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Burden of Malaria in a Birth Cohort of HIV-exposed Ugandan Infants

Abel Kakuru[1], Paul Natureeba[1], Albert Plenty[2], Edwin Charlebois[2], Deborah Cohan[2], Tamara Clark[2], Diane Havlir[2], Moses Kamya[3], Theodore Ruel[2]

1) Infectious Diseases Research Collaboration, Kampala, Uganda; 2) University of California, San Francisco, CA, USA; 3) Makerere University College of Health Sciences, Kampala, Uganda.

Contact:
Theodore Ruel, MD
Div. of Inf. Dis., Dept. of Pediatrics
Univ. of California, San Francisco
550 16th Street, 4th Floor
San Francisco, CA 94158-0434
Theodore.ruel@ucsf.edu

Introduction

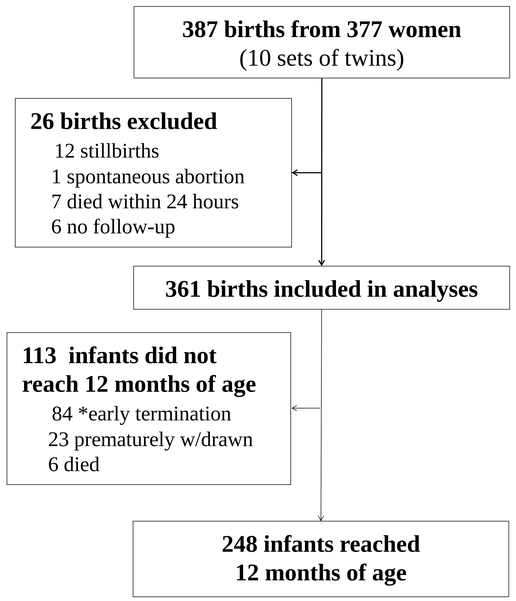
- HIV-exposed infants suffer high mortality in the first year of life
- Accurate data on the burden of malaria are lacking
- We evaluated the incidence of febrile illnesses and malaria from birth to 12 months in a cohort of HIV-exposed infants living in Tororo, a hyper-endemic area of rural Uganda

Methods

- HIV-infected pregnant women
  - Randomized to efavirenz- or lopinavir-based therapy in the PROMOTE trial (NCT0099303) [1] Provided insecticide treated bednets
  - Placentas examined with histopathology
  - Placental malaria = presence of parasites or pigment
- Infants
  - Cotrimoxazole prophylaxis prescribed starting at 6 weeks of age
  - Received all clinical care at study clinic
  - Febrile episodes were evaluated with blood smears for malaria, treated with:
    - Artemether-lumefantrine PO if > 4 months of age
    - Quinine IV if < 4 months of age
    Included infants who had follow up time > 24 hours after birth
- Malaria = fever with parasitemia on blood smear or parasitemia > 100,000
- Incidence density of febrile illnesses and malaria was determined from birth to 12 months of age
- Risk factors for malaria were assessed using generalized estimating equation modeling

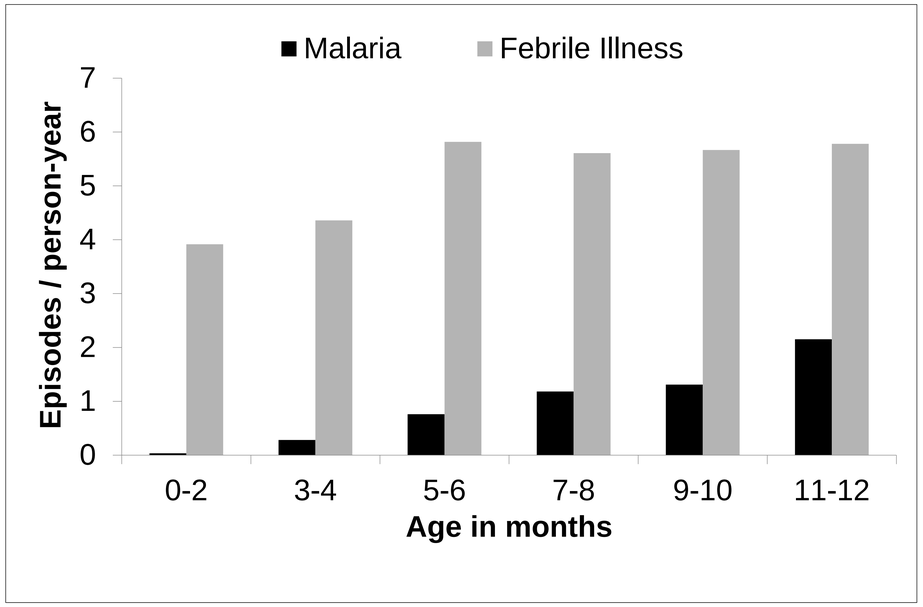
1) Natureeba P, Ades V, Luwedde F, Mwesigwa J, Plenty A, Okong P, Charlebois ED, Clark TD, Nzarubara B, Havlir DV, Achan J, Kamya MR, Cohan D, Dorsey G. Lopinavir/ritonavir-based antiretroviral treatment (ART) versus efavirenz-based ART for the prevention of malaria among HIV-infected pregnant women. J Infect Dis. 2014 Dec 15;210(12):1938-4.

Study Profile



** Study closed prior to some children reaching age of 12 months.*

Febrile illnesses and malaria over the first 12 months of life



	Events	Incidence*
Febrile Illness	1,562	5.12
Malaria	266	0.87

**per person year over total 305 person-years of follow-up time.*

Clinical Outcomes:

- No episodes of WHO-classified complicated malaria
- 6 deaths (none from malaria)
- 2 cases of HIV transmission

Study Population

Characteristic	Value (n= 361)*
Female	46%
Gestational Age (weeks)	38.9 (29.7 – 43.0)
Pre-term (< 37 weeks)	21%
Birth Weight (kg)	2.9 (1.3– 4.4)
Low Birth Weight (< 2.5 kg)	19%
Placental Malaria~	34%
Individual follow-up time (days)	361 (16 - 365)
Breastfeeding during entire follow-up period	92%
Prescribed TS during follow-up	91%

**Values are median (range) or percentage; ~ available from 312 specimens; TS: cotrimoxazole*

Predictors of malaria

Variable	Odds Ratio*	P-value
Age Category		
birth – 2 mo	ref	*n/a*
> 2 mo - 4 mo	13.4	*0.01*
> 4 mo - 6 mo	40.5	*<0.01*
> 6 mo - 8 mo	65.0	*<0.01*
> 8 mo - 10 mo	65.5	*<0.01*
> 10 mo - 12 mo	109.2	*<0.01*
Female	1.5	0.10
Maternal ARV (LPV vs EFV)	1.3	0.31
Low Birth Weight	0.6	0.10
Placental Malaria	1.5	0.09
Maternal Malaria during pregnancy	2.0	0.05

**Using generalized estimating equations modelling. ARV: antiretroviral therapy; LPV=lopinavir; EFV=Efavrienz.*

Conclusions

- HIV-exposed newborns living in a hyper-endemic with cotrimoxazole prophylaxis experienced low rates of malaria, that increased over the first 12 months of life
- Prompt and effective antimalarial therapy was probably a major contributor to the low incidence of complicated malaria seen
- Accurate malaria testing and consideration of non-malarial infectious etiologies in reducing the morbidity and mortality of HIV-exposed infants.

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