

SCANNING ELECTRON MICROSCOPY OF *TOXOCARA CANIS* EGGS

F. R. ZYNGIER (1)

SUMMARY

The Author presents a brief morphological description of *Toxocara canis* unembryonated eggs under the scanning electron microscope. An irregular pattern of branched ridges crossing and intermingling was seen, forming depressions of variable shape and size.

INTRODUCTION

The importance of visceral larva migrans as a clinical entity has increased in the last few years with the discovery of the potential harm that could be produced by wandering *Toxocara canis* larvae. Ocular granulomata and central nervous system lesions were described^{1, 3, 8} and the possibility of *Toxocara canis* larvae carrying other microorganisms to the brain was studied⁶.

The morphology of the adult worm was first described in 1782 and the larvae were well studied on later reports⁷. Woodruff presented the scanning electron microscopy of the second stage larva⁹.

Toxocara canis eggs are classically described as subglobose, superficially pitted and measuring 70x85 micra^{2, 4, 5}. This paper briefly reports the scanning electron microscopy of *T. canis* eggs.

MATERIALS AND METHODS

T. canis eggs were obtained from adult females, as described elsewhere¹⁰. A concentrated suspension of the eggs was washed with saline and fixed in buffered 3% glutaraldehyde for 1 hour. The eggs were then washed with 0,15 M phosphate buffer several times.

One drop of the concentrated suspension was placed on a coverslip and left to dry at room temperature. The coverslip was shaped by breaking the corners off to fit on to the scanning electron microscope stub. Glue was used to fix it in place. The stub was then coated with gold-paladium in a vacuum coating unit. The material was taken to a Cambridge Stereoscan Mark II A scanning electron microscope where it was photographed.

RESULTS

The results can be seen in Figures 1 and 2.

The eggs appear as subglobose structures. On the surface an irregular network can be seen, with depressions limited by rather sinuous and branched ridges that intermingle. The shape and size of these depressions vary. This pattern was apparent in several eggs with no major deviation.

DISCUSSION

This is a preliminary report on normal *T. canis* egg morphology under the scanning electron microscope. The effect of the de-

This work was performed at the Dept. of Tropical Medicine of the Liverpool School of Tropical Medicine

(1) Present address: Departamento de Imunologia, Instituto de Microbiologia, UFRJ, ZC-32 — Ilha do Fundão, 20.000 — Rio de Janeiro, Brasil

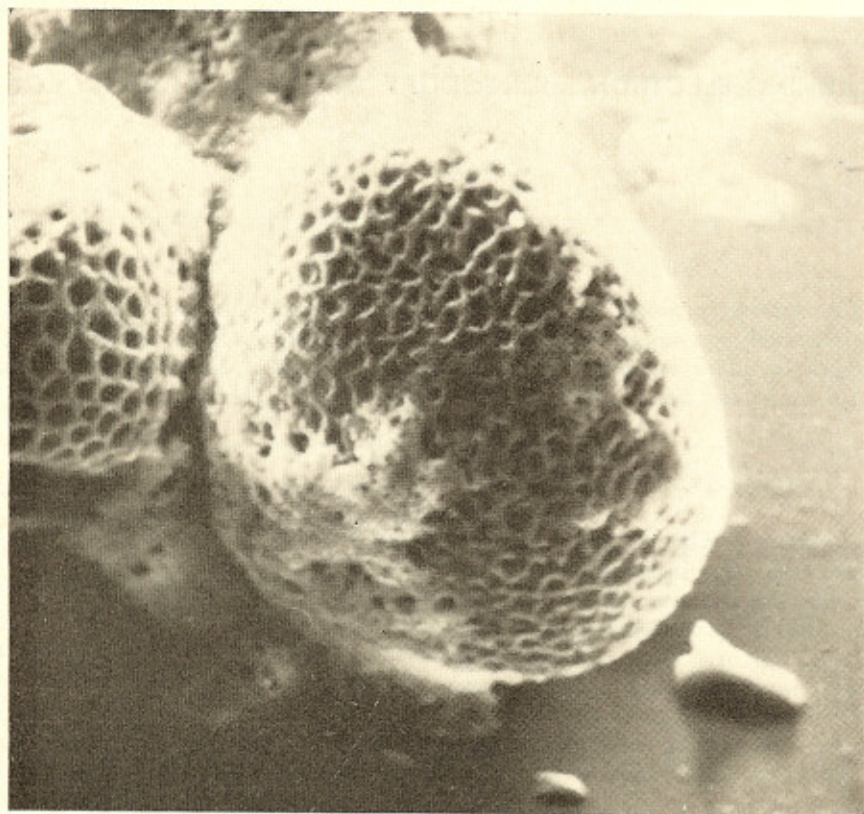


Fig. 1 — *T. canis* eggs. Subglobose shape. The irregular pattern of the surface is already discernible (1.200 x).

velopment of the larva upon the morphology of the egg will be studied in the future, as well as the action of digestive enzymes. The results of these studies can give some important clues on the mechanisms involved in the hatching of the egg in the intestinal lumen of the different hosts.

RESUMO

Microscopia eletrônica de varredura, de ovos de Toxocara canis

O Autor descreve a morfologia de ovos não-embrionados de *Toxocara canis* vistos

sob microscopia eletrônica de varredura. Um padrão reticulado, constituído por traves irregulares, estreitas e ramificadas, que se interpenetram e cruzam, delimitando depressões de forma e tamanho variáveis, foi o achado principal. A importância destes achados é discutida.

ACKNOWLEDGMENTS

The Author wants to express his thanks to Mrs. A. Brockbank for the invaluable help and to the Dept. of Botany of the University of Liverpool for the facilities provided.

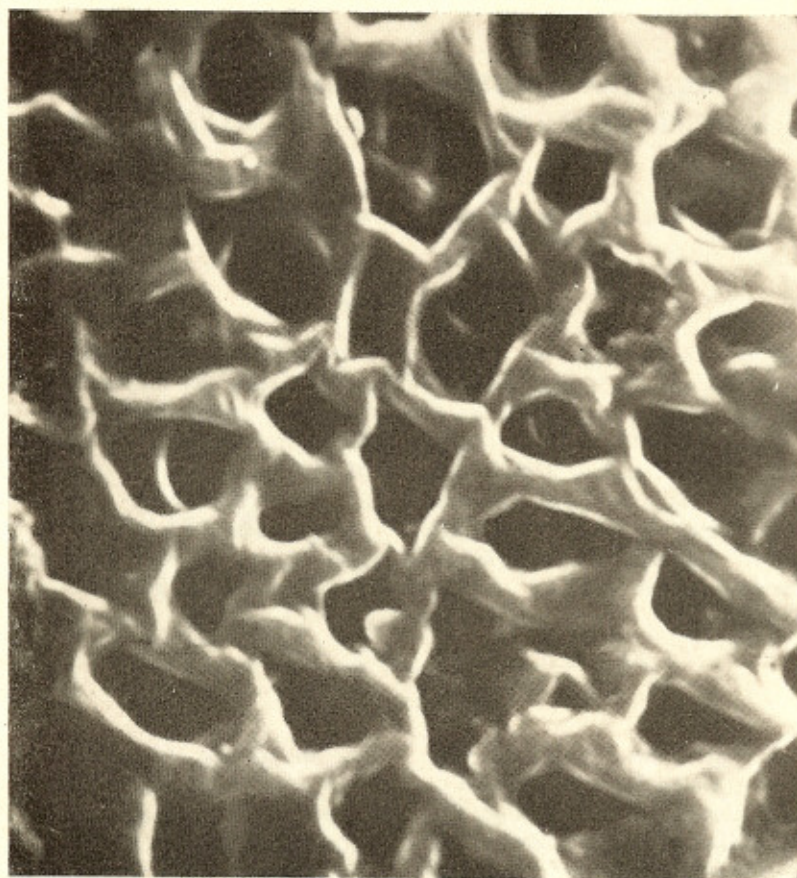


Fig. 2 — *T. canis* eggs. Higher magnification showing detail. Irregular ridges with branching and intermingling (12,000 x).

REFERENCES

1. ASHTON, U. — Larval granulomatosis of the retina due to *Toxocara*. *Brit. J. Ophthalmol.* 44:129-132, 1960.
2. BELDING, D. L. — *Textbook of Parasitology*. New York, Appleton-Century-Crofts, 3rd ed., 1965.
3. BRAIN, L. & ALLAN, B. — Encephalitis due to infection with *Toxocara canis*. Report of a suspected case. *Lancet* 1:1355-1356, 1964.
4. FAUST, E. C.; BEAVER, P. C. & JUNG, R. C. — Animal agents and vectors of human disease. New York, Lea & Febiger, 2nd ed., 1962.
5. FAUST, E. C. & RUSSEL, P. F. — *Clinical Parasitology*. New York, Lea & Febiger, 7th ed., 1964.
6. MOCHIZUKI, H.; TOMIMURA, T. & OKA, T. — Cerebrospinal nematodiasis as a provoking factor in Japanese B encephalitis: an experimental approach. *J. Inf. Dis.* 95:260-270, 1954.
7. NICHOLS, R. L. — The etiology of visceral larva migrans. I — Diagnostic morphology of infective 2nd stage *Toxocara* larvae. *J. Parasitol.* 42:349-362, 1956.
8. WILDER, H. C. — Nematode endophtalmitis. *Trans. Am. Acad. Ophthalm.* 55:99-100, 1950.
9. WOODRUFF, A. W. — Toxocariasis. *Brit. Med. J.* 1:1001, 1970.
10. ZYNGIER, F. R. — Histopathology of experimental toxocariasis in mice. *Ann. Trop. Med. Parasitol.* 68:225-228, 1974.

Recebido para publicação em 13/11/1974.