Short Communication

SERO-EPIDEMIOLOGICAL STUDY ON HUMAN TOXOCARIASIS IN THE RURAL SECTOR AROUND RECIFE, NORTHEAST BRAZIL

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Until 1981, over 1,900 human cases with toxocariasis had been reported in the world (Glickman and Shantz, 1981). Prevalence and epidemiology of human toxocariasis have been extensively studied in many countries (Brunello *et al.*, 1986; Salinas *et al.*, 1987; Lynch *et al.*, 1988). In Brazil, two cases of infant toxocariasis (Kawakami *et al.*, 1984) and prevalence of human toxocariasis (Chieffi *et al.*, 1988) have been reported in São Paulo. Recently, two human toxocariasis of inpatient and outpatient have been reported in two hospitals located in the urban area of Recife, northeast Brazil (Virginia *et al.*, 1991). However, to our knowledge, there is no reliable datum on the incidence, prevalence and epidemiology of human toxocariasis in the rural sector around Recife. According to parasitological examinations in São Lourenço da Mata, northeast Brazil (Goncalves *et al.*, 1990), four out of 485 inhabitants were positive for unembryonated eggs of *Toxocara canis* in stools. Therefore, a sero-epidemiological study was conducted to obtain preliminary data on the prevalence of human toxocariasis in São Lourenço da Mata.

Serum samples were collected from 288 inhabitants in four villages (Cerâmica Bicopeba, Engenho Pitangueira, Engenho Camurim and Engenho General) in São Lourenço da Mata during July to December, 1989. Prevalence of intestinal parasitic infections of these subjects has been reported previously (Goncalves *et al.*, 1990).

The serological examinations using Ouchterlony

and immunoelectrophoresis were performed according to the methods of Tsuji (1974, 1975). Crude extracted antigens were prepared according to the previous method (Tsuji, 1974) from the adult worms of *T. canis*, *Ascaris suum*, *Dirofilaria immitis*, *Schistosoma mansoni* and *Taenia saginata*, and from the larvae of *Anisakis* sp. Two hundreds and eighty-eight sera were primarily examined by Ouchterlony using *T. canis* antigen. Seven sera (2.4%) showed positive reaction with *T. canis* antigen as shown in Table 1. However, these seven sera also revealed positive reaction with other helminthous antigens: all sera were positive for *S. mansoni* and *D. immitis* antigens, and one reacted with both *A. suum* and *Anisakis* sp. antigens. Stool examination of all of these seven cases showed positive for *S. mansoni* eggs. Six subjects were also positive for hookworm eggs, two were positive for *T. canis* eggs, and one was positive for *Ascaris lumbricoides* eggs (Table 1).

To evaluate the specificity of precipitation reaction on Ouchterlony test, these seven sera were further analyzed by immunoelectrophoresis. All sera did not show any precipitin band with the antigens prepared from *A. suum*, *T. saginata* and *Anisakis* sp. But all sera revealed positive reaction with *S. mansoni* antigen, and one reacted with *D. immitis* antigen. On the other hand, all of those specimens showed plural precipitation lines with *T. canis* as demonstrated in Figs. 1 and 2, and the species-specific precipitin band for *T. canis* (Tsuji, 1975) were detected in four serum samples.

Although definitive diagnosis of the toxocariasis is

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Table 1 The results of Ouchterlony test and stool examination for inhabitants in São Lourenço da Mata, Brazil

Subjects			Ouchterlony test					Stool examination			
No.	Sex	Age	T.c	S.m	D.i	A.s	Ani	S.m	H.w	A.l	T.c
1019	F	7	+	+	+	+	+	+	+	+	
1028	F	32	+	+	+			+	+		
3009	M	17	+	+	+			+	+		+
3053	F	36	+	+	+			+			
3075	F	54	+	+	+			+	+		
4008	F	8	+	+	+			+	+		+
4185	F	19	+	+	+			+	+		

T.c: *Toxocara canis*D.i: *Dirofilaria immitis*Ani: *Anisakis* larvaeA.l: *Ascaris lumbricoides*S.m: *Schistosoma mansoni*A.s: *Ascaris suum*

H.w: Hook worm

based upon the larvae in biopsy specimens, demonstration of larvae appears to be difficult. Therefore, the diagnosis of human toxocariasis has been usually performed by various serological tests using different types of antigens (Cypess *et al.*, 1977; Savigny and Tizard, 1977;

Kawamura, 1983; Clemett *et al.*, 1985; Inoue and Tsuji, 1989). However, in the case of toxocariasis as well as other nematoda infections, there exist many cross-reactions with other parasitic antigens on any kind of serological methods. In contrast, Tsuji (1975) has demonstrated that toxocariasis can be diagnosed by the immunoelectrophoresis according to the presence of species-specific precipitin band. In the present study, such a species-specific precipitin band was identified in four serum samples by immunoelectrophoresis. It is, therefore, likely that at least four cases may be considered to be positive cases of human toxocariasis serologically. Gonçalves *et al.* (1990) suggest that the circumferential environments around their housings may be heavily contaminated with *T. canis* eggs. So, a high incidence of toxocariasis is expected in this area. But, in the present study, toxocariasis were a few cases. This finding suggested that some of ingested *T. canis* eggs potentially developed in humans. As mentioned above, no reliable data on human toxocariasis in the rural sector around Recife, northeast Brazil have been reported before so that the present communication may be first report on the occurrence defined cases of human toxocariasis in this area by serological approach.

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Fig. 1 Immunoelectrophoresis against *Toxocara canis* antigen for inhabitants in São Lourenço da Mata, Brazil

T. can: *Toxocara canis* adult worm.

Fig. 2 Immunoelectrophoregrams against *Toxocara canis* antigen for inhabitants in São Lourenço da Mata, Brazil

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