DIVERSITY AND DISTRIBUTION OF TICK SPECIES ASSOCIATED WITH HUMAN OTOACARIASIS AND RISK FACTORS OF TICK INFESTATIONS IN SRI LANKA

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Tick infestation in humans is a major public health concern. Humans are affected directly by tick bites and indirectly by disease transmission. Presence of ticks or mites in the ear canal is known as otoacariasis which may lead to external otitis, perforation of tympanum and rarely facial paralysis. First, the diversity and distribution of tick species associated with human otoacariasis was studied in five selected districts based on main agro-climatic zones of the island namely, Anuradhapura, Kandy, Kurunegala, Nuwara Eliya and Ratnapura. Ticks from patients attending the ear, nose and throat (ENT) clinics of general hospitals of these districts were collected to 70% ethanol from May 2007 to May 2010. A brief, self-administered questionnaire collected patient information. Over the three year period, a total of 426 ticks were collected. The highest number of human otoacariasis cases was reported from Kandy (33.8%) followed by Ratnapura (22.5%) and the lowest number was recorded from Nuwara Eliya (8.2%). Five tick species were identified, of which nymphs of *Dermacentor auratus* constituted 90.6% of the collection. Other species included *Rhipicephalus sanguineus, Hyalomma isaaci, Haemaphysalis bispinosa* and *Otobius megnini*. Occurrence of *H. bispinosa* and *O. megnini* in human otoacariasis are first time records in Sri Lanka. The majority of patients (42.6%) were children under 10 years. The number of patients decreased with increase in age and there was a small peak at the age interval of 50 – 59. A gender disparity was revealed with more male patients at every age group below 30 years and more female patients above 30 years.

Later, a field study was carried out to determine socio-ecological risk factors of human tick infestations in the above five districts. Based on hospital data, eight villages with high prevalence of otoacariasis were selected from each district. A total 400 households were visited and data were collected from villagers using a questionnaire. Kandy district had the highest prevalence of tick infestations followed by Anuradhapura. Villagers in Nuwara Eliya reported the least number of infestations. Involvement in outdoor activities (χ^2=146.180, P<0.001), presence of wild animals around the house (χ^2=42.313 P<0.001), close proximity of the house to a forest (χ^2=43.528, P<0.001) and occupation (χ^2=56.412, P<0.0001) were identified as major risk factors. Although, overall, tick infestation did not depend on the age, gender or presence of domestic animals (χ^2 test, P> 0.05) the presence of pets posed a risk in Kandy district (χ^2=4.347, P=0.036). Given the potential to transmit diseases, it is important to understand the role of these ticks as vectors of emerging and re-emerging tick-borne infections in Sri Lanka.