Plasmodium falciparum isotype-specific human response in a holo-endemic area of Senegal

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In a one-year long, longitudinal study, the specific anti-*Plasmodium falciparum* antibody response was analysed in a Senegalese village where parasite transmission is intense and perennial. Monoclonal antibodies specific for IgG_1, IgG_2, IgG_3 and IgG_4 human isotypes and ELISA were used to determine levels of IgG and IgM against a total extract from a local *P. falciparum* isolate. Each individual was his or her own control, allowing for paired comparisons and statistical analysis.

Although the changes in the levels of both IgG and IgM were age-related, they could not be correlated with the degree of protection for any individual. In contrast, variations in the levels of the antibody subclasses could be associated with age, transmission season and parasitaemia.

The relative level of IgG_3 gradually increased and reached that of IgG_1 at a time when subjects tended to experience less malaria attacks. The levels of all IgG specific isotypes except IgG_4 increased markedly between the seasons of lowest and highest transmission, which were 6 months apart. In contrast, the pattern of specific isotypes was remarkably similar in the two periods of relatively low transmission during the year. The data indicate that the cytophilic isotypes could have a potential role in the development of protection.

Detection of a RESA-related gene family dispersed on four chromosomes in *Plasmodium falciparum* field isolates

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Mapping studies of *Plasmodium falciparum* chromosomes have shown that subtelomeric regions are highly polymorphic. Duplication and translocation of large subtelomeric regions contribute to karyotypic polymorphism and genetic diversity. The presence of numerous related genes mapping to subtelomeric regions on different chromosomes (HRPII/HRPIII, GBP/GBPH, Pf332/Pf11-1 etc) indicates the importance of these events in the evolution of the haploid parasite genome.

In the present study, we investigated whether translocations of subtelomeric chromosome segments occur in natural parasite populations from different endemic areas. In several isolates from West Africa, we detected a RESA-related gene family dispersed on four chromosomes. The observation that the sequences related to RESA map to the subtelomeric regions of these chromosomes indicates that they originate from translocation and duplication of the subtelomeric chromosome-1 region that carries the RESA gene. After adaption of one isolate to *in vitro* culture, it was used to generate chromosome-specific DNA libraries in order to clone the RESA-related genes.