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Patterns of anti-PvRII IgG and IgG isotype responses to *Plasmodium vivax* Duffy Binding Protein in Sri Lanka

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Exploring the nature of the antibody response to potential vaccine candidates, during natural malaria infections would provide essential information for vaccination strategies. Recombinant protein PvRII, that represents native *Plasmodium vivax* Duffy Binding Protein, was used in an ELISA to assess the magnitudes of IgG and IgG isotype responses in acute vivax malaria patients. Serum samples that screened positive for anti-PvRII total (IgG+IgM) antibodies in a previous study were pre-selected for this assay from non-endemic Colombo (N=58), and from two endemic areas, Anuradhapura and Kataragama (N=48 from each area). The percentage of responders (prevalence) with anti-PvRII IgG was 71%, 79% and 67% from Colombo, Anuradhapura and Kataragama, respectively. No significant differences were detected among the proportion of responders (Chi square, $P>0.05$) and mean anti-PvRII IgG magnitudes (Kruskal-Wallis, $P>0.05$) among the three study populations. Cytophilic IgG3 was the most prevalent IgG isotype in all three-study cohorts. No significant difference was observed for prevalence of IgG isotypes between the three areas, with the exception of the significantly higher prevalence of IgG3 in Colombo than in Kataragama (Chi square, $P<0.05$). The prevalence of IgG3 was significantly higher than the other three isotypes within the residents of Colombo. However, in both endemic areas no significant difference was apparent between the prevalence of IgG3 and IgG1 (McNemar, $P<0.05$). In all test areas, prevalence of restricted IgG3 responses to PvRII was significantly higher (Chi square, $P<0.05$) than for responses restricted to each of the other 03 isotypes. Significantly higher magnitudes of IgG1 than the other IgG isotypes (Wilcoxon Signed ranks, $P<0.05$) were detected within each test area. A significantly higher IgG1 magnitude was detected in Colombo than in Kataragama (Mann-Whitney U Test, $P<0.05$). Both the prevalence and magnitudes of total IgG and of IgG isotypes were independent of age of patients or their pervious exposure to malaria or to their parasite burden. These results may imply that cytophilic antibody isotypes IgG1 and IgG3 may play important roles with regard to the immune response to PvDBP in Sri Lanka.

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