CELLULAR-MEDIATED IMMUNE RESPONSES IN THE LIVER TISSUE OF PATIENTS WITH SEVERE *PLASMODIUM FALCIPARUM* MALARIA

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Abstract. The immune responses against *Plasmodium falciparum* malaria infections are complex and poorly understood. No published studies have yet reported the lymphocyte subsets involved in the human liver tissue of *P. falciparum* malaria patients. To understand the cellular-mediated immune responses in the liver during malaria infection, we determined the numbers of the various lymphocyte subsets in tissue samples obtained at autopsy from patients who died with *P. falciparum* malaria infection. All the liver tissue specimens had been stored at the Department of Tropical Pathology, Faculty of Tropical Medicine, Mahidol University, Thailand. On the basis of total bilirubin (TB) levels prior to death, patients were divided into 2 groups: those with hyperbilirubinemia [total bilirubin (TB) ≥51.3 μmol/l) (n = 9)] and those without hyperbilirubinemia (TB <51.3 μmol/l) (n = 12). Normal liver specimens (n = 10) were used as controls. An immunohistochemistry method was used to analyze the types and numbers of lymphocytes (T and B lymphocytes), and Kupffer cells, using specific antibodies against CD3+, CD4+, CD8+, CD20+, and CD68+. Our findings reveal the numbers of T lymphocytes (CD3+ T-cells) and their subsets (CD4+ and CD8+ T-cells) were significantly greater in the portal tracts and sinusoids of liver tissue obtained from *P. falciparum* malaria cases with hyperbilirubinemia than those without hyperbilirubinemia or controls. CD8+ T-cells were the major lymphocyte subset in the liver tissue of patients with severe falciparum malaria. A significant positive correlation was seen between the numbers of CD4+ and CD8+ T-cells and the liver enzyme levels among *P. falciparum* malaria patients. The number of CD68+ cells (Kupffer cells) was significantly greater in the liver sinusoids of *P. falciparum* malaria cases with hyperbilirubinemia than those without hyperbilirubinemia. These findings suggest T-cells, especially CD8+ T-cells and Kupffer cells are an important part of the cellular immune response in the liver tissue of *P. falciparum* infected patients.

Keywords: *Plasmodium falciparum*, malaria, liver, lymphocyte subsets, T-cells, B-cells, Kupffer cells, immunohistochemistry

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