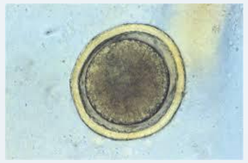
«PREVALENCE OF *TOXOCARA CANIS* OVA IN SOIL SAMPLES COLLECTED FROM PUBLIC AREAS OF ATTICA PREFECTURE, GREECE».

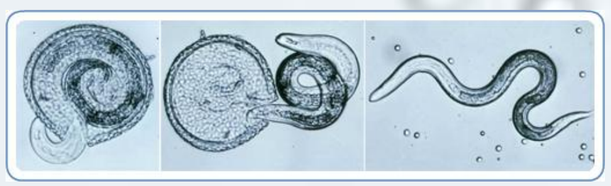
Vasilios Papavasilopoulos, Ioannis Elefsiniotis, Konstantinos Birbas, Vassiliki Pitiriga, Athanasios Tsakris, Gerasimos Bonatsos.

Corresp. Author: Papavasilopoulos Vasilios, National School of Public Health, 196 L. Alexandras Ampelokipoi Athens, PC 11521, Greece. E-mail: panpapavas@yahoo.gr

Introduction

Toxocariasis is a parasitic zoonosis caused by the larvae stage of roundworm *Toxocara sp*. The genus *Toxocara* includes more than 30 species, of which two are significant for human infections: *Toxocara canis* and*Toxocara cati. Toxocara canis* (*T. canis*) are common inhabitants of the intestines of a high percentage of new-born puppies and also in some adult dogs.
Human toxocariasis occurs after ingestion of infective eggs of *Toxocara* spp. Many *Toxocara* infections remain underdiagnosed and underappreciated. Most human infections are diagnosed serologically by the detection of IgG antibodies to antigens secreted by L2 larvae of *T. canis.*
According to several studies worldwide, infection rates are linked with pica or geophagia (soil eating), no hand washing before eating, and dog ownership. The aim of the present study was to determine the prevalence of *T.* canis in Athens and the broader area of Attica prefecture, and also to examine the occurrence of infection in human population living around these areas.





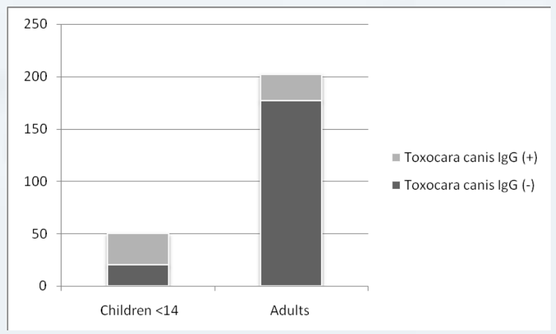
Methods

From March 2013 to May 2013, soil samples were collected from 33 most popular public places of six large regions throughout the total area of Attica prefecture: (A) Central Athens area, (B) West Attica area (C) North suburbs area (D) Southern suburbs area (E) Piraeus area (F) Elefsina area. The number of soil samples taken from each place was analogous to its dimensions (Table 1).

Size of area (m2)	Place size	No of samples
50-150	Small	4
200-100	Medium	8
250-350	Large	12

Samplers dug square-shaped holes 3cm deep with a small shovel marked with color lines to a depth of 3cm. The ova detection in soil samples was based on the technique proposed by **Kazacos 1983**.

Detection of antibodies to *T. canis* antigen in residents of the study area
Blood samples were taken from 250 healthy residents of the total study region. Serum examination for detection of antibodies against *Toxocara canis* (IgG) was carried out using Ridascreen testing kit (Biopharm AG) according to the manufacturer instructrions.



Results

A total of 1510 soil sample were collected. All six regions of Attica were contaminated with *T. canis* ova. Of the total 1510 examined samples, *T. canis* ova were recovered from 258 samples, suggesting an overall contamination proportion in Attica of 17.08%. (Table 2).

REGIONS	*TOXOCARA SP.* (+) SOIL SAMPLES/ TOTAL No OF SAMPLES	RATE	TOXOCARA IgG (+)/TOTAL SAMPLES	RATE	*P*-value
Central Athens Area	44/270	**16.3%**	8/50	**16%**	0.999
West Attica Area	89/390	**22.8%**	20/80	**25%**	0.778
North Suburbs Area	89/510	**17.45%**	5/50	**10%**	0.316
Southern Suburbs Area	11/90	**12.2%**	2/20	**10%**	0.999
Piraeus Area	15/150	**10%**	3/32	**9%**	0.999
Elefsina Area	12/100	**12%**	2/18	**11%**	0.999
TOTAL	**260/1510**	**17.21**	**40/250**	**16.13**	0.787

Sera were collected from 200 adults (104 males, 96 females) and 50 children <14 years (32 males, 18 females) selected from different areas throughout Attica. Positive *T. canis* antibody titers were found in 16.13% of serum samples in total. The proportion of seropositive samples was 60% (30 out of 50) in the group of children and 12.5% (25 out of 200) among adults (p <.0001). The prevalence of antibodies against *T. canis* was lower (p=) in males than females (8.6% and 16.6%, respectively) in the group of adults, but greater in boys than girls in the group of children<14 years (65.6% and 22.2%, respectively). (Fig.1)

Conclusions

Attica Prefecture exhibited a high *T. canis* soil contamination rate, therefore individuals and especially children might be at great risk for toxocariasis when exposed in public areas. Preventive measures should be implemented in order to control the spread of this parasitic infection.

Kazacos, K.R. (1983). «Improved method for recovering ascarid and other helminth eggs from soil associated with epizootics and during survey studies». *American Journal of Veterinary Research* **44**(5):896-900.

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NATIONAL SCHOOL OF PUBLIC HEALTH ATHENS SCHOOL OF HYGIENE 1929-1994
Τομέας Οικονομικών της Υγείας
Department of Health Economics

HELLENIC REPUBLIC
National and Kapodistrian University of Athens