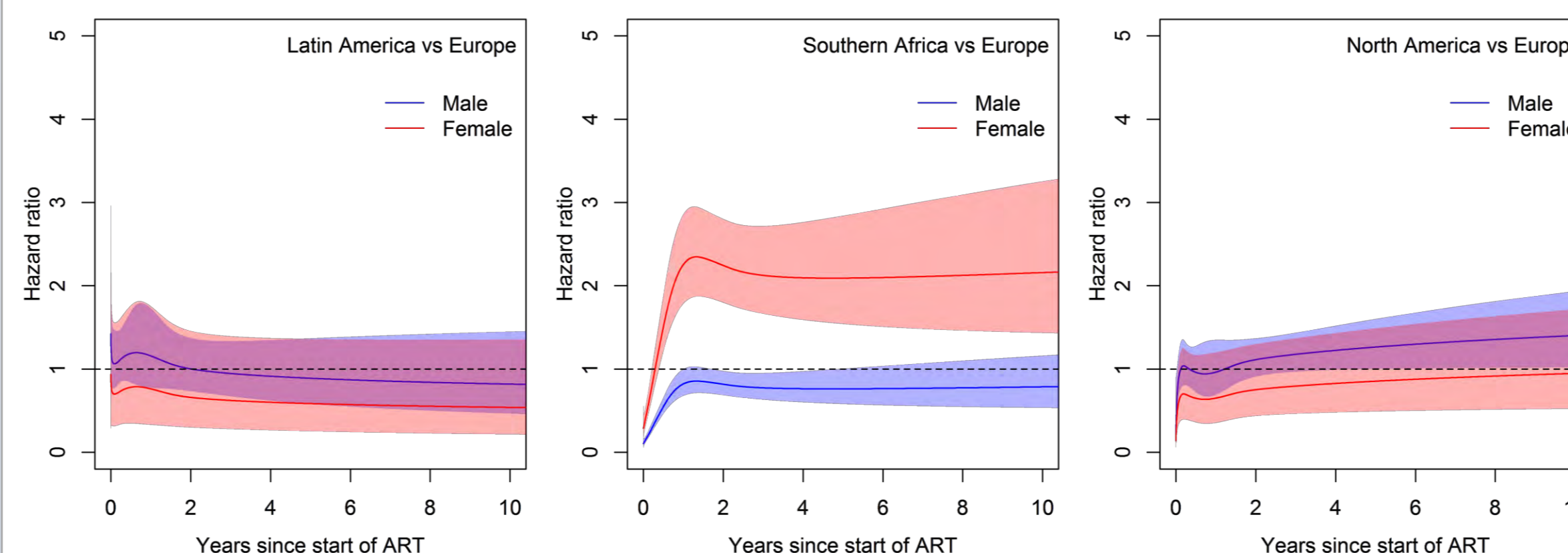
- We analyzed data from the International Epidemiologic Databases to Evaluate AIDS (IeDEA) and the Collaboration of Observational HIV Epidemiological Research in Europe (COHERE) in EuroCoord.
- We included HIV-positive adults (≥ 16 years) who initiated ART after enrollment into cohort from 1996 onwards.
- We compared the risk of incident KS after starting ART between regions using flexible parametric survival models with region-specific baseline hazards, adjusted for age, sex and its interaction with region, time-updated CD4 cell counts and year of ART start.
- We excluded the Asia-Pacific and Australia from multivariable analyses due to the small sample size.
- We present hazard ratios (HR) and 95% confidence intervals (CI) by time since ART start and at 2 years after ART start.

Table: Characteristics of included adults at ART initiation.

	Asia-Pacific	Australia	Southern Africa	Latin America	North America	Europe
Adults (N)	2,649	344	172,863	8,599	16,756	160,178
Median age [years]	36	42	35	36	40	37
	(31-43)	(35-48)	(30-42)	(30-43)	(34-46)	(31-45)
Men	69%	92%	37%	73%	75%	72%
MSM	23%	67%	NR	42%	50%	39%
Median CD4 cell count [cells/μl]	137	283	141	165	233	250
	(43-234)	(210-398)	(72-210)	(61-273)	(93-378)	(127-369)

ART, combination antiretroviral therapy; KS, Kaposi sarcoma; MSM, men who have sex with men, N, number, NR, not reported. Medians are presented with interquartile ranges.

Figure: Adjusted HR and 95% CI for the risk of developing KS in different regions.



ART, combination antiretroviral therapy; CI, confidence interval; HR, hazard ratio; KS, Kaposi sarcoma.

Results

- We included 361,389 HIV-positive adults from the Asia-Pacific, Australia, Southern Africa, Latin America, North America, and Europe (Table).
- Over 1.4 million person-years (pys) 2,725 adults developed KS for an overall incidence rate of 196/100,000 pys (95%CI 188-203).
- After 2 years on ART KS incidence was higher in women from Southern Africa than in European women (adjusted HR 2.2, 95%CI 1.8-2.8) and similar to European women in women from Latin and North America.
- In men crude KS risk after 2 years on ART was higher in North America compared to Europe (HR 1.5, 95%CI 1.2-1.9), in multivariable analyses this risk declined to HR 1.1 (95%CI 0.9-1.4). The change was mainly explained by adjusting for time-updated CD4 cell counts. KS risk was similar in men from other regions (Figure).

Limitations

- Migration data were not available for all regions and hence not considered in the analyses
- No data on HHV-8 status of included adults available
- KS diagnoses not in all regions histologically confirmed

Conclusions

Women in Southern Africa had a higher KS risk than women in Europe which was not explained by HIV-related risk factors. In men KS risk was similar across regions after adjusting for HIV-related risk factors. This pattern likely reflects different HHV-8 risk profiles: while men were at high risk of HHV-8 infection in most regions (MSM or resident in HHV-8 endemic regions) the main risk factor for HHV-8 infection in women was residence in HHV-8 endemic regions.

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