

## SERO-PREVALENCE OF *TOXOPLASMA GONDII* INFECTION IN TWO APPARENTLY HEALTHY POPULATIONS IN RAJAWATTA (KANDY DISTRICT) AND HEMMATHAGAMA (KEGALLE DISTRICT)

S.N. Kurukulasuriya<sup>1</sup>, S.A.M. Kularathna<sup>2</sup>, D.S.S. Wijesundara<sup>1</sup>  
and R.P.V.J. Rajapakse<sup>1</sup>

*1*Division of Parasitology, Department of Veterinary Pathobiology, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya

*2*Department of Medicine, Faculty of Medicine, University of Peradeniya

### Introduction

*Toxoplasma gondii* is horizontally transmitted to humans by accidental ingestion of the oocysts found in water, food or soil contaminated with cat's faeces, or by eating raw or undercooked meat containing cysts (Fayer *et al.*, 2004). Newly acquired *T. gondii* infection in a pregnant woman can be transmitted to the fetus and may cause mental retardation, blindness, epilepsy and death.

Infection by the protozoan parasite *T. gondii* is widely prevalent in animals and humans worldwide (Montoyo, *et al.*, 2004). For the diagnosis of *T. gondii* infection, detection of the organism itself is confirmative but very difficult. Thus, most clinical laboratories use serological tests to detect antibodies against *T. gondii*, such as the Modified latex agglutination (MAT) test, ELISA and IFAT. The MAT test has been widely used to screen for *T. gondii* infection owing to its high specificity and sensitivity (Dobey *et al.*, 2007).

In developing countries the prevalence of *Toxoplasma* infection among human populations is higher (30-47%) compared with the developed countries (Suzuki *et al.*, 1988). In Sri Lankan healthy adults,

initially a seroprevalence of 27.5% was noted but the test used was a complement fixation test which showed high false positives. Later studies using IHA and IFA tests showed an overall positive rate of 17% (Kithsiri *et al.*, 1973). Therefore, this study was carried out to detect antibodies against *Toxoplasma* in clinically healthy people using MAT which is currently used for diagnosis of toxoplasmosis world wide.

### Materials and Methods

#### *Serum samples*

A total of 201 blood samples were collected from apparently healthy residents of Rajawatta and Hemmathagama representing two villages in Kandy and Kegalle districts, respectively.

The sera were separated and stored at -80°C until the analysis.

#### *Laboratory assay*

Assay for detection of *T. gondii* antibodies was performed by using the direct Modified Agglutination Test (MAT) (Dobey *et al.*, 2007) on the serum samples collected.

Sero-positive samples were further tested to determine the titer by using the dilutions from 1/50, to 1/3200.

**Results**

**Seroprevalence of *T. gondii* antibodies among different gender groups**

The overall seroprevalence of *T. gondii* antibodies in males and females were 24.75 % and 31 %, respectively (Table 1.)

**Overall seroprevalence**

From a total of 201 samples, *T. gondii* antibodies were detected in 56 samples (27.86 %; Table 1).

**Seroprevalence of *T. gondii* antibodies according to age distribution**

The seroprevalence rates of *T. gondii* antibodies in different age groups are shown in Table 2.

**Antibody titers of seropositive samples**

The antibody titers ranged from 1/025 to 1/6400.

**Discussion**

The seroprevalence of *T. gondii* antibodies in apparently healthy populations has been studied in many countries. This study was also one of the few normal population based studies done in Sri Lanka.

The overall seroprevalence of *T. gondii* antibodies found (27.86%) is comparable with the previous studies conducted by Kithsiri *et al.*, 1973.

In comparison, the seroprevalence of *T. gondii* antibodies in Hemmathagama population (26.27%) was found to be lower than that of the Rajawatte population (30.12%).

The overall seroprevalence among females (31%) was found to be higher than that in the males, suggesting that the females had been more exposed to *T. gondii* antigens than the males. Considering the different age groups, a higher seroprevalence was observed in the age group 31-40 years (37.5%).

**Table 1. Overall seroprevalence among the different gender groups**

Gender Groups	Total samples	No. positive	Seroprevalence %
Male	101	25	24.75
Female	100	31	31.00
Total	201	56	27.86

**Table 2. Overall seroprevalence among the different age groups**

Age Group (Years)	Total samples	No. positive	Seroprevalence %
1-10	0	0	00.00
11-20	6	2	33.33
21-30	13	1	07.69
31-40	40	15	37.5
41-50	65	19	29.23
51-60	52	15	28.84
61-70	14	2	14.28
>71	11	2	18.18

Although reports on clinical cases are scanty, out of 56 seropositives 8 showed high antibody titers of >1/3200. This finding further emphasizes the risk of *T.gondii* infection among the populations studied.

### Conclusion

Among the two populations studied 27.9 % was found to be seropositive to *T. gondii* suggesting that humans have a considerable amount of risk to *T. gondii* infection; although the clinical disease is not that significant. The findings of the study indicate that it offers an inspiration for an advanced screening program against toxoplasmosis.

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