

OP1 *Phlebotomus argentipes*: possible vector of leishmaniasis in Sri Lanka

Senanayake S A S C¹, Abeyewickreme W², Abeysinghe R R³, Dotson E M⁴, Karunaweera N D¹

¹Faculty of Medicine, University of Colombo, Sri Lanka, ²Faculty of Medicine, University of Kelaniya, ³Sri Lanka, Anti Malaria Campaign, Ministry of Healthcare and Nutrition, Sri Lanka, ⁴Centre for Disease Control and Prevention, Atlanta, USA.

Introduction

Leishmaniasis is caused by a protozoan parasite belonging to the genus *Leishmania*. The disease is transmitted via infective the bite of female phlebotomine sandflies. The disease has three clinical presentations depending on the different tissues involved (skin – cutaneous leishmaniasis (CL), mucous membranes – mucocutaneous leishmaniasis (MCL) and internal organs – visceral leishmaniasis (VL). Leishmaniasis is endemic in more than 90 countries including neighboring countries like India, Bangladesh, Nepal and Pakistan.

CL is prevalent in many parts of Sri Lanka and has become an established disease in the country. A few cases of visceral leishmaniasis are also reported and many more cases may be awaiting diagnosis. The causative organism of Sri Lankan CL was confirmed as *Leishmania donovani* MON 37. The true vectors of leishmaniasis in Sri Lanka are still under investigation and no concrete evidence has surfaced even though the potential vector *Phlebotomus argentipes* was reported in 1910. The researchers carried out a field study on vector aspects of leishmaniasis in a selected pocket where there were many reported cases of CL. The objectives were to describe the distribution of various species of sandflies in the area and to identify the true vectors of leishmaniasis in Sri Lanka.

Methodology

Mamadala GN division, in Hambantota District of Southern Province was selected for the study. Sandflies were collected using cattle-baited net traps, light traps and manual methods with the help of aspirators for a period of 08 months. The sandflies were preserved in 80% ethanol until they were used for further studies. The male/female differentiation and species identification was done using standard keys. Female sandflies were further analyzed using PCR to detect *Leishmania* DNA within them. Positive products were later sequenced and compared with the available Gen-Bank data.

Results

Total of 2991(634 female and 2357 males) sandflies were collected. The majority (99%) was identified as *Phlebotomus argentipes*. Rest of the sandflies (1%) were *Sergentomyia zeylanica* a non human vector of leishmaniasis. Presence of *Leishmania donovani* DNA was confirmed in 2/634 of female sand flies using PCR. Both sandflies positive for DNA were identified as *P. argentipes*. Further analysis of isolated parasite DNA revealed almost 100% sequence similarity with regional *L. donovani* from Bangladesh and India.

Conclusions and recommendations

Phlebotomus argentipes is the major sandfly species distributed in the study area. Two female sandflies that were positive for *Leishmania* DNA were also *P. argentipes*. Therefore this study provides the first evidence to establish *P. argentipes* as the disease transmitting agent of leishmaniasis in Sri Lanka. Further studies are needed to confirm its true vectorial capacity using laboratory and experimental models.

Acknowledgement

Authors would like to acknowledge W.D.A. Mahakumara from Malaria Field Research Station, Kataragama and K H Weerasena from Dept of Parasitology, Faculty of Medicine, and Colombo for their assistance in the field work.

OP2 Geographic structure of *Plasmodium vivax*: microsatellite analysis of parasite populations from Sri Lanka, Myanmar and Ethiopia

Gunawardena S¹, Karunaweera ND¹, Ferreira MU², Phone-Kyaw M³, Pollack RJ⁴, Alifrangis M⁵, Rajakaruna RS⁶, Konradsen F⁵, Amerasinghe PH⁷, Schousboe ML⁵, Galappaththy GNL⁸, Abeyasinghe RR⁸, Hartl DL⁹, Wirth DF⁴

¹Department of Parasitology, Faculty of Medicine, University of Colombo, Sri Lanka, ²Department of Parasitology, Institute of Biomedical Sciences, University of São Paulo, Brazil, ³Parasitology Research Division, Department of Medical Research (Lower Myanmar), Myanmar, ⁴Department of Immunology and Infectious Diseases, Harvard School of Public Health, USA, ⁵Centre for Medical Parasitology, Department of International Health, Immunology & Microbiology, University of Copenhagen, and Department of Infectious Diseases and Department of Clinical Microbiology, Copenhagen University Hospital (Rigshospitalet), Copenhagen, Denmark, ⁶Department of Zoology, University of Peradeniya, Sri Lanka, ⁷International Water Management Institute, India, ⁸Anti-Malaria Campaign, Ministry of Health, Sri Lanka, ⁹Department of Organismic and Evolutionary Biology, Harvard University, USA.