Kaposi Sarcoma Risk in Children on Antiretroviral Therapy from Africa, Europe and Asia

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Abstract #619

Background

Epidemic Kaposi sarcoma (KS) is caused by human herpesvirus 8 (HHV-8) infection and HIV-induced immunosuppression. HHV-8 prevalence varies between geographical regions: HHV-8 prevalence is higher in Eastern Africa than Southern Africa, and lower in Europe and Asia.

Objectives

- To compare KS burden in HIV-infected children on combination antiretroviral therapy (ART) between Eastern Africa, Southern Africa, Europe and Asia
- To examine risk factors for developing KS in children on ART

Methods (1)

Databases

We analyzed data from the International Epidemiologic Databases to Evaluate AIDS Southern Africa; the TREAT Asia Pediatric HIV Observational Database; and the Collaboration of Observational HIV Epidemiological Research in Europe in EuroCoord.

Methods (2)

Inclusion criteria and definitions

We included HIV-infected children aged <16 years at ART initiation after 1995. Geographic regions were defined according to the United Nations classification.

Statistical methods

Time at risk was measured from ART initiation to KS diagnosis, last follow-up visit, death, or database closure. We calculated KS incidence rates for the overall observation period, and by time periods after ART initiation. We ignored ART interruptions or treatment changes. We used Cox models to calculate hazard ratios (HR), adjusted for region and origin, sex, age at ART initiation, CDC stage at ART initiation and ART start year.

Limitations

- Only children on ART included
- KS ascertainment (mainly clinical versus histological confirmation) varies between regions

Results (1)

Study population

- We included data on 25,033 children from 16 countries in Eastern Africa (Zimbabwe, Zambia); Southern Africa (South Africa); Europe (Denmark, France, Germany, Ireland, Netherlands, Spain, and the UK); and Asia (Cambodia, India, Indonesia, Malaysia, Thailand, Vietnam).
- Median age at ART start was 5.0 years (interquartile range 1.8-9.1) and varied across regions (Table). Overall, 10% (n=2,429) of children and adolescents initiated ART in CDC stage C.

Table: Characteristics of included children at ART start

	Eastern Africa	Southern Africa	Europe, SSA origin	Europe, Non-SSA origin	Asia
Children (N)	11,197	9,182	658	934	3,062
Boys (%)	50%	50%	51%	49%	51%
Median age	6.1	3.4	8.7	3.3	5. 8
[years]	(2.3-10.3)	(1.0-7.3)	(5.0-12.1)	(0.6-8.8)	(3.0-8.8)
CDC stage C	8%	10%	10%	17%	12%
CDC stage missing	10%	3%	10%	8%	15%
Median CD4 cell	241	265	259	290	118
count [cells/µl]*	(120-403)	(108-466)	(135-406)	(140-469)	(26-300)
Median CD4%	14 (9-19)	14 (8-21)	14 (8-20)	17 (11-28)	9 (3-16)

ART, combination antiretroviral therapy; KS, Kaposi sarcoma; SSA, sub-Saharan African. Medians are presented with interquartile ranges.
*Children below the age of 5 years were excluded from the analysis of CD4 cell counts.

Results (2)

KS incidence rates and risk factors

- During 74,617 person-years (pys) of follow-up time, 26 children developed KS after ART initiation. Incidence rates per 100,000 pys were 85 in Eastern Africa (95% confidence interval [CI] 55-132), 11 in Southern Africa (95% CI 4-35), and 81 (95% CI 26-251) in children of sub-Saharan African (SSA) origin in Europe; no incident KS cases were observed in children of non-SSA origin in Europe and in Asia.
- The overall KS incidence rate was highest in the first three months on ART (206/100,000 pys, 95% CI 117-363), and declined steeply thereafter (Figure).
- KS risk was lower in girls than boys (adjusted hazard ratio [aHR] 0.3, 95% CI 0.1-0.9), and increased with age (10-15 versus 0-4 years; aHR 3.4; 95% CI 1.2-10.1) and advanced HIV/AIDS stage (CDC stage C versus A/B; aHR 2.4; 95% CI 0.8-7.3) at ART initiation.

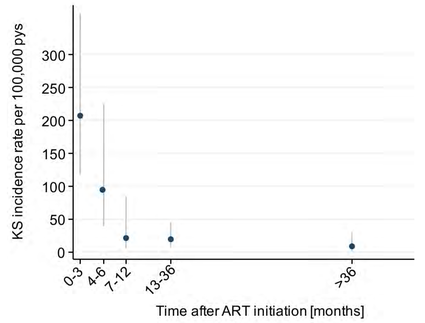

Figure: KS incidence rates by time on ART

Conclusions

HIV-infected children from sub-Saharan Africa, but not those from other regions, have a high risk of developing KS after ART initiation. In these children early ART initiation might reduce KS risk.

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