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Seasonal pattern and risk factors of human otoacariasis in the Kandy District, Sri Lanka

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Tick's site of attachment on the human body varies, but of particular interest is the lodging of ticks within the ear canal, a condition known as otoacariasis. Seasonal pattern and risk factors of human otoacariasis in the Kandy District were studied from December, 2013 to November, 2014.

Ticks collected from patients attending the Ear, Nose and Throat clinic in the Kandy General Hospital (KGH), were preserved and identified. A case control patient follow-up study was carried out in the Kandy District to assess the risk factors. Risk factor analysis was carried out visiting 47 patients and three different controls per case (n= 141).

Of the 66 cases reported to KGH, a majority was infested with nymphal stages of *Dermacentor auratus* (90.8%) followed by *Amblyomma integrum* (4.6%) and *Hyalomma isaaci* (3.1%). The highest number of cases was reported from December to February coinciding with the rainy period and a smaller peak in October. Most of the patients were from Thalathuoya followed by Ampitiya, Menikhinna and Poojapitiya. Two risk groups identified were: females (80.0%; $\chi^2 = 18.41$, $p < 0.001$) and children (< 10 years; 56.9%; $\chi^2 = 95.24$, $p < 0.001$). Presence of domestic animals (85.1%; $\chi^2 = 34.28$, $p < 0.001$), association with wildlife (91.5%; $\chi^2 = 35.94$, $p < 0.001$) and engagement in outdoor activities (97.9%; $\chi^2 = 20.27$, $p < 0.001$) were identified as risk factors. Children and women become risk groups as they were more engaged in outdoor activities such as playing, gardening, tending to vegetable plots, etc. In the Kandy District the villagers often interact with forest gardens (Kandyan Forest Gardens) nearby. This increases the exposure to questing ticks on vegetation. The immature ticks could attach to the person after dropping or after climbing on to the host from a questing position on low vegetation. The adult stage of the major tick species associated with otoacariasis, *D. auratus* infests wild boars, a common visitor to home gardens in the Kandy District and the larvae of *D. auratus* had been recorded on dogs. Although the presence of a home garden was not identified as a risk factor, involvement in outdoor activities in these gardens posed a risk.

Key words: human otoacariasis, ticks, *Dermacentor auratus*, Kandy district

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