Abstract

Malaria is one of the most serious infectious diseases of humans, with 300–600 million clinical cases and 1-2 million deaths annually. Adaptive immune responses in the host limit the clinical impact of infection and provide partial protection against pathogen replication. Worldwide, most infections are clinically silent, reflecting the ability of adaptive immune mechanisms to prevent disease. In non-immune individuals, infections are more clinically overt, and a minority of these can become severe or life-threatening, manifesting a range of overlapping syndromes of complex aetiologies. There is an urgent need for vaccines to improve the global malaria situation justifies giving the highest priority to their elaboration and clinical development. Epidemiological and experimental studies have shown that protective immunity can be induced against malaria. In the field, immunity is acquired with time after repeated infections, and it is thought that it targets principally the merozoite. Experimentally, sterile immunity has been obtained in humans against the pre-erythrocytic stage only after immunization with radiation-attenuated sporozoites, and against blood stage parasites only after repeated immunization with live blood stage parasites under drug prophylaxis. However such high levels of protection have never been obtained with current sub-unit vaccines. The reasons for this failure may be due to the use of inappropriate antigen(s) and the fact that the absence of validated correlates of protection is a serious obstacle hindering the development of an effective vaccine. The mechanisms leading to pathology are still debated and probably results from the effects of combined effects of uncontrolled immune response and parasite immune evasion strategies.

In the recent years, we have tried to identify correlates of protection or pathology in *Plasmodium* spp. infection. In particular we have tried to determine whether the immune responses associated with specific antigens play a role in the protection or in pathology, and subsequently to identify mechanisms of this protection against infection in order to help the design of a new and efficient malaria vaccine or therapeutics.

Selected Publications


