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Cutaneous leishmaniasis: the parasite and immune response to sand fly saliva in endemic areas of Mali

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Background: Cutaneous leishmaniasis is a tropical neglected disease underreported in West Africa. Epidemiological studies using leishmanin skin test (LST), reported a prevalence rate reaching 60% in Sahelian and northern areas of Mali some areas. A high prevalence of exposure to *Leishmania* infection in humans observed in 2 endemic villages of Mali contrast with very low incidence of active cutaneous lesion (ACL). The goal of this study was to assess the immune response of these individuals to the bites of the vector present in these villages, the sand fly *Phlebotomus duboscqi*.

Methods & Materials: We amplified *Leishmania* DNA from patients with clinically suspected CL received at the referral dermatologic clinic to determine species involved in the disease in Mali. Cellular immune responses to sand fly salivary proteins were tested from peripheral blood mononuclear cells (PBMCs) of individuals living in this endemic area stimulated with sand fly saliva in vitro. We also assessed the presence of delayed type hypersensitivity response (DTH) to sand fly bites in these volunteers after exposing them to three colony-bred sand flies.

Results: *L. major* was the only species detected in specimens collected from of ACL patients across the endemic regions of Mali. Ninety-eight percent of individuals responded to sand fly saliva with production of cytokines. Interestingly, we identified a population that responded with a Th1 response to sand fly saliva characterized by the presence of IFN-g and IL-12p40 and a population that developed a Th2 response that produced IL-5 and IL-13 to sand fly saliva. Dermal biopsies of DTH sites were dominated by abundant expression of IFN-γ and absence of Th2 cytokines, establishing the Th1 nature of this DTH response.

Conclusion: The dichotomy of cellular immune response to sand fly saliva may be related to protection or a higher susceptibility to *Leishmania* infection among individual living in endemic areas. This susceptibility to the disease could also be due to systemic Th2 response

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Real Time PCR detection and prevalence determination of Cryptosporidium species in stool specimens from the United Arab Emirates

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Background: Cryptosporidiosis is an important public health problem in children, elderly and immunosuppressed patients. In the United Arab Emirates (UAE) there is an important community of migrants who are employed in different sectors such as food handlers, house maids and other domestic workers. However, the prevalence of Cryptosporidium is unknown among these individuals. To determine the rate of infection with *Cryptosporidium*sp. among expatriates residing in Sharjah, UAE, one hundred and thirty four stool samples were tested using real time PCR (qPCR).

Methods & Materials: One hundred and thirty four stool samples were collected from different sites in Sharjah, UAE between June 2009 and January 2011. Demographic information was collected. The age distribution of the screened individuals showed that 41 (30.6%) were 25 years or less; 73 (54.5%) were between 26 -45 years and 19 (14.2%) were above 45 years. Of the 134 study subject, 103 (76.8%) were males and 31 (23.1%) females. Genomic DNA was extracted from the stool samples using the QIAamp stool DNA Mini Kit (Qiagen GmbH, Hilden, Germany) as per the manufacturer's recommendations.A real time PRC protocol based on the amplification of a specific sequence of the 18S rRNA gene was used to detect and quantify *Cryptosporidium spp.*

Results: Twenty six (19.4%) were found to be positive for *Cryptosporidium* by PCR. The infection rate was found to be highest in Afghan nationals (33.3%) compared to the rest of the study population, yet no significant association existed between nationality and infection rate. Moreover, no association was observed between infection rate and gender ($\chi^2 = 2.439$; $p = 0.118$) nor infection rate and age group ($\chi^2 = 1.219$; $p = 0.544$).

Conclusion: The infection by *Cryptosporidium* sp is frequent in the study group. Given to the results of this investigation and the nonexistence of studies in this population, is necessary to deepen in the impact of this parasite in food handlers/house maids/domestic workers and the rest of the population.

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