Kiyingi et al. Retrovirology 2010, 7(Suppl 1):P72
http://www.retrovirology.com/content/7/S1/P72

RETROVIROLOGY

POSTER PRESENTATION Open Access

Prolonged elevation of viral loads in HIV-1-infected children in a region of intense malaria transmission in Northern Uganda

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From 16th International Symposium on HIV and Emerging Infectious Diseases
Marseille, France. 24-26 March 2010

Background

Introduction

Malaria and HIV-1 infection cause significant morbidity and mortality in children in sub-Saharan Africa. Recurrent malaria infection increases HIV-1 viral load in adults and increases the rate of progression of HIV-1 infection to AIDS. The effect of malaria on viral loads in Children living with AIDS (CLWA) is not clearly known.

Objective

To assess the effect of malaria on HIV-1 viral loads in CLWA.

Methods

One hundred thirty five afebrile HIV-1 positive children having negative blood slides for malaria were recruited at Apac Hospital and followed up for one year. They were monitored for development of P. falciparum malaria, which was treated with CQ+SP and the children followed up for 28 days. HIV-1 viral loads were measured over three time-points: at enrolment (no malaria), during an episode of malaria, and at a visit about 8 weeks (range 6-19 weeks) after the malaria visit when the child had neither parasites nor any intervening malaria episodes (post-malaria). Primary analyses were restricted to children who on follow up had HIV-1 viral loads measured at the three relevant time-points.

Results

Baseline characteristics, Table 1.

Malaria increased HIV-1 viral load significantly in CLWA. Low parasitaemia <= 5/HPF transiently increased viral load by 0.42 log (95% CI 0.29-0.78, p = 0.0002), higher than that reported in adults. These patients' viral loads returned to levels similar to those at baseline after treatment. In 13 patients with high parasitaemia (10-20/HPF), the mean increase in viral load was 0.53 log (0.14 to 0.51), p < 0.0001, remaining significantly higher than at baseline after treatment ie. mean difference (signed-rank test) in viral load "before" and "after" malaria was significant.

Table 1

SEX	MALE/FEMALE	41.1%/58.9%
AGE (yrs)	(1.5-5)/(6-12)	44.7%/55.3%
WHO CLASSIFICATION 1, 2, 3, 4	n = 30, 55, 48, 02	percentage = 22.2%, 40.7%, 35.6%, 1.48%
HAEMOGLOBIN median, IQR	10.5	9.8 - 13.8

Discussion

P. falciparum malaria increased HIV-1 viral loads in children, with some viral loads remaining elevated several weeks after antimalarial treatment. Prolonged post-treatment elevation has important implications for the clinical course and the potential for transmission in sexually active adults.

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Published: 11 May 2010

doi:10.1186/1742-4690-7-S1-P72
Cite this article as: Kiyingi *et al.*: Prolonged elevation of viral loads in HIV-1-infected children in a region of intense malaria transmission in Northern Uganda. *Retrovirology* 2010 **7**(Suppl 1):P72.