

Visceral Leishmaniasis in Vervet Monkeys: Immunological Responses During Asymptomatic Infections

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Abstract

Nine vervet monkeys (*Cercopithecus aethiops*) were infected intradermally with 8×10^7 virulent *L. donovani* promastigotes. Four animals developed clinical visceral leishmaniasis and died over a period of 18 months. The remaining five animals have remained asymptomatic for a period of 3 years now. Attempts to isolate parasites from spleen and liver through biopsies were fruitless. Immunological responses of these subclinically infected animals were examined. Enzyme-linked immunosorbent assay (ELISA) and western blot analyses demonstrated *Leishmania* specific antibodies in these animals, but the antibody titres were low. When proliferation of peripheral blood monocytes (PBMC) to Con-cunavalin A (Con A) of these animals was compared with control 'disease free animals' there were no significant differences in response. However *L. donovani* antigen (fixed promastigotes) specific proliferation was demonstrated in the five subclinically infected animals. High and varying levels of interferon gamma (IFN- γ) were secreted in PBMC cultures from the five vervet monkeys when stimulated with either Con A or *L. donovani* antigens. In control animals, IFN- γ was only detected when PBMC were stimulated with Con A. Marked delayed-type hypersensitivity (DTH) responses were demonstrated in the five subclinically infected animals 48 h after injection with formalin fixed promastigotes. It was concluded that the visceral *Leishmania* disease spectrum due to *L. donovani* observed in humans could be induced in vervet monkeys and that *L. donovani* asymptomatic/cryptic infected animals have competent humoral and cellular responses to homologous parasites.