Vaccines and immunity

PO - (8590) - COMPARATIVE ANALYSIS OF IGG RESPONSES TO RECOMBINANT QB PHAGE DISPLAYED MSP3 AND UBO5 IN DUAL HIV-MALARIA INFECTED ADULTS

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Background

Immunoglobulin G (IgG) specific responses against Plasmodium falciparum merozoite antigens such as the merozoite surface protein 3 (MSP3) and UBO5 are known to play critical roles in parasitemia control and protection from symptomatic illness. However when there is intense perennial malaria transmission coupled with concurrent infection with the human immunodeficiency virus type 1 (HIV), knowledge of IgG antibody response profiles is limited.

In this study we assessed the impact of dual HIV-Malaria infections on IgG subclass responses to MSP3 (QβMSP3) and UBO5 (QβUBO5) in individuals living in two areas of Cameroon differing in malaria transmission intensity.

Methods

IgG and IgG subclass responses specific to either MSP3 or UBO5 were determine in plasma from study participant by ELISA. To improve reactivity with their respective antibodies the antigens were displayed upon the surface of the RNA coliphage Qβ.

Results

We observed differences in antigen specific IgG and IgG subclass responses which was dependent upon the antigen type, malaria transmission intensity, HIV infection, malaria infection and dual HIV-malaria infections. Individuals living in high malaria transmission areas irrespective of HIV or malaria status had significantly higher IgG responses to both antigens (P=0.0001 for QβMSP3, P=0.0001 for QβUBO5) than their counterpart from low transmission areas. When dual HIV-Malaria infection is considered significantly higher QβMSP3 specific IgG1 (P=0.0001) and IgG3 (p=0.04) responses in double negative individuals was associated with protection against malaria in low transmission areas. Superior QβUBO5 specific IgG1 responses (P=0.0001) in double negative individuals were associated with protection in high transmission areas in contrast to significantly
higher IgG3 responses to QβUBO5 (p=0.0001) which were more relevant to protection in low malaria transmission areas in the same population.

Conclusion
Thus, understanding immune responses to QβUBO5 and QβMSP3 could facilitate the development of immunotherapeutic strategies suitable for areas differing in malaria transmission intensity.