

## HIV1 infection is associated with increased malaria and parasitaemia

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**BACKGROUND** Links between HIV1 and malaria have been proposed but not practically demonstrated. In sub-Saharan Africa, 22 million people are infected with HIV and 500 million per year acquire malaria.

**OBJECTIVE** To investigate the effects of HIV1 infection and associated increases in immunosuppression on clinical malaria and falciparum parasitaemia.

**SETTING** Rural Uganda; 1990–1998.

**METHOD** Prospective cohort study.

**LITERATURE REVIEW** No explicit strategy; 27 references.

**PARTICIPANTS** Four hundred and eighty-four HIV1 positive and negative adults.

**INTERVENTION** Participants were invited to attend clinics routinely every 3 months and whenever

they were sick. Malaria information was collected at each visit.

**OUTCOMES** Rates of clinical malaria; malarial parasitaemia; CD4-cell counts (immunosuppression indicator).

**MAIN RESULTS** HIV1 positive participants had more sickness-related visits; higher rates of malarial parasitaemia (12 versus 6%,  $P < 0.0001$ ); and clinical malaria (2 versus 0.7% for routine visits,  $P = 0.0003$ ; 4 versus 2% for interim visits,  $P = 0.009$ ). They were twice as likely to suffer from malaria. Higher parasite densities and risk of clinical malaria were associated with lower CD4-cell counts.

**AUTHORS' CONCLUSIONS** HIV1 is associated with increased malaria and parasitaemia, especially as immunosuppression advances.

### Commentary

This paper represents a breakthrough in the study of HIV and malaria coinfection, a major public health challenge for developing countries. Formerly, only the association between HIV1 infection and malaria parasitaemia in pregnant women was firmly established (an enhanced effect on perinatal transmission of malaria, with increased post-neonatal mortality). Overcoming the methodological limitations of former studies (e.g. small sample sizes), the authors pointed to the fact that parasitaemia was significantly higher among HIV-infected participants than for uninfected participants, with a stronger association as immunosuppression progresses.

In terms of clinical care, the HIV/malaria coinfection highlights the core role of malaria prophylaxis for HIV-infected patients, and the comprehensive treatment of coinfecting individuals. It is important both in terms of a putative effect of malaria on HIV progression and management of severe malaria in immunocompromised hosts.

From the point of view of public health, the two-fold increase in parasitaemia may lead to a substantial increase of malaria transmission (if gametocytaemia parallels asexual parasitaemia).

This could generate a higher number of new malaria infections in both HIV-infected and uninfected subjects in areas where both infections prevail, such as the sub-Saharan Africa. As we have shown recently,<sup>1</sup> in heterogeneous countries like Brazil, geographical overlap of HIV infections and malaria is on the rise. This is particularly true as HIV has been spreading all over the country and both developed and developing regions co-exist (particularly where developing regions are plagued by malaria).

New cases of HIV infection and different tropical diseases (immunopathogenic on their own) have been continuously identified. However, traditional opportunistic diseases have been declining over time due to the favorable impact of anti-retroviral therapies, wherever available. This paper renews our concern regarding the prevention and clinical management of malaria and HIV, and highlights the need for further studies and prompt interventions.

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### Literature cited

1. Morgado MG, et al. *Mem Inst Oswaldo Cruz* 2000; 95: 145–151.