PP3 Strain-specific protective immunity induced by infection with pre-erythrocytic stages of *Plasmodium cynomolgi* in toque monkey

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Background and Justification

One drawback in vaccine development to malaria infection is the existence of strain-specific immunity thereby affecting the efficacy of a vaccine against malaria. Due to this reason a number of infections with different antigenic types is necessary to elicit an effective protective immunity against challenge infection.

Methodology

Strain specific protective immunity to malaria infection (SSPI) was investigated using two strains of *Plasmodium cynomolgi*, Pc746 and PcCeylon, in toque monkey. Two groups of monkeys were immunized against either Pc746 (n=5) or PcCeylon (n=4), by giving bites with 2-4 sporozoite-infected *Anopheles tessellates* mosquitoes per monkey. Primary blood infection was prevented during immunization by treating the monkeys with chloroquine for 6 days starting from day 5 after infective mosquito bites and secondary, hypnozoite-induced, blood infection was prevented by treating the monkeys one month later with primaquine. The two immunized groups and a group of unimmunized monkeys (n=4) were given a mixed-strain sporozoite challenge infection, by feeding a similar number of infective mosquitoes, which were infected with each strain, 140 and 100 days respectively after immunizing infection. Parasite DNA was collected for 5-8 consecutive days after parasitaemia reached 0.05% or above. The proportions of the two parasite strains in these samples were quantified using a Pyrosequencing^{TM} assay based on SNPs in MSP1 and CSP genes.

Results

In the challenge infection in immunized monkeys the earliest recorded proportion of parasites of an immunizing strain was significantly lower than its proportion in monkeys immunized against a heterologous strain (P=0.014 and 0.027 for the two SNPs) and the

proportions of immunizing strain tended to decline further during the period of sample collection.

Conclusion

These results show that a parasite strain specific protective immunity to *P. cynomolgi* was induced following a sporozoite induced pre-erythrocytic infection. This immunity has been directed against the liver stages or against the blood stage parasites, or against both.

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PP4 Association between interleukin – 13 gene polymorphisms and anti – malarial antibodies in a Sri Lankan population

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Background

Number of malaria cases reported from Kataragama, which was an endemic area for malaria has reduced over past 5 years. Preliminary studies revealed that in spite of low incidence rates, certain anti-malarial antibodies are fairy high in this population. Genetic markers known to be associated with malaria were looked at in relation to anti-malarial antibody levels in residents of 8 villages in Kataragama. Association between markers in IL – 13 gene and elevated levels of antibodies are presented here.

Methods

Blood samples were collected from 1011 individuals over 14 years in eight villages in Kataragama MOH area. Data on age, sex, history of malaria attacks were collected.