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Splenic CD11c (+) cells derived from semi-immune mice protect native mice against experimental cerebral malaria

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Background: Immunity to malaria requires innate, adaptive immune responses and *Plasmodium*-specific memory cells. Previously, mice semi-immune to malaria was developed. Three cycles of infection and cure (3-cure) were required to protect mice against *Plasmodium berghei* ANKA infection.

Methods: C57BL/6J mice underwent three cycles of *P. berghei* infection and drug-cure to become semi-immune. The spleens of infected semi-immune mice were collected for flow cytometry analysis. CD11c (+) cells of semi-immune mice were isolated and transferred into native mice which were subsequently challenged and followed up by survival and parasitaemia.

Results: The percentages of splenic CD4 (+) and CD11c (+) cells were increased in semi-immune mice on day 7 post-infection. The proportion and number of B220 (+) CD11c (+) cells (plasmacytoid dendritic cells, DCs) was higher in semi-immune, 3-cure mice than in their native littermates on day 7 post-infection (2.6 vs. 1.1% and 491,031 vs. 149,699 respectively). In adoptive transfer experiment, three months after the third cured *P. berghei* infection, splenic CD11c (+) DCs of non-infected, semi-immune, 3-cure mice slowed *Plasmodium* proliferation and decreased the death rate due to neurological pathology in recipient mice. In addition, anti *P. berghei* IgG1 level was higher in mice transferred with CD11c (+) cells of semi-immune, 3-cure mice than mice transferred with CD11c (+) cells of native counterparts.

Conclusion: CD11c (+) cells of semi-immune mice protect against experimental cerebral malaria three months after the third cured malaria, potentially through protective plasmacytoid DCs and enhanced production of malaria-specific antibody.

Biography

Bao Quoc Lam graduated PhD. in infection research in Nagasaki University, Japan. His study has been on cerebral malaria in semi-immune mice. In malaria transmission areas, the adults, as semi-immune individuals, were less vulnerable to cerebral malaria than children. Naturally acquired immunity to malaria minimizes malaria morbidity and mortality in older children and adults living in intensive *Plasmodium sp*.endemic regions. His mouse research has suggested that IL-10 producing B and plasmacytoid dendritic cells confer protection against cerebral malaria in semi-immune mice. In addition, he is currently a co-investigator in a cohort: Resistance to reinfection and pathogenesis of human schistosomiasis in Eastern Africa to identify the protective immune responses.

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