OXYURIS GRANULOMA OF THE ENDOMETRIUM

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The first description of an intrinsic genital lesion caused by threadworms (*Oxyuris* or *Enterobius vermicularis*) is by Klee (1920), who found a gravid female worm in a granulomatous lesion of the cervix. There are a few other reports, reviewed comprehensively by Symmers (1950), of the identification of threadworms in other parts of the female genital tract, and search of the literature since Symmers's review has brought to light four further studies of oxyuris infestation of the female genitalia (Fatheree, Carrera, and Beaver, 1951; Freudenberg, 1951; Leschke, 1951; Gill and Smith, 1952). It is interesting that the majority of such reports are in the German literature, which may be a reflexion of the very high incidence of oxyuriasis found in Germany. Between 71 and 97% of German school-children are affected (Mendheim and Scheid, 1948; Beckers, 1949, and Ebert, 1949, quoted by Neumann and Wiedemann, 1950) as compared with 40 to 55% in similar groups in this country (Young, 1942; Mac Keith and Watson, 1948). The findings in the published cases of genital oxyuriasis indicate that the worms (adult gravid females) find their way into the genital tract during their nocturnal wanderings over the perineum. They gain access to the uterus, Fallopian tubes, and peritoneal cavity by crawling up the lumen of the genital tract. In a case encountered recently such a worm had lodged in the endometrium, where it caused a granulomatous lesion which was discovered during the routine histological examination of uterine curettings.

Case Report

The patient was a married woman of 45 who had had a uterine prolapse since the birth of her last child nine years previously. The only symptoms she had which might have been related to the threadworm infestation were pruritus and menorrhagia of six months' duration. The latter could also be explained by the presence of multiple fibroids of the uterus. On examination, the external genitalia were found to be healthy but the vaginal mucosa was hyperaemic and the cervix and body of the uterus were swollen and tender; there was a small inflamed area at the cervical lip. A diagnostic curettage was performed a few days before the uterus was removed.

Curettings.—The endometrium was in the premenstrual phase and its stroma was heavily infiltrated by eosinophil granulocytes (Fig. 1). Fortuitously, the histological preparation contained a small granulomatous area, 4 mm. across, in the centre of which were some parasitic remains (Fig. 2). Serial sections were cut from the rest of the block; a few were stained with eosin and methylene blue or by Mallory's connective tissue stain, and the remainder with haematoxylin and eosin. It was found that the granuloma consisted of a central space containing parasitic eggs which had an asymmetrical outline and were approximately $50 \times 20\text{--}30 \mu$ in size. They consisted of a hyperchromatic central mass surrounded by a thick transparent envelope; larval outlines could be recognized in a few. The egg-shells did not develop a blue colour with Mallory's stain, which indicated that they were not chitinous. These features are characteristic of oxyuris eggs. Dispersed among the eggs were a few fragments of tissue, apparently visceral remains, and round about the central collection was a hyaline eosinophilic capsule in which some nuclear structure could be seen. The capsule developed a deep blue colour with Mallory's stain, suggesting a chitinous composition; it was identified with certainty as the cuticle of the worm by the demonstration of an oesophageal bulb in direct continuity with it in a deeper section (Fig. 3), and in other sections by the recognition of a lateral crest. The presence of nuclei in the cuticle indicated that the worm at the time of the curettage was either alive or very recently dead. The portion of the worm at our disposal measured 3.5×0.4 mm., but the complete worm may well have been somewhat larger than this.

The granulomatous reaction around the worm consisted of a fairly well demarcated zone, 1 mm. thick, in which there were large numbers of degenerating eosinophil and neutrophil granulocytes together with lymphocytes and plasma cells. The granulation tissue close to the worm showed the greatest degenerative changes and contained a few strands of fibrinoid material. Around the granulomatous area the endometrial stroma was heavily infiltrated by inflammatory cells, among which eosinophils were again particularly abundant. The endometrial fragments not directly connected with the granuloma showed only an infiltration with eosinophil granulocytes. Encapsulation by fibrous tissue, calcification, foreign-body giant cells, and Charcot-Leyden crystals, which are said to be common in oxyuris granulomas, were not seen. Follicle formation in the

FIG. 1.—Secretory endometrial gland in a stroma which is heavily infiltrated by granulocytes, mostly eosinophil in type. (Haematoxylin and eosin. $\times 380$).

FIG. 2.—Gravid female threadworm surrounded by necrotic granulation tissue, with adjacent endometrial glands and infiltrated stroma. (Haematoxylin and eosin. $\times 75$.)

FIG. 3.—High-power view of worm showing capsular nuclear material, oesophageal bulb (top left), and typical oxyuris ova. The adjacent granulation tissue contains large numbers of eosinophil granulocytes. (Haematoxylin and eosin. $\times 380$.)

granulation tissue has also been previously described and this feature was recognized in a few of the sections.

Uterus.—After the diagnostic curettage the patient had a menstrual period, following which the prolapse and fibroids were treated by total hysterectomy. The uterus was examined by us for any sign of threadworm infestation. It weighed 450 g. and contained a large intramural fibroid, 5 cm. across, and a few smaller fibroids of less than 1 cm. diameter. There was no macroscopic or microscopic sign of threadworm infestation in the endometrium or in the lumen. Histologically, the endometrium was in the early follicular phase; the stroma showed a moderate infiltration by leucocytes, mainly eosinophil granulocytes, and no other pathological feature. The fibroids were cellular but benign.

Stools and Perianal Swabs.—The stools were examined once and "cellophane" perianal swabs were examined on four occasions with negative results. Direct questioning of the patient about a history of threadworms, did, however, elicit the surprising information that she had suffered from worms on and off for over 30 years but had made no effort to obtain treatment since leaving school. She had last observed worms in her stools "during the summer," i.e., about two months before her admission to hospital, and there had been no sign of them since.

Discussion

This case illustrates the capacity of the threadworm to live an almost harmless parasitic existence for very many years. Even when the uterus was invaded there was apparently little threat to health. More important from the pathological aspect is that the case may allow certain conclusions to be drawn on the time required for an oxyuris granuloma to develop. It is likely that the worm crawled into the uterus just after the last menstrual period and that it was then enveloped by the proliferating

endometrium. Fortunately the curettage was done just before the next period and the worm was not lost in the menses as it otherwise might have been. The time between the final day of the last period and the curettage was three weeks and it is suggested that the histological picture required no longer than this to develop. This short history was probably responsible for the failure to produce giant cells, calcification, and a fibrous capsule. The case also calls attention to a possible cause of infiltration of the endometrium by eosinophil granulocytes. Having regard to the minute size of the worm compared with the extent of the endometrium, it is a cause which might well be overlooked.

Summary

A granuloma containing a gravid female threadworm was found during the routine histological examination of uterine curettings. The endometrial stroma showed a striking infiltration by eosinophil granulocytes. It is believed that the granuloma reached its full development in not more than three weeks.

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