LONGEVITY OF NATURALLY-ACQUIRED ANTIBODY RESPONSE TO *PLASMODIUM VIVAX* MEROZOITE SURFACE PROTEIN 1 PARALOG VACCINE CANDIDATE

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ABSTRACT

Plasmodium vivax merozoite surface protein 1 paralog (PvMSP1P) is a glycosylphosphatidylinositol anchored blood-stage protein expressed on merozoite surface. It is proposed as a blood-stage vaccine candidate against *P. vivax* because of its ability to induce immune responses on natural *P. vivax* exposure and in immunized animal. Here, cross-sectional survey and longitudinal study were conducted for monitoring the longevity of antibody and memory B cell responses to PvMSP1P during and after infection with *P. vivax*. The antibody titer and neutralizing antibodies against PvMSP1P-erythrocyte binding were demonstrated by using enzyme-linked immunosorbent assay (ELISA) and *in vitro* erythrocyte inhibition binding assay (EIBA) respectively. In addition, memory B cell response to PvMSP1P was also performed using flow cytometric analysis and enzyme-linked immunospot (ELISPOT) assay. The seroprevalence of anti-PvMSP1P response was significantly higher in acutely infected *P. vivax* patients, 73% of total 40 individuals had a seropositive response to this antigen. The positive anti-PvMSP1P response was maintained up to 9 months post-infection. The high responder group from PvMSP1P-seropositive patients strongly inhibited the binding to erythrocytes and some individuals had a stable anti-PvMSP1P neutralizing antibody for at least 12 months post-infection. Interestingly, this persistence of antibody response was associated with the presence of PvMSP1P-specific memory B cells and the maintenance of circulating $CD19^{+}CD10^{-}CD27^{+}$ cells at post-infection. Altogether, PvMSP1P antigen has immunogenicity in induction of antibody response and memory B cell development during infection which could be maintained after recovered from infection. Therefore, PvMSP1P antigen should also be considered as a reliable vaccine candidate for blood-stage *P. vivax*.

KEY WORDS: PLASMODIUM VIVAX / MEROZOITE SURFACE PROTEIN 1 PARALOG/ ANTIBODY RESPONSE/ LONGEVITY/

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