

## STUDIES ON HISTOPATHOLOGY OF *STILESIA* *GLOBIPUNCTATA* INFECTIONS IN IRAN (\*)

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**Summary.**—Nine cases of infection with *Stilesia globipunctata* were observed among 204 sheep and goats presented for routine necropsy. Gross lesions included a severe oedema of both the subcutaneous tissues and the internal organs. Numerous nodules from which, in many instances, the posterior segments of the tapeworm projected, were scattered throughout the mucosa of the small intestine. These nodules on histopathological examination were found to contain the encysted scolex of *S. globipunctata*. This parasite was considered to be the cause of death in each of these nine cases.

### Introduction

*STILESIA globipunctata* is a cestode infecting sheep, goats and cattle. It has been reported from Europe (2-6) Africa, and India (1). The immature forms of parasite produce nodules in the mucous membrane of the duodenal region of the small intestine while the adults occupy its lumen.

In Iran during 1968, of 204 sheep and goats presented for autopsy, nine sheep were found to be suffering from heavy infections with both mature and immature forms of *S. globipunctata*. All nine sheep were females of the fat tail (Shal) native breed.

This report details the clinical signs and pathological findings which were considered to be associated with this parasite.

### Clinical Signs

Eight of the nine cases seen had died before they were brought for necropsy. The only live animal which was seen was moribund, unable to move, and its head and neck were extended. It was very depressed and refused all food. The animal was first noted as sick four days previously and since then had lost weight

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rapidly. Prior to prostration, leg weakness and swayback occurred. This history was constant with the other animals which had died, but in some of these a dark, mucoid diarrhoea had been observed.

### Gross Pathological Changes

The disease was characterised by an extensive subcutaneous oedema. The primary lesion was in the small intestine which was thickened to approximately four to six times normal. The mucosa was oedematous, pale in colour and velvety in appearance. Its surface was studded with round lenticular shaped nodules measuring 6–10 mm. in diameter. The greatest concentration of these nodules was in the duodenal region. Some of the nodules were umbilicated and a thread-like tapeworm emerged from the top. The head-end of the worm, consisting of the scolex and anterior segments, was embedded in the nodules, while the posterior segments were free in the intestinal lumen. In some nodules no extension of the parasite into the intestinal lumen could be seen. Each sheep harboured from 60 to 100 immature stages.

Moderate numbers of adult tapeworm were also found in the intestinal contents. These worms were relatively short and narrow, measuring from 7–60 cm. by 0.25 cm. and were identified as *S. globipunctata* by Dr. K.D. Skerman, the FAO-UNDP/SF helminthologist in Iran. A concurrent infection and other gastro-intestinal helminths in small number was present, but it was considered that these were not sufficient to cause disease.



Fig. 1.—Round lenticular shaped nodules bulging from the mucosal surface of the duodenal region of the small intestine.

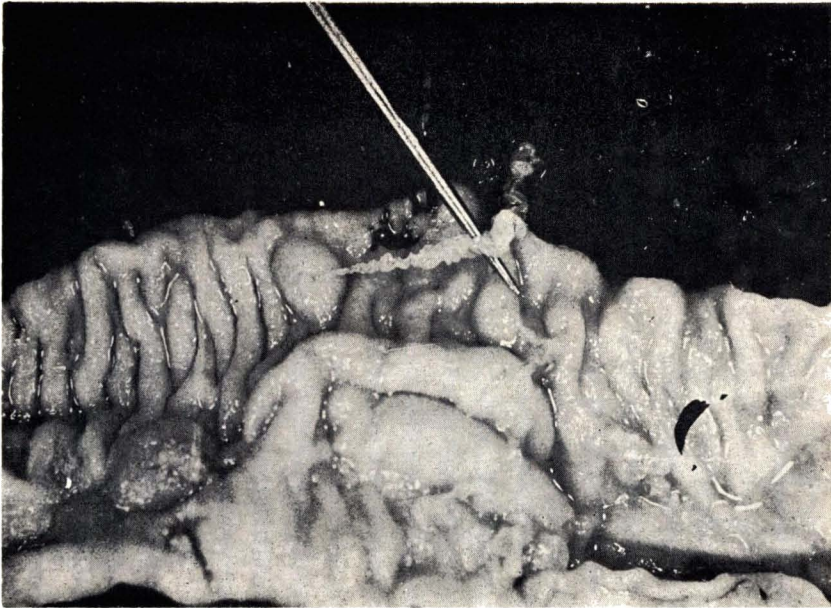


Fig. 2.—Thread-like tapeworm emerging from the top of the umbilicated nodules.

### **Histopathological Findings**

In addition to sections from the small intestine, haematoxylin and eosin stained sections were prepared from the following: liver, kidney, heart, lungs, spleen, pancreas, lymph nodes and skeletal muscle.

Microscopically there was a marked submucosal oedema which caused separation of the mucosa and submucosa of the small intestine. Elevations of the mucosa, with obvious hyperplasia of the glandular tissue, were present as nodules in the duodenal regions. Proliferation of glandular tissue surrounded encysted tapeworm larvae and in this glandular tissue, many chronic inflammatory cells, such as monocytes, plasma cells, various types of mononuclear cells and eosinophils were present. The glands were extensively hypertrophied and showed excessive secretory activity. This may well have been due to toxic substances secreted by the scoleces of the larvae which had penetrated from the lamina propria to the muscularis mucosa where they had encysted.

The cyst walls, which consisted of connective tissue, were relatively thick and distinct, although they were incomplete at some points. There was no tendency for eosinophils to accumulate in, or adjacent to, these walls. Each cyst contained only one scolex which was lying adjacent to the muscularis mucosa or base membrane, while its segments extended to the mucosal surface. In the cyst the parasite appeared to be attached to the connective tissue wall by its suckers and the blood vessels in that area were moderately congested. Slight

to moderate chronic inflammation was observed in the remainder of the small intestine. In some animals the intestinal mucosa was congested and haemorrhages had occurred into the lumen of the bowel.

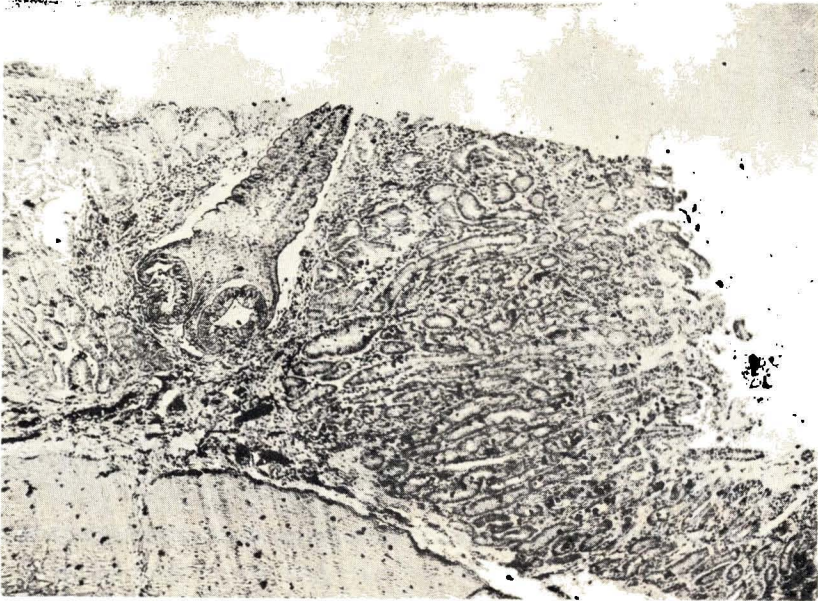


Fig. 3.—Histopathological section through a nodule, showing encysted larvae of *S. globipunctata*. (Note the scolex penetrating the lamina propria adjacent to the muscularis mucosa.)



Fig. 4.—Higher magnification of the encysted larvae, with (1) distinct cystic wall imperfect in upper portion, (2) hypertrophied glandular tissue, (3) heavy infiltration of chronic inflammatory cells between the glands.

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## Résumé

Neuf cas d'infection par *Stilesia globipunctata* ont été observés parmi 204 ovins et caprins présentes pour une autopsie de routine. L'ensemble des lésions comprenait un oedème sévère des tissus sous-cutanés et des organes internes. Les nombreux nodules desquels, dans plusieurs cas, apparaissaient les sections postérieures du ténia, étaient éparpillés sur toute la muqueuse de l'intestin grêle. Ces nodules, à l'examen histopathologique, ont révélé contenir le scolex enkysté de *S. globipunctata*. On a considéré que ce parasite était la cause de la mort de ces neuf sujets.

## Zusammenfassung

Unter 204 Schafen und Ziegen, die in Iran zur routinemässigen Nekropsie eingeliefert wurden, befanden sich neun mit *Stilesia globipunctata* befallene Tiere. Unter den mit blossem Auge wahrnehmbaren pathologischen Veränderungen war ein schweres Odem des subkutanen Gewebes und der inneren Organe zu verzeichnen. Zahlreiche Knötchen aus denen in vielen Fällen

die hinteren Bandwurmglieder hervorragten, waren über die gesamte Dünndarmschleimhaut verstreut. Bei der histopathologischen Untersuchung wurde festgestellt, dass jedes Knötchen einen in der Zyste eingeschlossenen Bandwurmskolex enthielt. Dieser Parasit wurde in allen neun Fällen als Todesursache angenommen.