Gut, 1972, **13**, 8-16

Helminthic pseudotumours of the bowel: Thirty-four cases of helminthoma

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SUMMARY Human infestation with nematode worms of the superfamily Strongyloidea has been recorded from time to time to give rise to serious surgical complications.

Worms of the genus Oesophagostomum are most frequently responsible. These are common parasites of ruminants, monkeys, and apes in which their histotropic phase is confined to the bowel wall and sometimes results in multiple inflammatory nodules. Man is an accidental host and it seems an abnormal one. The worm fails to return to the bowel lumen, migrates further and persists in the tissues. The commonest manifestation is a solitary tumour-like inflammatory mass or abscess ('helminthoma') in the ileocaecal region. The ileum, transverse and sigmoid colons are affected less commonly and the lesions are occasionally multiple. Patients may also present with abscesses of the abdominal wall. The clinical diagnosis is difficult, even at laparotomy. Carcinoma, appendicitis, ileocaecal tuberculosis are frequently simulated and unnecessary radical surgery is often the result, particularly in expatriate Europeans.

In this communication 34 cases from Uganda are reviewed with emphasis on histopathology as responsibility for the correct diagnosis is likely to fall on pathologists. Three characteristic appearances are described and related to phases in the natural history of the disease. Current knowledge on parasitology is reviewed. The disease affects Africans as well as Europeans and it is anticipated that cases will be seen in those returning from the tropics.

The term 'helminthoma' was first used by Elmes and McAdam (1954) to designate a tumour-like inflammatory swelling of the bowel following penetration of the wall by a nematode worm. They described the clinical presentation of six patients in Uganda, three of whom were Europeans. A live worm was found in four and three of these were shown to belong to the genus Oesophagostomum.

Inflammatory nodules, tumour-like masses, and abscesses of the bowel caused by Oesophagostomum and other closely related species have been known to occur since the turn of the century. In 1902 Brumpt reported the necropsy findings of a Pouma native who died from 'dysentery' in the Lake Rudolph area of north-western Kenya. Multiple nodules were present in the terminal ileum, caecum, and ascending colon, each enclosing an immature female oesophagostome. In 1910 Thomas found 187 nodules and abscesses in both small and large intestine of a Brazilian prisoner many of which contained live worms. In 1949 Lie Kian Joe recorded one case from Indonesia. Cases have been seen more recently on the Ivory Coast (Chabaud and Larivière, 1958), in Nigeria (Davey, 1962), in the Sudan (Adams and Seaton, 1963), and in Ghana (Haaf and van Soest, 1964). In Uganda Welchman (1966) reported a further two cases.

A total of 22 cases have been reported so far though many more are known to have occurred in Uganda alone (McAdam, 1968). It seems that the condition may occur at any age, in both sexes, and in all races. Little evidence is available so far on how infestation with oesophagostomes is acquired. It may be expected that cases will occur amongst expatriates and travellers returning from the tropics. Clinical presentation is variable, misdiagnosis is frequent, and the pathologist may be baffled by appearances that range from inflammatory to neoplastic.

In this communication we present 34 cases of helminthoma with emphasis on pathology but brief notes are included on clinical presentation and problems of surgery. All the cases occurred in Uganda, six in expatriate Europeans.

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Received for publication 25 October 1971.

Material and Methods

Case material for study was selected on histological criteria. Sixteen cases were personally diagnosed by one of us (P.P.A.) during 15 months in 1969-70. A further 20 cases, diagnosed by other pathologists, were obtained from the files of the Department of Pathology, Makerere University, Kampala, where helminthomas have been indexed as such since 1967. A search of the clinical case records of Mulago Hospital Medical School, Kampala, yielded a further 10 cases in which histological material was available. A total of 46 cases was thus collected for review.

It soon became clear that if the presence of a worm was applied as sole criterion this was going to lead to the exclusion of many cases. It was therefore decided to classify the lesions in the following manner.

CLASSIFICATION

Class I

An abscess and/or worm track where a worm was found by the surgeon at laparotomy, or seen in tissue sections.

Class II

An abscess and/or worm track of identical appearance to class I but where no worm was found.

Class III

A chronic inflammatory mass with features suggesting a parasitic infestation (heavy eosinophilic infiltration in particular) but where no worm, abscess, or track was detected.

In classes II and III care was taken to exclude, as far as possible, tuberculosis, schistosomiasis ('bilharzioma'), amoebiasis ('amoeboma'), appendicitis (appendicular abscess), diverticular disease of the bowel, Crohn's disease, and tumours.

Clinical and pathological analysis resulted in the rejection of 12 out of 46 cases originally diagnosed as helminthoma. Ten were non-specific inflammatory masses of uncertain aetiology and two proved to be schistosomal granulomas (bilharziomas). Thirty-four cases were considered to be helminthomas and classified as above. Histological blocks were re-cut and sections stained with haematoxylin-eosin, periodic acid-Schiff reagent, and Masson's trichrome stain. Serial sections were cut when necessary. Ziehl-Neelsen stain was carried out when indicated. Intact worms were sent for identification to the Parasitology Section, Division of Geographic Pathology, Armed Forces Institute of Pathology, Washington, USA.

All the histological material filed as tuberculosis, schistosomiasis, and amoebiasis of the gastrointestinal system for the three years 1967-69 inclusive was reviewed to assess the relative incidence of tumour-like inflammatory masses due to such causes.

Results

The basic data are shown in the Table.

AGE, SEX, AND RACE

Age varied from 2 to 72 years with an average of 27·5 years. There were 14 children under the age of 16 years. Both sexes were affected equally. Six patients were Europeans and 28 Africans.

CLINICAL FEATURES

Presentation was variable and misdiagnosis frequent as the Table shows.

The onset of symptoms was usually gradual. Continuous pain, localized to the right lower quadrant, was the most frequent complaint. The appetite remained unaffected, the tongue was clean, and the temperature was only slightly raised. Vomiting was an inconstant feature and when it occurred it was often delayed one or two days after the onset. Tenderness was usually well localized, often with guarding, and a mass could frequently be felt, the size of which seemed disproportionately large when judged against the comparatively mild symptoms. The bowel lumen was never obstructed except in two cases in which intussusception had occurred. Six patients presented with abscesses of the anterior abdominal wall. Occasionally several members of a household were affected.

Laboratory investigations were of little help. Blood eosinophilia was frequently found but this is common enough in the tropics. Examination of the stools for eggs was unrewarding as these are extremely difficult to differentiate from those of other nematodes. Radiological examination was occasionally helpful in demonstrating an intact mucosa over a filling defect.

At laparotomy the usual finding was a mass in, or attached to, the bowel wall often wrapped over by the greater omentum. In only 10 cases was the diagnosis of helminthoma made and in four of these a live worm was obtained by the surgeon either by opening the abscess or by aspirating it (Fig. 1). The contents were thick, yellow, odourless pus which proved sterile on culture. Eight cases were diagnosed as carcinoma, including three Europeans. It may be noted here that invagination of the bowel wall to feel the mucosal surface is a helpful manoeuvre: in helminthoma it is always intact and smooth whereas

Case No.	*Age*	*Sex*	*Race*	*Presentation*	*Clinical Diagnosis*	*Site*	*Class*	*Worm*
1	8	M	A	Tender mass below umbilicus	Helminthoma	Transverse colon	2	
2	43	M	A	Mass in right iliac fossa	Carcinoma	Caecum	3	
3	55	M	A	Mass in centre of abdomen	Carcinoma	Transverse colon	3	
4	50	F	A	Abdominal pain, constipation. and tender abdominal mass	Tuberculosis	Mesentery	2	
5	20	F	A	Abdominal pain, tender mass in left iliac fossa, fever	Helminthoma	Sigmoid colon	1	Small nematode worm sectioned in the tissues
6	12	F	A	Mass in umbilical hernia	Carcinoma	Transverse colon	1	*Oesophagostomum apiostomum*
7	53	M	A	Tender mass in right iliac fossa	? cause	Ileocaecal	2	
8	50	F	A	Mass in anterior abdominal wall	? cause	Abdominal wall adherent to transverse colon	2	
9	7	F	A	Abdominal pain, tender mass in centre of abdomen, fever	? cause	Transverse colon	3	
10	8	F	A	Mass in anterior abdominal wall	? cause	Abdominal wall	1	Degenerate nematode worm sectioned in the tissues
11	41	M	A	Mass in right iliac fossa	Helminthoma	Ileocaecal	3	
12	45	F	A	Tenderness and guarding in right iliac fossa	? Appendicitis	Ileocaecal	2	
13	30	F	A	Mass in right iliac fossa	Crohn's disease	Ileocaecal	3	
14	10	M	A	Central abdominal pain, tenderness, and guarding	Helminthoma	Ileum	1	Small nematode worm sectioned in the tissues
15	4	F	A	Tender mass below umbilicus	? cause	Transverse colon	2	
16	2	F	A	Mass in anterior abdominal wall	? cause	Abdominal wall	2	
17	Adult	M	A	Colo-colonic intussusception	? cause	Caecum	1	Small nematode worm sectioned in the tissues
18	15	M	A	Pain and tenderness in right iliac fossa	Tuberculosis	Ileocaecal	3	
19	6	M	A	Fluctuant swelling in anterior abdominal wall	? cause	Abdominal wall	2	
20	10	M	A	Mass in anterior abdominal wall	? cause	Rectus abdominis sheath attached to transverse colon	2	
21	Adult	F	A	Pain, tenderness, and guarding in the right iliac fossa	? Appendicitis	Ileocaecal	2	
22	6	M	A	Mass in anterior abdominal wall	? cause	Rectus sheath attached to transverse colon	2	
23	58	F	A	Mass in right iliac fossa	Carcinoma	Caecum	3	
24	50	M	E	Mass in right iliac fossa	Carcinoma	Caecum	1	*Oesophagostomum apiostomum*
25	10	F	A	Tender mass with guarding in centre of abdomen	Helminthoma	Transverse colon	2	
26	8	M	A	Abdominal pain, tenderness and guarding, fever	Helminthoma	Ileum	1	*Ternidens deminutus*
27	72	M	A	Mass in right iliac fossa, constipation, weight loss	Carcinoma	Ileocaecal	3	
28	22	F	A	Central abdominal pain, tenderness, and guarding	Helminthoma	Transverse colon	3	
29	33	M	E	Mass in right iliac fossa	Carcinoma	Caecum	2	
30	26	M	A	Ileocolonic intussusception	Carcinoma	Caecum	2	
31	31	M	E	Pain, tenderness, and guarding in right iliac fossa	Helminthoma	Ileocaecal	1	*Oesophagostomum apiostomum*
32	29	F	E	Pain, tenderness, and guarding in right iliac fossa	? Appendicitis	Ileocaecal	3	
33	55	M	E	Abdominal pain, tenderness, and vomiting	Helminthoma	Ileum	2	
34	27	F	E	Pain and tenderness in right iliac fossa	Helminthoma	Ileocaecal	2	

Table *Summary of 34 cases of helminthoma*

M = Male, F = Female, A = African, E = European

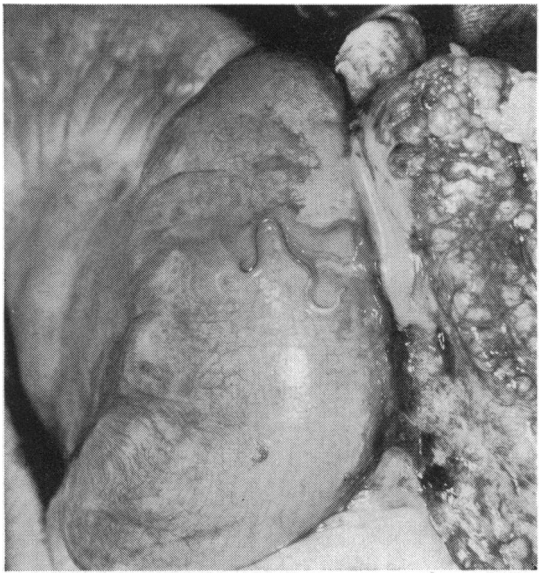

Fig. 1 *An inflammatory mass, adherent to the caecum, has been partly dissected free at operation to reveal an abscess containing a live worm.*

in carcinoma a hard ulcer or an uneven surface is present. Tuberculosis was diagnosed in two cases and Crohn's disease in one. In 13 cases no diagnosis was arrived at, though in three cases appendicitis or appendicular abscess were queried.

Twenty-two patients underwent major bowel resection, including radical surgery for those thought to be carcinomas. In the remainder, after the abscess had been opened and the worm removed, the inflammatory mass around rapidly subsided and no further harm resulted even when the peritoneal cavity had been soiled by pus. Straight radiographs of the abdomen months or years later showed calcification of the lesion in a few cases.

In summary it may be said that the condition frequently presents a diagnostic riddle even to those with experience. Carcinoma is frequently suspected and unnecessary radical surgery is carried out. The differentiation from other inflammatory lesions is almost impossible.

SITE

The ileocaecal region was most frequently involved in 16 cases, followed by the transverse colon in seven, the ileum in three, the sigmoid colon in one, and the mesentery in one. Six cases presented with abscesses of the anterior abdominal wall. The lesions were multiple in three cases.

Pathology

NAKED-EYE APPEARANCES

A mass of variable size, but usually 4-6 cm in diameter, was found in, or adherent to, the bowel wall. Adhesions to surrounding strictures were common and the greater omentum was frequently attached. The similarity to infected or sclerosing carcinoma was close in many cases. On opening the bowel the mucosa was intact in all but one case where the mass formed the head of a colo-colic intussusception and had ulcerated. On sectioning the mass an abscess or track was found in 24 cases, in four of which the worm was still *in situ* (Fig. 2). The

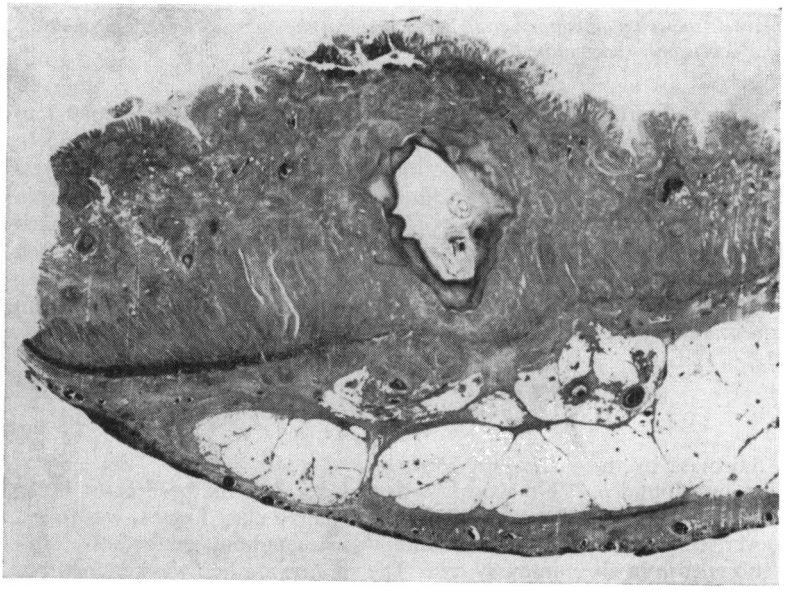

Fig. 2 *Section through a disc-shaped, ill-defined swelling in the base of the caecum to show the intact mucosa uppermost. A worm track is present at the junction of submucosa with muscularis, containing the barely recognizable remnants of a degenerate worm. (Masson's trichrome* × *4).*

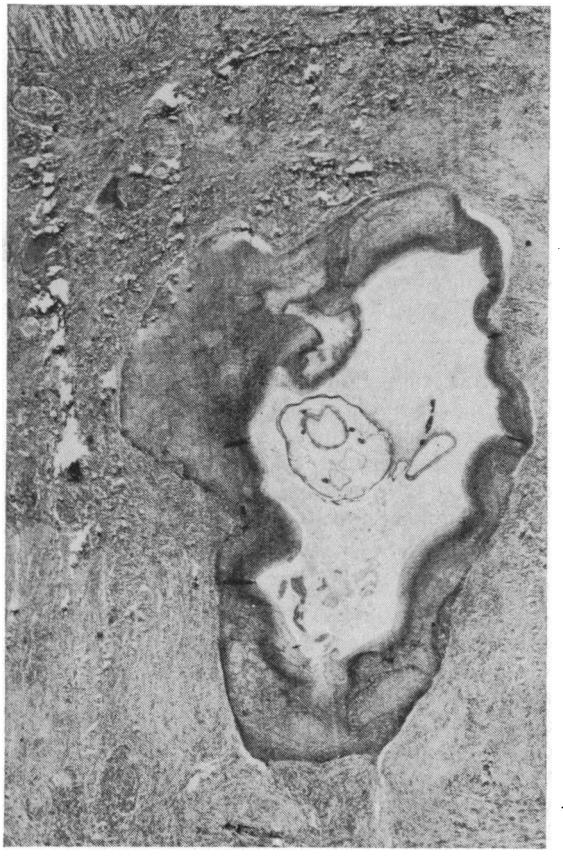

Fig. 3

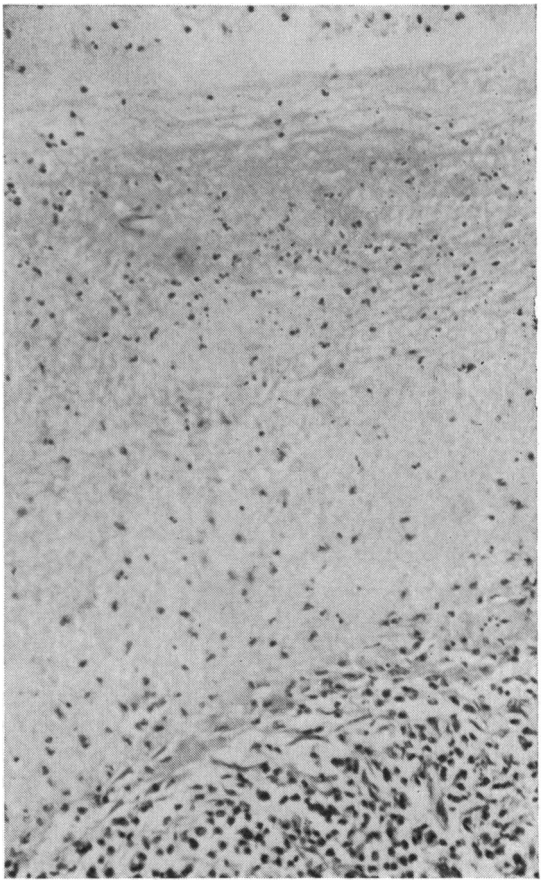

Fig. 4

Fig. 3 *Same case as shown in Figure 2. The worm track and remnants are clearly shown (Masson's trichrome × 16).*

Fig. 4 *Section through the wall of the track shows inflammatory granulation tissue at the bottom and thin fibrinous exudate at the top which contains nuclear debris only (haematoxylin and eosin × 160).*

contents of abscesses were thick, yellow, odourless fluid, sterile on culture. Peritonitis was seen only in two cases. On six occasions a track could be traced from the submucosa through the muscle coat and into the surrounding tissues. On one occasion the track presented as a sausage-shaped lump and gave the bizarre appearance of a double appendix. Yellowish-grey nodules of fat necrosis were sometimes present in the vicinity of the mass and regional lymph nodes were usually enlarged.

HISTOLOGY

Class I: eight cases

A live worm was extracted from the mass by the surgeon in four cases, and the worm was found *in situ* by the pathologist in the other four. The point of entry through the mucosa was never seen but the track could be traced back to the submucosa in six cases. The diameter of the track was from 0·5 to 2 mm leading to an abscess of variable size up to 5 cm. The outline of both was sinuous. In the presence of an intact worm they were filled with a thin fibrinous exudate, were ill defined, and contained numerous fat globules. The cellular content was often scanty and was made up chiefly of eosinophils, macrophages, and nuclear debris. There was no definite lining or wall. Surrounding tissue was oedematous. The overall appearances suggested tissue lysis with insudation of fibrin and little inflammatory response (Figs. 3 and 4).

Class II: 16 cases

No worm was found in any of these cases but a track or abscess, similar to class I cases, was found in all. The lesion was situated outside the bowel wall in every case. The sinuous outline was retained but

Fig. 5

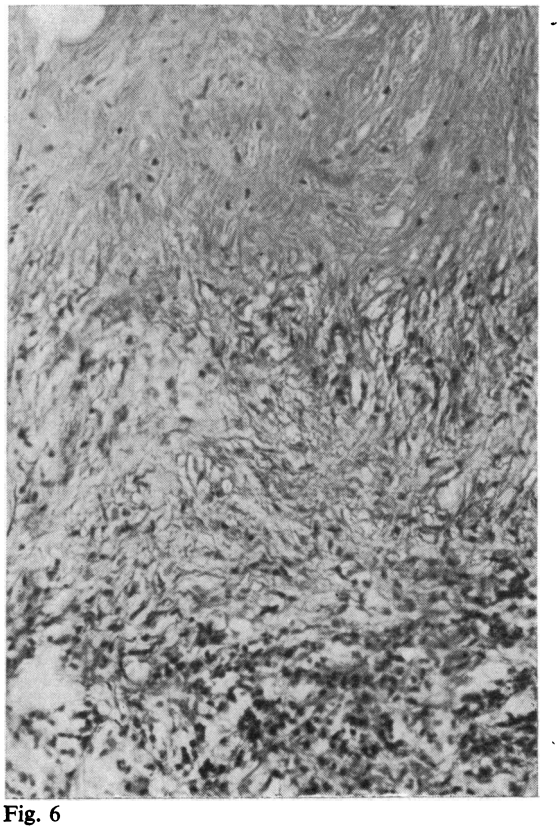

Fig. 6

Fig. 5 *Abscess and track with a sinuous outline showing numerous fat globules in the bottom cavity and dense, 'cheesy' contents in the track above that resembles caseation (haematoxylin and eosin × 16).*

Fig. 6 *Section through the wall shows, from above downwards, dense, 'cheesy' contents, a well defined lining of epithelioid cells and fibroblasts, and chronic inflammation in which eosinophilic polymorph leucocytes are present (haematoxylin and eosin × 160).*

the contents were denser, more eosinophilic, and in some cases came to resemble caseation. Nuclear debris was frequently present. Granular deposits of calcium were seen in some. The lining was better defined and more definitely granulomatous in character, being made up of macrophages, epithelioid cells, and fibroblasts. The resemblance to tuberculosis was close in many cases. Surrounding tissue was chronically inflamed with much fibrosis. Fat globules were often numerous. Eosinophil leucocytes were present in moderate to large numbers (Figs. 5 and 6).

Class III: 10 cases

A mass was always present outside the bowel and adherent to surrounding strictures. In six cases the anterior abdominal wall was involved. Histologically a fibrous chronic inflammatory mass was seen containing many eosinophils and sometimes areas of old fat necrosis (Fig. 7). The diagnosis in these was conditional on the exclusion of all alternatives. Giant cells in any numbers, the formation of discrete epithelioid cell granulomata, or the presence of haemozoin pigment should make one look hard for schistosome eggs. It is also advisable to carry out a PAS stain for amoebae.

Enlarged regional lymph nodes showed non-specific reactive changes only, usually in the form of sinusoidal histiocytosis, sometimes with the deposition of PAS-positive granular material in the cytoplasm of littoral cells. A foamy, xanthomatous reaction was also seen in a few cases. The content of eosinophilic leucocytes was variable. The combination of PAS-positive or foamy sinus histiocytosis with eosinophilic inflammation was sufficiently noticeable in a few cases only.

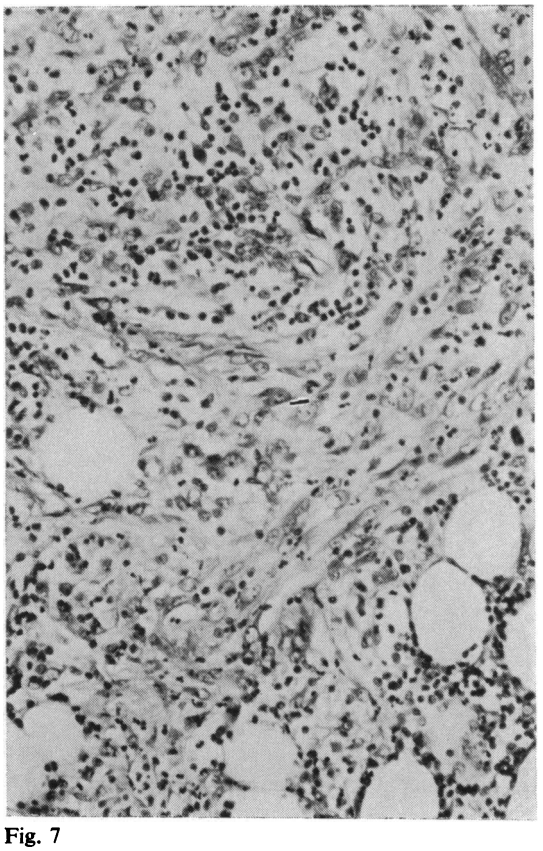

Fig. 7

THE WORM

Precise identification is only possible of whole, undamaged specimens. Four of these were obtained, three of which were identified as *Oesophagostomum apiostomum* and one as *Ternidens deminutus*. Three were gravid females.

In four cases the worm was sectioned in the tissues. All had the gross characteristics of nematodes with a body wall consisting of a transversely striated, anucleate cuticle, epidermis, and dermomuscular layer. Two could be definitely identified as gravid females but eggs were never seen free in the tissues (Fig. 8).

TUBERCULOSIS, SCHISTOSOMIASIS, AND AMOEBIASIS

In the period 1967 to 1969 inclusive there were 54 cases of tuberculosis, 117 cases of schistosomiasis, and 31 cases of amoebiasis of the gastrointestinal tract and peritoneum filed in the records of the Department of Pathology, Makerere University, Kampala. Review of these did not yield any case of helminthoma. Tuberculosis presented as an ileo-caecal mass in six cases. There were two tumour-like masses caused by schistosomiasis (bilharziomas) both in the small bowel and only one case of amoebiasis of the caecum (amoeboma).

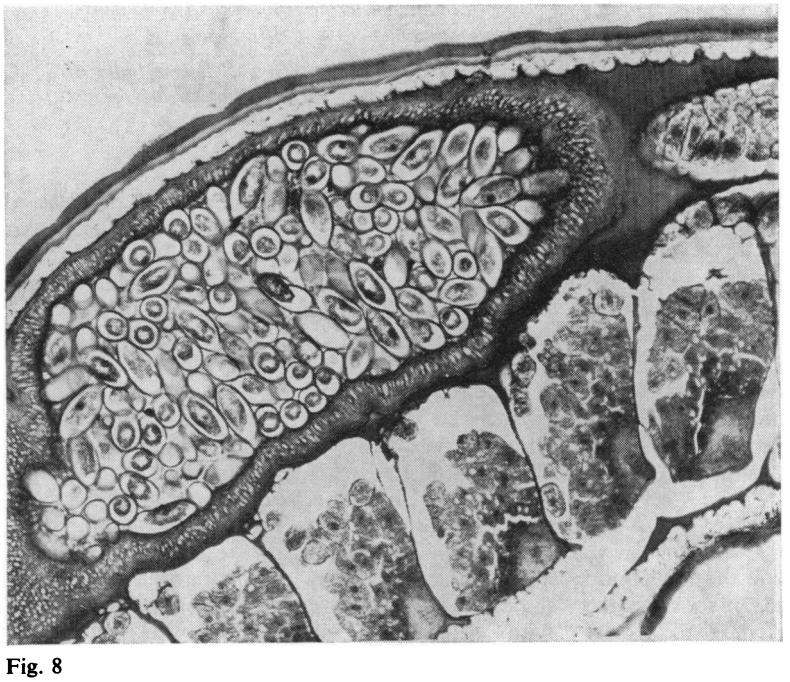

Fig. 8

Fig. 7 *A fibrous chronic inflammatory mass containing numerous eosinophilic polymorph leucocytes (haematoxylin and eosin* × *160).*

Fig. 8 *Histological section of an intact female worm in the tissues. The three layers of the body wall characteristic of a nematode; the uterus and numerous eggs are clearly shown (Masson's trichrome* × *160).*

Discussion

Little is known about the parasitology of this condition, except that in most cases reported so far worms belonging to the genus Oesophagostomum were found. These so-called nodular worms belong to the superfamily of Strongyloidea and are relatives of hookworms. They may be found in pigs, sheep, goats, cattle, and other ruminants as well as monkeys and apes but man is only an accidental host. Their histotropic phase is confined to the bowel wall. In animals, eggs are passed in the faeces, hatch in the soil, and develop into first- and second-stage larvae. These are swallowed by the new host and moult again to become third-stage larvae which then enter the submucosa of the bowel, usually terminal ileum or colon. Here they mature to the fourth stage and return to the lumen to become adults. In younger animals lacking resistance to these parasites there is normally little reaction around the worm in the intestinal wall. In older, previously infected animals, caseous nodules develop and the worms may be destroyed. We do not feel qualified to enter into the considerable controversy regarding source, nomenclature, and identification but would refer the interested reader to the studies of Railliet and Henry (1906), Travassos and Vogelsang (1932), and Chabaud and Larivière (1958). It appears to us that there are two major species, *Oesophagostomum stephanostomum* and *Oesophagostomum apiostomum*, but other designations and eponyms abound: Stossich and Thomas for *O. stephanostomum* and Willach, bifurcum (Creplin), Brumpt and aculeatum (Linstow) for *O. apiostomum*.

It is not known how infestation with these worms occurs in man. Contact with ruminants is close enough in African populations but the same cannot be said for monkeys and it is unlikely that expatriate Europeans or travellers could be infested in this way. Transmission from man to man cannot be excluded and the occurrence of cases in the same household supports this possibility. There are, however, no data on the existence of a human reservoir apart from sporadic recordings. Johnson (1913) in a report to the British Colonial Office noted a 4% carriage rate of Oesophagostomum species amongst prisoners in a jail at Zungeru in Nigeria. Leiper (1911) and Joyeux (1944) also from West Africa, reported single cases of intestinal carriage.

Other nematodes may occasionally be involved. Elmes and McAdam (1954) recovered *Ancylostoma duodenale* from one case and *Ternidens deminutus* was identified in one case in this series. These, however, seem exceptional findings. Hookworms, Sparganum and Oxyuris do occasionally bury themselves into the mucosa or submucosa causing circumscribed haemorrhages but do not usually penetrate into the tissues any further (Bonne and Lie Kian Joe, 1940a and b; Bijlmer, 1946; Elmes and McAdam, 1954).

Development of oesophagostomes in man is highly abnormal and leads to serious complications. In animals the normal histotropic phase usually lasts about a week. In man it is prolonged, the worms reach maturity whilst still in the bowel wall, and continue to migrate further. Three patterns may be seen (Haaf and van Soest, 1964): (1) multiple nodules in the wall of the small and large intestines: 13 cases reported so far, nine of them from Ghana (Brumpt, 1902; Thomas, 1910; Lie Kian Joe, 1949; Adams and Seaton, 1963; Haaf and van Soest, 1964); (2) solitary abscesses and tumour-like masses mainly in the ileocaecal region: seven cases, all from Uganda (Elmes and McAdam, 1954; Welchman, 1966); (3) abscesses of the anterior abdominal wall: two cases (Elmes and McAdam, 1954; Chabaud and Larivière, 1958).

Cases occurring in Uganda fall mainly into the pattern of solitary, ileocaecal lesions: in this series of 34 cases 25 were solitary and 16 of these occurred in the ileocaecal region. Multiple abscesses of ileum and colon were present in three patients. Six presented with anterior abdominal wall abscesses.

The clinical presentation is variable and misdiagnosis is frequent even when special experience can be called upon. The condition may imitate carcinoma, appendicitis, or appendicular abscess, diverticular disease, ileocaecal tuberculosis, Crohn's disease, amoebiasis, and schistosomiasis. Laboratory investigations are of little help: blood eosinophilia is common enough in those living in the tropics and examination of stools for eggs is unlikely to provide the answer as these are almost indistinguishable from those of other nematodes. At laparotomy the problem often remains unsolved and major surgery is resorted to for the sake of safety.

We feel it particularly important that pathologists should be aware of the existence of this condition as they alone may make the diagnosis unless the surgeon is fortunate enough to find the worm. In cases classified here as class I, where the worm is found in the tissues, there can be no doubt. It is of interest to note that the worm is usually a gravid female. Eggs, however, are never seen free in the tissues. In class II cases, with a similar histological appearance but no worm, the diagnosis is reasonably easy if one is aware of the possibility but very difficult indeed if ignorant of it. It is important that these cases be not confused with tuberculosis, the histological appearances of which they may superficially resemble. In class III cases the diagnosis depends on the evalu-

ation of both clinical and pathological findings and the exclusion of alternatives. The histological picture is that of a fibrous chronic inflammatory mass with variable eosinophil leucocytic infiltration and sometimes old fat necrosis. Intestinal contents are never seen. Formed epithelioid and giant cell granulomata or the presence of haemozoin pigment should make one look very hard for schistosome eggs. This approach led to the exclusion of two cases from this series. Amoebae should be looked for, utilizing the PAS stain. It is of interest to note that helminthoma is by far the commonest cause of an inflammatory mass in the intestines in Uganda: there were 26 cases against six of ileocaecal tuberculosis, two of bilharzioma and one of amoeboma for the three years 1967-69 inclusive. Diverticular disease and Crohn's disease are practically unknown in Ugandan Africans, carcinoma of the colon is rare, and appendicitis is just beginning to be seen in urban areas. The latter alternatives must be considered first in the expatriate Europeans of course, whose disease patterns are similar to those of their respective countries of origin. They are far from immune, however, there being six cases in this series. As the ratio of Europeans to Africans is 1 to 1,000, this represents a very high incidence indeed.

We feel that classes I, II, and III represent stages of evolution in this inflammatory process. Class I is the acute lesion. This is characterized by an ill-defined sinuous abscess or track filled with a fibrinous exudate in which inflammatory cells may be scanty. When such appearances are seen, worms are likely to be found though the whole of the mass may need sectioning. Class II is when the abscess or track becomes walled off by a layer of macrophages, epithelioid cells, and fibroblasts and the contents become dense and 'cheesy' though never truly caseous as nuclear fragments ar still visible. We never found a recognizable worm in these cases and granular calcification of the contents is often seen. We feel that the worm has died and been reabsorbed when these appearances are seen. If only chronic inflammatory tissue is obtained this may be due to inadequate sampling or to the complete disappearance of the worm track or abscess. Eosinophils will, however, be found to persist. How long the worm does remain alive in the tissues is conjectural but it would seem from some case histories that this may be several weeks, even months.

The incidence of helminthoma cannot be determined at the moment for several reasons.

(1) There is reasonable clinical evidence that many cases settle spontaneously and only a minority develop serious surgical complications such as described here. A death has not been seen in Uganda.

2 In the past it has been the policy to treat all suspected cases of helminthoma conservatively. Patients were kept in hospital under observation until it was clear that their condition was subsiding. Only those who failed to resolve or in whom the diagnosis was in doubt were operated upon.

3 In many cases the proof of diagnosis is missing because either a worm is not found or it is not considered justifiable to take tissue for examination.

Welchman (1966) quoted the case of a European woman, normally resident in Uganda, who presented with an abscess of the sigmoid colon while on leave in England, the exact nature of which was never elucidated. We also have hearsay knowledge of such cases. It is likely that with increasing numbers of people travelling to, and returning from, the tropics helminthoma will have to be considered in the differential diagnosis of intraabdominal masses and inflammatory conditions.

We wish to thank Professor M. S. R. Hutt and Mr J. J. Shepherd for their advice and help and Dr Myron G. Radke for the identification of the worms.

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