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Seroprevalence Rate of Toxocariasis in Keoje-Island and Inchon City of Korea

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= ABSTRACT =

Toxocariasis is produced by the migration of *Toxocara canis* larvae into the extra-intestinal tissue of unnatural hosts or natural hosts under unsuitable conditions. Soil contaminated with *T. canis* embryonated eggs in the main source of infection of man. In the present study, ELISA with *T. canis* adult crude antigen was used for determination the seroprevalence of *T. canis* infection in two areas of Korea.

It was found that antibody positive rate was 15.7% in Keoje-Island. In the analysis according to sex, female group presented significantly higher positive rate than male group (23.8% in female and 7.4% in male, $p < 0.05$). In Inchon city, the positive rate was 13.1%, and there was no significant difference between female and male group. Immunoblot analysis was performed to some positive patient sera. As the results, 9 cases of 15 cases were positive in Keoje-Island, and 22 cases of 27 cases were positive in Inchon city by immunoblotting.

KEY WORDS: ELISA, Seroprevalence, Toxocariasis, Human, Korea

가
(toxocariosis)

Toxocara spp (*Toxocara canis*)
(*Toxocara cati*)

(Nakagura , 1989) (Salem Schantz, 1992) (excretory-secretory antigen)
(Sturchler , 1990)
(paratenic host)

가

(Baixenth , , , ,
1992). 200 가 (Glickman , 1987), ,
, , , , , , ,
(Taylor , 1988).
(non-specific)

10

(pediatric disease) . (definitive diagnosis)
organ specimen

(土食症, geophagia)

가

Yejs

(visceral larva migrans, VLM)

(Beaver , 1952).
(>2,000 cells/mm³) , hyper-
gammaglobulinemia가 TES-ELISA (de Savigny , 1979) .
blot 가 SDS-PAGE Western
가 가

(MagnaVal , 1991).

(ocular larva migrans,
OLM) . 가 protozoa helminthic
extract reactivity가

가

Fundoscope uveitis,
endophthalmitis, papillitis (Gass Braubstein,
1983), retinal granulomatous lesion(Gillespie ,
1993) peripheral vitreous inflammatory
mass가 (Tran , 1999). specificity가

(subclinical TES ELISA Schantz(1989)
infection) review
2.8%(238/8500), 1- 11

(Hakim, 1992), Jordan 10.9% (Abo-Shehada, 1992)가 Chengdu 17.7%, Magnaval(1994) 2.1% 2-5%, 14.2-337% Bali가 63.2%(Chomel, 1993), Saint-Lucia 가 86% (Thompson, 1986) La Reunion 92.8% (Magnaval, 1994)

(1998)

가

(1998)

가

ELISA

WB

Crude-worm ELISA *Toxocara*

1.

300 (149, 151) ,
520 (223, 292)

-20 .
2. PBS (pH 7.2)
Ig PBS 10Mℓ SBTI 0.002mg PBS
20Mℓ teflon coating glass homogenizer
20,000 rpm
Bradford
5.4mg/Mℓ
3. IgG
IgG ELISA
5μg/Mℓ ELISA micro plate
-4 , 1:100
Conjugate peroxidase conjugated
IgG fraction, goat anti-human IgG 1:1000
OPD(o-phenylenediamine)
ELISA reader
490nm

4. Immunoblotting

Immunoblotting Tx-WB 24 G kit(LDBIO DIAGNOSTIDS, Lyon, France)
PVDf incubation
tray sample buffer 1:120
1
, anti- IgG conjugate 1.2Mℓ 가
30 1.2Mℓ NBT/BCIP
substrate

5.

PC-SAS ANOVA
Kruskal-Wallis test

1. IgG

가 20 14.3%, 39.3%
 (Table 1). 13.1%

14.4%, 12.1%

820 372 , 448

ELISA 가 30 17.8%
 , 6.3%- 20.0%

(IgG) 10 가
 15.7%
 7.4% (Table 2).

23.8%

가 (p<0.05).

가 (p<0.05).

Table 1. Seroprevalence of toxocariorosis among the people residing in Keoje-Do, southern costal islands in the Republic of Korea

Age group	Male		Female		Total	
	No.Positive	Positive rate(%)	No.Positive	Positive rate(%)	No.Positive	Positive rate(%)
10- 19	0 (2) ¹	0.0	0 (0)	0.0	0(2)	0.0
20-29	5 (35)	14.3	22 (56)	39.3	27(91)	29.7
30-39	2 (46)	4.4	6 (33)	18.2	8(79)	10.1
40-49	3 (39)	7.7	5 (35)	14.3	8(74)	10.8
50-59	0 (20)	0.0	2 (11)	18.2	2(31)	6.5
60-69	1 (5)	20.0	0 (10)	0.0	1(15)	6.7
70-	0 (2)	0.0	1 (6)	16.7	1(3)	33.3
Total	11(149)	7.4	36(151)	23.8	47(300)	15.7

Table 2. Seroprevalence of toxocariosis among the people residing in suburb of Inchon city

Age group	Male		Female		Total	
	No.Positive	Positive rate(%)	No.Positive	Positive rate(%)	No.Positive	Positive rate(%)
10-19	2 (12) ¹	16.7	1 (5)	20.0	3 (17)	17.6
20-29	4 (23)	17.4	4 (21)	19.1	8 (44)	18.2
30-39	8 (45)	17.8	7 (42)	16.7	15 (87)	17.2
40-49	7 (52)	13.5	6 (62)	9.7	13 (114)	11.4
50-59	4 (50)	8.0	12 (87)	13.8	16 (137)	11.7
60-69	5 (29)	17.2	5 (64)	7.8	10 (93)	10.8
70-	2 (12)	16.7	1 (16)	6.3	3 (28)	10.7
Total	32 (223)	14.4	36 (297)	12.1	68 (520)	13.1

2. Immunoblotting

ELISA

가

immunoblotting

24-35

kDa

. Immunoblotting

9 가

27 22 가

(Fig. 1),

(Fig. 2).

15

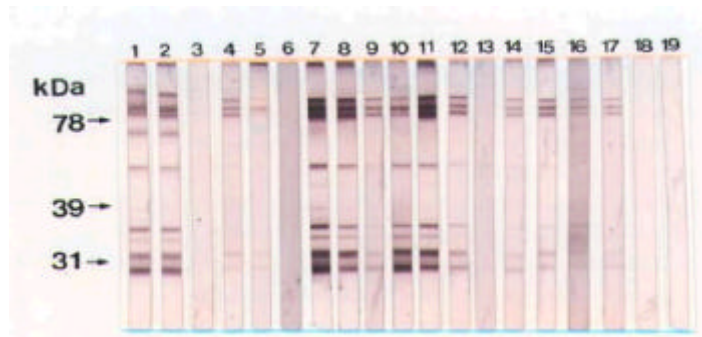


Fig. 1. Immunoblot findings of IgG reacting bands to TES antigens using ELISA positive human sera in Keoje-Island.

lane 1-2 : reference positive sera.

lane 3-17 : ELISA positive human sera.

lane 18-19 : reference negative sera.

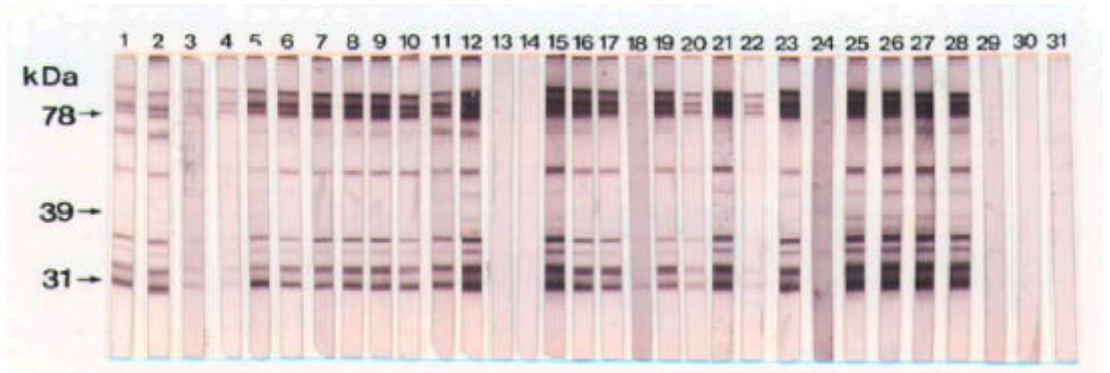


Fig. 2. Immunoblot findings of IgG reacting bands to TES antigens using ELISA p sera in Incheon city.
 lane 1- 2 : reference positive sera.
 lane 3-29 : ELISA positive human sera.
 lane 30-31 : reference negative sera.

Toxocariasis() 가 .
Toxocara canis larva , 가
 , 가 ,
 , visceral 가
 larva migrans(VLM) ocular toxocariasis 가
 가 , 가
 가
 (, 1989),
 (, 1978; 1983), (,
 , 1990) (1989),
 1983) ELISA
 , IgG
 , 가 100%

가 Saint-Lucia 가 86%
 (Thompson , 1986), (Embil , 1988)
 68.2%, La
 Reunion 92.8%(Magnaval , 1994)
 . Chan (2001)

가 ELISA
 21.2%

(Toxocaral excretory-secretory antigen;
 TES) (de
 Savigny Tizard, 1977; de Savigny , 1979) 8.6%
 La Plata . Radman (2000)
 39%

(*Ascaris suum*), (*Toxocara cati*)
T. pteropodis (1991)
 radio-immunoassay ELISA
 (Nicolas , 1984) 0.8% 16.1%
 , , 5.6%

radio-immunoprecipitation TES
 가 . Giacometti (2000) Ancona
 (Maizels , 1984; Nicolas , 1986). 8.1% 가
 , 63.6%
 2.8%

가
 , , 43% ,
 19%
 , 1-11 가 4.6%-7.3% , ,
 , 15.7% .
 (Glickman Schantz, 1981; Hermann ,
 1985). 7.4% 23.8%

20 14.3%, 39.3% 가
 (Matsumura , 1982) . 13.1%

3.6% , 14.4%, 12.1%
 (van Knapen , 1983) 7.1%, (Kenny
 Allwright, 1987) 8.8% ,
 Bali가 63.2%(Chomel , 1993), 가 , 6.3%-20.0%

10 가 7.4% 23.8%

가 , 가 ($p < 0.05$).
20

14.3%, 39.3% 가
13.1% 14.4%,
12.1%

가

MagnaVal (1991) SDS- 30
PAGE Western blot 17.8% 가 , 6.3%-
가 Tx-WB 24 20.0% 10 가
G kit(LDBIO DIAGNOSTIDS, Lyon, France)
immunoblotting (78
kDa) (24-35 kDa) 가 ($p < 0.05$).
ELISA 가가
immunoblotting
15 9 가
ELISA immunoblotting 27 22 가
15 9
, 27 22 가
(73.8%)
immunoblotting
가
IgG ELISA
15.7%

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