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Antibody responses to Plasmodium falciparum sporozoite-, liver- and blood-stage synthetic peptides in migrant and autochthonous populations in malaria endemic areas.

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This study evaluates the differences in host immune responses to defined plasmodial antigens in four geographically different regions in which malaria is endemic. Sera from 527 individuals were tested for the presence of antibodies specific for three types of plasmodial antigen: liver-stage antigen (LSA-1), blood-stage antigen (SPF 70) and circumsporozoite (CS) antigen (NANP)4. The individuals taking part in the study comprised: patients with transfusional malaria due to Plasmodium falciparum or P. vivax; non-immune migrants residing in an endemic area in Rondônia; Amazonian Indians from the states of Pará (Xingu PA) and Mato Grosso (Xingu MT); people living in a hyperendemic area in Africa (Burkina-Faso); and controls that had never been to a malaria endemic area. None of the transfusional sera displayed antibodies against sporozoite or to liver stage antigen, although 80% of the P. falciparum transfusional malaria sera contained IgG antibodies against the blood-stage peptide. A low percentage of Indians from Xingu PA and of non-immune migrants displayed antibodies against

liver-stage (27% and 17%) and sporozoite (11% or d 12%) peptides, although a greater frequency of antibodies against blood-stage peptide (50% and 49%) was observed in both cases. Indians from Xingu MT exhibited a greater frequency of antibodies against liver, sporozoite and blood-stage peptides (45%, 50% and 58%). Only hyperimmune African individuals exhibited higher percentages of antibodies against liver- (64%) and blood-stage antigens (87%), contrasting with a low frequency of antibodies against the CS repeat (33%). Taken together, the present data confirm that Rondonian migrants and Indians from Xingu PA constitute populations with limited exposure and immunity to P. falciparum malaria infection and conversely, Xingu MT Indians and Africans have been more exposed to malaria infection. In conclusion this study indicates that the immune response to these malaria parasite peptides can be used to assess malaria transmission in epidemiological surveys.

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