Malaria/HIV co-infection and pregnancy: malaria antigen recognition

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Abstract

Background

Malaria and HIV infection are serious public health problems in sub-saharan Africa. The risk of transmission of both malaria and HIV may increase due to co-infected. In pregnancy the risk is even higher, and may cause severe adverse perinatal outcomes. However, knowledge of the molecular interactions between malaria and HIV is still poorly understood. This study investigates the influence of malaria/HIV co-infection on malaria antigen recognition during pregnancy.

Methods

A total of 60 pregnant women (15 co-infected with malaria/HIV, 15 infected with malaria only, 15 infected with HIV only and 15 negative for both infections) were recruited after their full consent. *Plasmodium* parasite species were confirmed by the Polymerase Chain Reaction (PCR). *P. falciparum* parasites isolated from placental biopsies were sonicated to release parasites proteins; the total protein was quantified by Bradford and resolved by SDS-PAGE. The resolved proteins bands were immunoblotted on nitrocellulose membrane and probed with individual patient's antiserum, then detected using goat anti human (Alkaline phosphatise labelled) IgG antibody. Antigen recognition profiles between the four groups of women were compared.

Results

A total of 21 antigenic protein bands were detected in the group infected with malaria only. Five of these with molecular weigths (Kda) 169; 147; 74; 56; 16 were not found in women co-infected with malaria and HIV, meanwhile only 10 identical bands were detected in women negative for both infections and HIV only. The presence of some bands in women positive for malaria only but not in the co-infected group suggests the likelihood of HIV to exacerbate the outcome of malaria in co-infected individuals. Presumably, this could be due to antibodies of both infections competing for the same epitope on *P.falciparum* or inhibition of malaria antibody production due to prior binding of HIV antibody. The plethora of parasite protein antigens is likely to enhance the parasites' ability to evade immune recognition and hinder the development of a plausible malaria vaccine.

Conclusion

Health policies towards vaccine and/or drug development for malaria must consider the uniqueness of co-infected persons as the efficiency is likely to be reduced in this group.

Key words: Malaria, HIV, co-infection, pregnant women, western-blot.