

SEROPREVALANCE OF TOXOCARA ANTIBODIES IN MULTIPLE SCLEROSIS AND ANKYLOSING SPONDYLITIS

Sir,

Multiple sclerosis (MS) is a chronic and inflammatory autoimmune disease of the central nervous system. Its etiology remains obscure and subject to extensive research. Although some studies have shown an association between contact with a dog or cat and MS, the role of this contact in the etiology of the disease is still unclear. Ankylosing spondylitis (AS) is a chronic inflammatory disease that predominantly affects young male individuals. The etiology of AS has not been completely clarified. However, a close association with HLA B27 has been shown.

Toxocariasis is a common infection worldwide. Humans acquire the infection by oral ingestion of the *Toxocara* eggs through contact with larvae contaminating the teats of bitches or by the consumption of raw or not adequately cooked paratenic host. *Toxocara canis* is the cause of toxocariasis in humans and causes at least three syndromes: visceral larva migrans, ocular larva migrans and covert toxocariasis. In addition, the question was raised whether an autoimmune phenomenon was involved in *Toxocara* infections.^[1-3] The aim of this study was to assess the seroprevalance of *Toxocara* antibodies in MS and AS, two different diseases with unknown etiology.

Thirty-seven patients (14 male and 23 female) who were followed by the Multiple

Sclerosis Outpatients Clinic and Physical Medicine and Rehabilitation Department and had clinically definite MS, were enrolled. Thirty-one patients (24 male, 7 female) who met the modified New York criteria for the diagnosis of AS, were included in the study. The study group was recruited from the patients attending the rheumatology outpatients clinic of our institution. We compared the patient's results with our cohort consisting of 50 healthy subjects (25 male, 25 female) who were living in our city.^[4] Informed consent of all the patients participating in the study was obtained. Specific anti-*Toxocara* IgG or M antibodies were determined by enzyme-linked immunosorbent assay (ELISA) (Novum Diagnostica, Germany), according to the manufacturer's instructions. Statistical analyses were performed using the statistical package for social sciences (SPSS) software.

We found 10.8% *Toxocara* seropositivity among the MS cases and 3.2% *Toxocara* seropositivity among the AS cases. For MS patients, the odds ratio was 5.94 and the 95% confidence interval was 0.64 to 55.53, with a *P*-value of 0.08. The odds ratio of MS between those with toxocara seropositivity was more than five times higher than among those with toxocara seronegativity. For AS patients, the odds ratio was 1.63 and the

95% confidence interval was 0.10-27.10, with a *P*-value of 0.73. There was no significant difference in *Toxocara* seropositivity between our control population with MS and with AS patients. Demographic data and seropositivity in patients and healthy controls is shown in Table 1. Twenty-eight patients (75.6%) of MS had relapsing-remitting, 1 (2.7%) had primary progressive and 8 (21.6%) had secondary progressive disease. Two patients with MS who had relapsing-remitting disease and two patients with secondary progressive MS were *Toxocara* seropositive. Only one AS patient was *Toxocara* seropositive and had axial involvement without extraarticular features.

Toxocara canis is a worldwide common parasite and its frequency ranges between 2.6 and 47.5% in the adult urban population. Dogs and cats are important in the life cycle of *Toxocara* and owning dogs and cats is a risk factor for *Toxocara* infection. In a recent study, contamination of playgrounds by *Toxocara* spp. was found to be relatively lower than other cities in our country, as seen in our study also.^[4] *Toxocara* seroprevalance has been widely investigated in diseases of unknown etiology. It has been hypothesized that *Toxocara* could have etiological importance in MS.^[3] In our study, all patients with MS and AS were adults and most of the patients with MS were females (62.1%),

Table 1: Demographic data and seropositivity in MS and AS patients and healthy controls

Parameters	MS patients	AS patients	Control
Gender (n) (M/F)	(37) (14/23)	(31) (24/7)	(50) (25/25)
Age (mean \pm SD) (min-max)	(37.3 \pm 9.0) (20-54)	(30.7 \pm 7.3) (19-49)	(31.2 \pm 5.4) (20-50)
Disease duration (mean \pm SD) (min-max)	(7.2 \pm 6.0) (1-21)	(8.1 \pm 2.7) (2-20)	-
Owning dogs and cats, (yes/no)	(3/34)	(3/28)	(5/45)
<i>Toxocara</i> seropositive (%)	(10.8)	(3.2)	(2)

M: male, F: female, SD: standard deviation

whereas most of the patients with AS were males (77.4%). This was not considered as a limitation for the study, since it has been shown that gender and age did not influence *Toxocara* seropositivity.^[6]

There are some limitations in this study. Firstly, whether the infection was causing the disease or whether the disease was causing the infection, was unclear. Secondly, we could not conduct a regression analysis on the gender effect and other factors, since the sample size was small. To our knowledge, this is the first report assessing *Toxocara* seropositivity in patients with MS and AS, as compared to the healthy control population. Further research with a wide series of MS patients is warranted.

REFERENCES

1. Despommier D. Toxocariasis: clinical aspects,

epidemiology, medical ecology and molecular aspects. Clin Microbiol Rev 2003;16:265-72.

2. Garcia LS. Tissue Nematodes. Diagnostic Medical Parasitology. 4th ed, ASM press: Washington DC; 2001. p. 309-12.
3. Sondergaard HP, Theorell T. A putative role for *Toxocara* species in the aetiology of multiple sclerosis. Med Hypotheses 2004;63:59-61.
4. Kuk S, Özel E, Oguztürk H, Kirkil G, Kaplan M. Seroprevalance of *Toxocara* antibodies in patients with adult asthma. Southern Med J In press.
5. Chia KF, Chien CH, Wen YD, Chien WL, Kua ES. Seroepidemiolgy of *Toxocara canis* infection among mountain aboriginal schoolchildren living in contaminated districts in eastern Taiwan. Trop Med and Int Health 2004;9:1312-8.

Salih Kuk, Salih Ozcocmen*, Serpil Bulut**

Department of Parasitology, *Division of Rheumatology, Physical Medicine and Rehabilitation, **Neurology, Firat University, Faculty of Medicine, Elazig, Turkey

Correspondence

Salih Kuk, Firat University, Department of Parasitology 23119, Elazig, Turkey.
E-mail: salihkuk@hotmail.com