PA-048 *PLASMODIUM FALCIPARUM* PARASITE DYNAMICS DETERMINED BY QPCR AFTER CONTROLLED HUMAN MALARIA INFECTION IN SEMI-IMMUNES FROM GABON

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Background Characterising the effect of natural acquired immunity and sickle cell anaemia on the pattern of *Plasmodium falciparum* parasitaemia may be useful to understand the pathophysiological mechanisms of protection against malaria. Controlled human malaria infection (CHMI) by direct venous inoculation of aseptic, purified, cryopreserved sporozoites (Pf-SPZ challenge) is a new tool which can be used to investigate the pathophysiology of malaria.

Methods The study was performed in Lambarene, Gabon, one of seven African partners in the EDCTP-funded CHMI platform. Adults aged 18–35 from three groups NI: 5 non-immune (NI), 11 semi-immunes with haemoglobin AA (IA), and 9 semi-immunes with haemoglobin AS (IS) received 3,200 sporozoites after a curative treatment course with clindamycin. Capillary blood samples were taken daily up to Day 28 to determine parasitaemia by real-time quantitative polymerase chain reaction (RT-qPCR). Treatment was administered for a malaria episode or at Day 28, whichever came first.

Results Parasitaemia was detected in 5 (100%) subjects in the NI group, 9 (82%) in the IA group and 7 (78%) in the IS group. All volunteers in the NI group showed similar patterns with parasitaemia starting around Day 8 and rising quickly. Patterns for parasitaemia in the immune groups (IA and IS) were highly heterogeneous. Although time points of initial parasitaemia and duration of parasitaemia varied, all semi-immunes managed to control parasitaemia for at least several days. There were no discernible differences in patterns between the IS and IA group, including the area under curve of parasitaemia over time.

Conclusions No parasitaemia was detected in 20% of the semi-immunes, likely due to liver stage immunity. The highly variable patterns of parasitaemia did not allow us to discern immune mechanisms against blood stages. Haemoglobin AS had no visible effect on parasite dynamics at the low parasitaemia encountered.