



POSTER PRESENTATION

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# Synthesis of the studies about the transmission cycle of malaria in an area of very low incidence outside the Amazon Region in Brazil

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## Background

To describe malaria transmission cycle in an area of residual occurrence in Brazil.

## Methods

Survey of cases reported from April 2001 to March 2004. Blood sampling of inhabitants (two kilometers around the cases). ELISA for antibodies against the Circumsporozoite protein (CSP) of *Plasmodium vivax* and its variants, and *Plasmodium malariae*. Blood smears. Indirect Fluorescent Antibody (IFA) test for crude blood stage antigens of *P. vivax*, *P. malariae* and *Plasmodium falciparum*. Protein chain reaction (PCR) for amplification of the DNA of *P. vivax*, *P. malariae* and *P. falciparum* (Rubio's protocol). Mosquitoes captures with CDC-CO2 traps placed in the canopy and in the ground inside the forest and at its margin, as in the open field. Shannon light traps at the margin of the forest. PCR of the macerated mosquitoes for DNA of *Plasmodium* (Kimura's protocol) (thorax and abdomen tested separately).

## Results

Sixty-five patients and 1,777 inhabitants evaluated. Patients were 35.11 +/- 16 years old in average and most of them were males (78.5%). There were no case clusters. *P. vivax* (morphology and PCR) in 47 of 48 patients, and *P. malariae* in the remainder. Anti-CSP antibodies for *P. vivax*, its variants and *P. malariae* in high frequency in the patients and in the inhabitants. IFA positive for IgM against *P. malariae* in 40 of

253 samples from the inhabitants (15.8%) and in 113 of 253 for IgG antibodies (44.6%). Figures for *P. vivax* were 105 of 1,701 (IgM) (6.2%) and 641 of 1,701 (37.7%) (IgG). PCR from the inhabitants revealed *P. vivax* in 23, *P. malariae* in 15, *P. falciparum* in 9 and *P. falciparum* plus *P. malariae* in one. *Anopheles cruzii* had an acrodendrophilic behavior (90% of the specimens captured in the canopy). DNA of *Plasmodium* was amplified in several species of anopheline mosquitoes.

## Discussion

Predominance of males and absence of vectors nearby the houses favor an extradomiciliary transmission. Absence of clusters and distance among the cases point out to the existence of a silent reservoir. Two possibilities: asymptomatic human reservoir (not important in our survey) and simian reservoir (close relation between cases and the forest; acrodendrophilic behavior of the main vector).

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