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دراسة عن طفيل الينجوتيلاسيراتا من الماعز المصرى

محمد الشرى ، فاطم سكللا

أكتشف وجود جرانيولوما تحتوى على البيرقة الشائبة لطفيل الينجوتيلاسيراتا متحوصة ، وكذلك وجود النيف المعدى حرافى الغدد الليمفاوية المجاورة للأمعاء فى واحد من ستة ماعز مصرى اشترت من محافظة الجيزة .

بعمل قطاعات متتالية فى الغده الليمفاويه امكن ملاحظة وجود الخلايا الملتهمه العملاقة للجسام الغريبه فى الجرانيولوما . وهو ملحوظ ذا معنى تشخيصى من جرانيولومات الامراض الاخرى . وقد سبب النيف المعدى المهاجر تحلل نسيجي .

ويعتبر هذا أول تسجيل لهذا الطفيل فى مصر ، حيث يقترح الباحثان استمرار استكمال دراسة هذه الطفيليات لاكتشاف الطفيليات البالغه والعائل النهائى لها .

هذا وبينه الباحثان على خطورة هذا الطفيل لاحتمال اصابته للانسان حيث يعتبر من الامراض المشتركة .

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**ON A LINGUATULID PARASITE, *LINGUATULA SERRATA*
(PENTASTOMIDA: ARTHROPODA) FROM AN EGYPTIAN GOAT**
(With 5 Figures)

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SUMMARY

A parasitic granuloma containing encysted secondary larvae and migrating infective nymphs of *Linguatula serrata* Parasite were observed in the mesenteric lymph nodes in one out of six Egyptian goats purchased from Giza Governorate. The foreign body giant cells in the pentastomid granuloma observed in serial sections are differential pathognomic feature from other granulomas. The migrating infective nymphs caused mainly tissue histolysis. *Linguatula serrata*, encountered in the present study, is recorded from Egypt for the first time. Extensions of this work to find out the infection among the final carnivorous host is highly recommended. Besides, this study might throw further light on the ecology of more serious zoonotic disease potentially transmissible to man.

INTRODUCTION

Many aspects of the pentastomid parasites are still unsettled in the taxonomic position, biology and pathology. HEYMONS (1935) considered them as being intermediate between annelids and arthropods, basing on the non segmented body cavity, the metamericly arranged muscles and that of chitinous tegument. The succession of the larval stages from primary larva form egg, second larva after hatching and molting and third stage larva (infected nymph) is highly reminiscent of larval development of arthropods (BAER, 1952). Their arthropodian affinities are mainly suggested by the larvae which posses two pairs of clawed leg like processes (RICHARDS and DAVIS, 1963).

Biologically, BAER (1952), stated that only the second stage larva is encysted in the host tissue and the nymph is the free migrating infective stage. BELDING (1965) stated that the nymph is encysted. Pathologically differential diagnosis between the pentastomid granulomas and tuberculosis in the lymph nodes is stated to be difficult (LAPAGE, 1956). As regards to the linguatulid parasite infections in carnivorous, herbivorous animals and human, no adequate data on their occurrence in Egypt are available.

Therefore, this work presents a report on *Linguatula serrata* infection among Egyptian goats.

MATERIAL and METHODS

The material for this study was obtained during the histopathological examination of H & E paraffin sections of all the parenchymatous organs, the carcass lymph nodes (submaxillary,

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prescapular, popliteal), the vescceral lymph nodes (pharyngeal, bronchial, mesenteric, hepatic, renal), the tongue and the skin of six adult sheep and six adult goats which were purchased from Embaba Market, El Giza Governorate.

The linguatulid parasites Linguatula serrata FROHLICH, 1789 were recovered from the mesenteric lymph glands of one out of six goats.

The parasite were lying free in a migeratory tract within the lymphoid tissue without initiating any reaction. A granuloma was found beside the non reactive present of the parasite. A serial sections were performed all over the substance of the granuloma to reveal its relation to the parasite.

RESULTS

Gross anatomy:

One or two sporadic capsulated nodules were found embeded in the substance of the mesenteric lymph nodes. The nodules diameter was 1-2 mm. on cut sections. They reaveled caseated contents. The rest of the lymph nodes parenchyma was of normal appearance.

Histopathology:

Histopathological examination demonstrated the presence of foreign body granulomas beside the parasitic larvae lying freely in a migeratory tract within the lymphoid tissue without initiating any reaction.

The granuloma showed caseated basophilic contents surrounded by a zone of foreign body giant cells, then a connective tissue capsule (Fig. 1). Serial sections through the whole mesenteric lymph nodes has revealed the presence of early granulomas with different cut section planes of second larva of L. serrata as indicated by the small size, diameter and the smooth cuticular covering (Fig. 2). The reaction was also foreign body giant cells and connective tissue capsule.

The freely lying pentastomid parasitic nymphs were of large size, 1-2 mm. in diameter. They were characterised by having a flattened and pseudosegmented body (Fig. 3). The cuticular annular rings of the body beared sharp minute tegumental spines which were backwardly directed (Fig. 4). Somatic striated muscles metamericly arranged was found to fill the matrix and no body cavity could be traced. Section through the parasite intestine was found within the somatic musculature (Fig. 5). Thick supporting connective tissue was observed to surround the intestinal epithelial cells. Neither circulatory nor respiratory system could be detected. The above described morphology specially with the presence of spines indicated that this is the nymph stage of Linguatula serrata FROHLICH, 1789.

The damage initiated by the nymphs was only traumatic. The borders of the migerating tunnels in which the nymphs lying free showed evidence of histolysis with the presence of basophilic fluid (Fig. 3).

DISCUSSION

The histopathological examination revealed the presence of different stages of Linguatula serrata FROHLICH, 1789 within the substance of mesenteric lymph glands. The diagnosis was based on the characters of the pentastomid parasites in the tissue sections and their separation into order Cephalobaenida and Porocephalida as postulated by CHITWOOD and LICHTENFELS (1972).

LINGUATULID PARASITE IN GOAT

The early and old granulomas observed in the present material represent the different stages of encysted secondary larvae. BAER (1952) stated that in the course of larval development a pentastomid passes through three stages; first, the primary larva is formed within the egg. A second larva is formed after hatching and moulting several times. It becomes quiescent, encysted within tissues of the intermediate host. After eight moults, it is found to be covered with spines and it escapes from the cyst and becomes the infective nymph.

The foreign body giant cell reaction observed in the pentastomid secondary larval granuloma is a feature of differential diagnostic significance specially in those granulomas where larvae or particles of larvae are absent. LAPAGE (1956) reported that such larval free pentastomid granulomas specially when calcified may resemble tuberculous lesions so closely that it may be impossible to distinguish between the two either macroscopically or microscopically. Foreign body giant cells are diagnostic and always observable specially when serial sections is performed.

The nymph caused traumatic damage through migration. Evidence of tissue histolysis were observed. CHENG (1964) described the presence of frontal glands (also known as head glands) situated on each side of the mouth on a finger like projection, the popopodia in Linguatula serrata. These glands secrete a lytic substance that dissolves the host tissue.

BELDING (1965) stated that Linguatula serrata FROHLICH, 1789, adults inhabit the nasal cavities of carnivorous animals, while the immature forms infect herbivorous animals. Accordingly, the discovery of the immature stages of L. serrata in a local herbivorous animal assured the existence of the adult parasites in the local carnivorous animals. Nevertheless, extension of this work to find out the infection among the local carnivorous, as well as parasitological, serological and clinical studies about this disease in Egypt is highly recommended.

According to the available literature, it seems that the encapsulated larvae and nymphs of L. serrata recovered from the mesenteric lymph glands from an Egyptian goat in the course of the present work, have never been recorded from Egypt before. Hence, the present study provides the first record of this parasite.

As a matter of fact, the fore mentioned finding might throw further light on the ecology of a rather more serious zoonotic parasite potentially transmissible to man. Besides, the present study might call the attention of some workers to study the human infection with linguatulid parasite which was generally believed to be only parasite of animals. In this respect, HUNTER and HIGGINS (1960) and RENDTORFF *et al.* (1962) reported nymphs of Linguatula serrata causing visual damage due to the invasion of the eye in their North American patients. Yet, the unrecorded cases of such infection may be surprisingly very numerous. Moreover, BELDING (1965) pointed out that Linguatulidae and Porocephalidae of which species of the genera Linguatula and Porocephalus are both parasites of man. In addition, FAUST *et al.* (1975) mentioned that species of Porocephalus (Armillifer) have been recovered in immature stage from man in various anatomical sites including the eye in Africa, India, Java and China. Besides, FAUST *et al.* (1975) and (1976) added that Linguatula serrata, commonly found as an adult or nymph in the upper respiratory passages of dogs and other mammals, and as a larva or encapsulated nymph in herbivorous, has been recorded from man in Africa, Switzerland, Germany, Greece, Brazil, Chile, Colombia, Panama, Cuba, and the United States (Virginia, Texas, and Mississippi).

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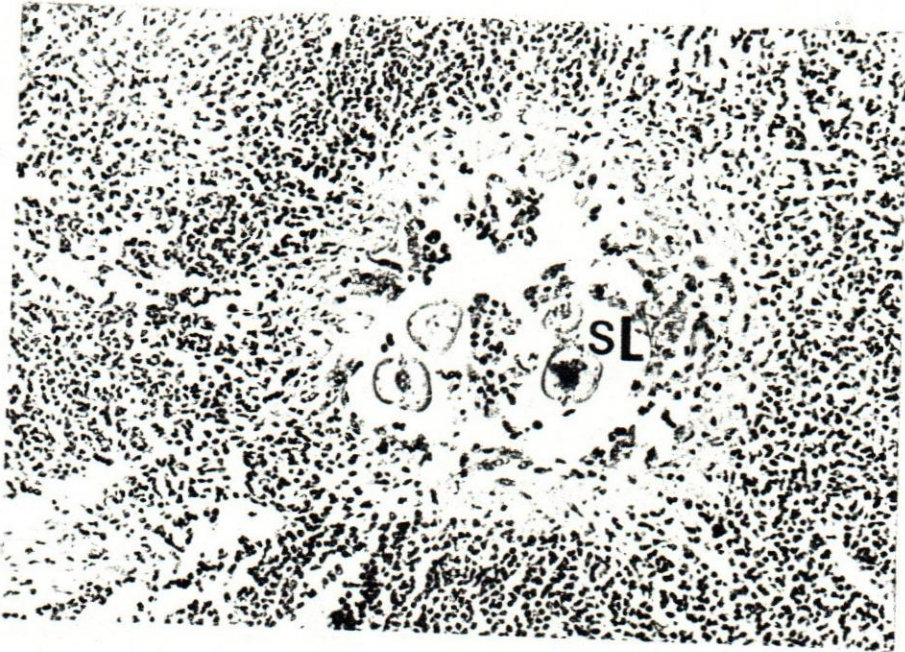
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Abbreviations used on micrographs:

- an: annulation of the cuticle
 G: giant cells
 int: intestine
 L: larvae
 msc: muscles
 sp: spines



Fig (1)



Fig(2)



Fig (3)

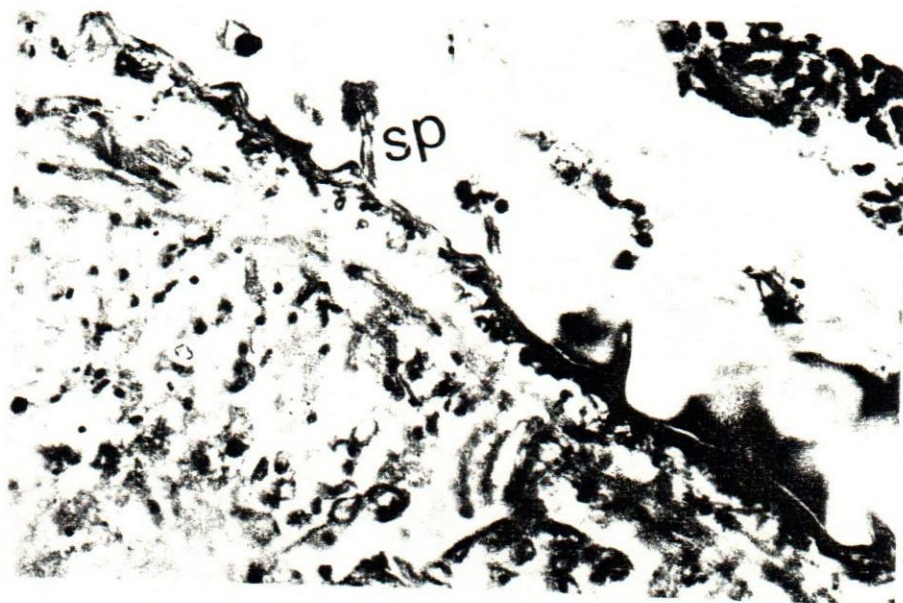


Fig (4)



Fig (5)