

Seroprevalence of toxocariasis among Orang Asli (Indigenous people) in Malaysia using two immunoassays

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Abstract. Toxocariasis is a zoonotic helminthic infection of humans caused by the dog roundworm (*Toxocara canis*) or cat roundworm (*Toxocara cati*). There are two main human syndromes: visceral larva migrans (VLM), which are characterized by symptoms associated with major organs and ocular larva migrans (OLM), in which pathological effects on the host are restricted to the eye and the optic nerve. The present study evaluated the seroprevalence of toxocariasis among the Orang Asli with an IgG4-ELISA using recombinant antigens (rTES-26, rTES-30 and rTES-120) and an IgG-ELISA commercial kit (Cypress Diagnostic, Belgium). A total of 188 serum samples were analyzed using IgG4-ELISA recombinant antigens while 83 were tested using IgG-ELISA. Overall, 9 out of 188 (4.8%) samples were positive with the former assay: rTES-26 (2.7%) and rTES-30 (2.1%); and 63 out of 83 (75.9%) were positive with the IgG-ELISA. In general, the seroprevalence of toxocariasis among males (9.5%) was higher compared to females (1%). Children below 12 years (6.3%) have higher seroprevalence rate compared to adults (1.2%). Out of 59 IgG positive samples, 56 (94.9%) were also positive with soil-transmitted helminth (STH) infections which may indicate high false positivity. None of the IgG4-ELISA positive samples were positive with STH infections. Of 9 positive samples with IgG4-ELISA, 7 were also positive with IgG-ELISA giving the probability of true cases. The present finding indicated that exposure to *Toxocara* infection is not unusual among Malaysian aborigines, and it affects both sexes and all age groups. As a prevention strategy, more effective public health programmes to promote better understanding on the consequences of toxocariasis among the Orang Asli communities are deemed necessary.

INTRODUCTION

Toxocariasis is a zoonosis caused by the second stage larvae (L2) of ascarid of cats (*Toxocara cati*) and dogs (*Toxocara canis*). Of these two species, *T. canis* is regarded as the main cause of human toxocariasis. Cats usually bury their faeces and the infective eggs are not exposed to susceptible individuals. The morphology of the larvae in tissue section and in early serology failed to implicate *T. cati* in human cases. However, there were some studies which reported that *T. cati* has been implicated as the main cause for ocular

toxocariasis in human (Smith & Rahmah, 2006). Hence, the role of *T. cati* in causing human toxocariasis should not be ignored and may require further investigation. Other species such as *Toxascaris leonine* (Fisher, 2003), *Toxocara malaysiensis* (Gibbons *et al.*, 2001) and *Toxocara lyncus* (Macchioni, 1999) have also been reported in both cats and dogs. Nonetheless, it is still controversial whether these species could cause human infection resulting in clinical disease (Despommier, 2003).

The eggs of *Toxocara* are unembryonated when passed in the faeces of animals into the environment. Under