ORAL PRESENTATION



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A novel Plasmodium vivax vaccine based on recombinant chimpanzee adenovirus ChAd63 and MVA expressing TRAP

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Background

P. vivax is the most geographically widespread human malaria and is considered to be the most prevalent form in some regions of Latin America, Central and South-East Asia, accounting for up to 390 million clinical infections every year and an estimated 2.6 billion people being at risk of infection with P. vivax [1,2]. An effective vaccine against this protozoan would have a major global impact on the disease burden [3]. Modified Vaccinia Ankara (MVA) and the chimpanzee adenovirus ChAd63 are two clinically relevant viral vectors that have been shown to induce strong and protective antibody and T-cell responses against P. falciparum TRAP, both in pre-clinical studies and clinical trials [4-7].

Materials and methods

We developed recombinant ChAd63 and MVA vectors expressing P. vivax TRAP (PvTRAP), which were used to assess T-cell and antibody responses upon sequential immunisation (prime-boost) of mice. Vaccine efficacy was assessed through challenge with a newly developed transgenic P. berghei expressing PvTRAP.

Results

High antibody titres and frequencies of PvTRAP-specific T cells were induced in all tested inbred and outbred mouse strains. The newly developed parasite showed similar fitness to wild type P. berghei and was successfully used to infect and assess protection in vaccinated mice. The Ad-MVA prime-boost regimen induced good protective levels regardless of the mouse strain.

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Conclusions

The strong immunogenicity and protective efficacy elicited by the recombinant ChAd63 and MVA viruses expressing PvTRAP indicate that this vaccine approach has a good potential to be tested in clinical trials in the near future.

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