RECTAL PAPILLOMATA IN SCHISTOSOMA
HAEMATOBIIUM INFESTATIONS.

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INTRODUCTION.

In his chapter on schistosomiasis in the latest edition of Manson's *Tropical Diseases* (1921) Manson-Bahr makes the following observation in relation to urinary schistosomiasis: "In a large proportion of cases, much more frequently than was formerly thought to be the case, the characteristic ova of *S. haematobium* may be found in the faeces (Fairley), though it has not yet been proved that they are capable of forming the intestinal papillomata so characteristic of *S. mansoni* infestations."

Our experience in Iraq is fully in support of the observation that ova of *S. haematobium* are commonly to be found in the

FIG. 1.—Longitudinal section from the hypertrophic adenomatous portion of the growth, showing the papillomatous prolongations and numerous deeply stained ova in the tissues. Fixed in formol saline and stained with Ehrlich's acid haematoxylin and orange "G." (x 44.)

faeces, but we hope in this note to demonstrate that it both can and does occasionally form intestinal papillomata. Our experience suggests, moreover, that the condition is not by any means a rarity. In the areas of Iraq infected with schistosomiasis rectal papillomata have been occasionally reported, but not until quite recently have we been able to obtain specimens for section.

Three of these growths have been sectioned; in addition to the case about to be described Dr. Braham and Dr. Perry have both sent specimens of rectal papillomata to the Central Laboratory, Baghdad, for examination, and in each case the ova of *S. haematobium* were found on section.

The present case mainly differs from the other two in that the signs and symptoms presented left little doubt as to the causation of the new growth prior to its removal, and that, as will be seen later, adult worms in addition to ova have been found in the papilloma removed.

The patient, Hassan ibn Bairam, aged 26, a Kurdish coolie from Erbil, was admitted to the New General Hospital, Baghdad, on January 24th, 1923, with a diagnosis of "anaemia"; he complained of increasing shortness of breath on exertion for three months. He stated that he left Erbil for the first time six months previously, and had since been engaged in coolie work on the new cantonment in the course of construction at Hinajidi just south of Baghdad. He was insistent that he had been free from any symptoms whatever pointing to a urinary or rectal lesion until three months previously, when he first noticed a burning pain on micturition, and a month later a few drops of blood at the end of micturition. A week later he noticed the passage of blood and mucus by the rectum, a symptom which steadily increased in frequency up to the time of his admission to hospital. There was a history of occasional attacks of fever in Kurdistan, probably malarial.

Clinical Examination and Course of Illness.

The patient was a well built man with a pale "biscuit colour" complexion, and was obviously very ill on admission. The spleen was just palpable on deep inspiration; haemic bruits were to be heard on auscultation of the heart, and a few râles at both pulmonary bases. The temperature was 100° F., and the pulse 96. The result of a total and differential blood count was as follows:

Haemoglobin 60 per cent., red blood corpuscles 3,235,000 per cubic millimetre, giving a colour index of just under 1. There was a moderate degree of leucocytosis (13,800), the percentage of the respective white elements present being—

Polymorphonuclear leucocytes	...	...	55.4 per cent.
Lymphocytes	...	...	26.6 "
Large mononuclear leucocytes	...	...	5.2 "
Eosinophil leucocytes	...	...	12.8 "

The patient at the time of admission was passing from six to ten motions daily. Naked-eye examination of the stools showed the presence of both blood and mucus, the former dark in colour, free, and greatly in excess of the latter. Microscopically the presence of an enormous number of the typical ova of *S. haematobium* containing active miracidia was noted.

Examination of a centrifuged deposit of urine showed many pus and red blood cells and a large number of live terminally spined ova. Digital examination revealed a papillomatous growth in the rectum just within range of the finger, and the presence of the tumour was confirmed by sigmoidoscopic examination. The growth was removed by Dr. Woodman on February 7th, and under intravenous administration of sodium antimony tartrate the patient is making very satisfactory progress.

FIG. 2.—Transverse section of the adenomatous portion of the growth. Tissue fixed and stained as in Fig. 1. (x 44.)

It is of interest in this case to note that though the infestation was heavy it was apparently of quite recent origin. Erbil is a town in Kurdistan, and as far as is known schistosomiasis does not exist in that country. The presence of an enlarged spleen in a Kurd is quite usual; so rife is malaria in Kurdistan that a Kurd with a non-palpable spleen is quite a rarity.

As to the exact origin of the infestation there is little to help in the history, but everything points to it having occurred either in the neighbourhood of Baghdad, where a focus of this disease undoubtedly exists, or en route from Erbil, though the chances of infestation north of Baghdad would appear to be remote. The degree of eosinophilia is higher than our average in urinary cases of infestation by *S. haematobium* in Iraq, but is possibly to be accounted for by the heaviness of the infection present in this case.

It might here be noted that, as far as our investigations have gone, *S. mansoni* does not occur in either Iraq or Kurdistan.

PATHOLOGY.

A specimen of faeces and the polypoid growth removed at operation were submitted to the Central Laboratory for examination.

A. Examination of Faeces.

Examination of the specimen of faeces revealed the presence of the typical terminal-spined ova of *S. haematobium* in large numbers, many containing miracidia showing considerable activity; pus cells and red blood corpuscles were present in moderate numbers.

B. Examination of the Polypoid Growth.

Microscopically the mass approximated in size to that of a small walnut; it was greyish-white, of firm consistence,

and presented a somewhat nodular surface showing considerable congestion, and in places what appeared to be small areas of superficial ulceration. No marked resistance was offered to the knife. On section the tissue showed a solid core with a marked peripheral radiating structure which on microscopical examination was found to correspond to the hypertrophic adenomatous portion of the growth.

Microscopic Examination.

1. *The Peripheral Portion of the Growth.*—Sections taken from the periphery of the polypoid growth show an advanced hypertrophic condition of the rectal glandular tissue, with the formation in places of long papillomatous prolongations of the mucosa. The supporting structure is loose, and consists of delicate strands of fibrous tissue, between which are to be seen numerous cells of the mononuclear type. Young thin-walled blood vessels are plentiful and in a condition of marked engorgement. In several places small collections of ova with deep-staining miracidia are to be seen in the interglandular tissue, and it is of interest to note that in the neighbourhood of such collections the cellular content of the tissue changes, the majority of cells in these situations consisting of polymorphonuclear leucocytes of the eosinophil type. In the transitional area between the adenomatous and the more centrally placed portion of the tissue are collections of ova

FIG. 3.—Section showing collection of embedded ova, one of which shows the terminal spine mentioned in the text. Fixed in formal saline and stained with Heidenhain's iron haematoxylin and orange "G." (x 206.)

which, from the failure of the miracidia to take the nuclear stain, would appear to be of less recent date. In such areas we find that the particular stimulus determining the calling forth of the eosinophil polymorphonuclear elements has ceased, the cells found in these particular areas being chiefly of the mononuclear type. Here also stimulation of the fibroblastic elements has taken place, with marked increased production of fibrous tissue and resulting attempts at encapsulation. Sections taken from certain superficial portions of the growth fail to show the adenomatous structure above described; it is replaced by a tissue presenting the appearance of granulation tissue in which numerous ova are present; blood vessels are numerous, and ulceration of the surface is apparently occurring. It is from areas such as these that ova would appear to be liberated into the lumen of the bowel.

2. *The Central Portion of the Growth.*—In this area the glandular structure above described is entirely absent. On the other hand, the fibrous tissue elements show considerable increase, forming a well marked stroma in which numerous ova of various ages are embedded. Here again variation in the cellular content of the tissue is to be noted; in the proximity of ova containing miracidia which stain well the infiltrating cellular type is that of the eosinophil polymorphonuclear leucocyte. In the neighbourhood of ova showing degeneration of the miracidia, evidenced by the absence of nuclear staining, the predominant cell is that of the mononuclear type. In some of the sections ova are present in very large numbers; in one particular area as many as sixty were visible in the field given by an objective Leitz No. 3 with ocular No. 2.

Apart from the fact that numerous terminal-spined ova

were found in the stool it was considered necessary to search sections in the endeavour to find an embedded ovum cut longitudinally through the middle line showing beyond any doubt the presence of the terminal spine. In due course a fine specimen was found (Fig. 3). The complete contained miracidium is unfortunately not shown, but the specimen demonstrates the terminal spine very clearly. No evidence whatever has been obtained after prolonged search of any ova showing the slightest suggestion of a lateral spine.

Certain structures were seen lying within the blood vessels which lead us to think that they were the transverse sections of the terminal portion of a trematode worm. Further search in other sections from the same tissue finally led to the discovery of typical transverse sections of the helminths themselves lying within the blood vessels and presenting the characteristic arrangement of the male and female worms. A portion taken from one of these sections is illustrated in Fig. 4.

From the histo-pathological examination the polypoid growth would appear to be of the nature of a papillo-adenoma, the stimulus producing this hypertrophic condition of the rectal mucosa being the presence in the tissues of numerous ova of *S. haematobium*, and also possibly certain toxic substances secreted by the adult worms themselves whilst lying in the terminal ramifications of the haemorrhoidal vessels.

FIG. 4.—Transverse section showing the helminths lying within the blood vessels; numerous ova can be seen in the surrounding tissue. Fixed in formal saline and stained with Ehrlich's acid haematoxylin and eosin. (x 44.)

CONCLUSION.

The case under consideration would appear to prove the ability of *S. haematobium* to produce rectal papillomata.

The fact that after very careful search no trematode ova other than those of *S. haematobium* have been found in the urine, faeces, and tissues is, we think, fairly conclusive evidence of a further and previously unproved manifestation of infection with *S. haematobium*.

The accompanying illustrations were kindly drawn from the actual specimens by Mrs. Sinderson, and depict the main points of pathological interest mentioned in the text.

A TWO-LOOP BUTTON SUTURE.

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BEFORE I adopted the suture to be described I had had to experience the unforeseen bursting open of abdominal wounds. This happened after both suturing in stages and the insertion of deep through-and-through sutures. After gastro-jejunostomy or a similar aseptic operation, in weakly patients, somewhere about the tenth day the abdominal incision opened and bowel prolapsed. A cough, vomit, strain at stool, tympanites, merely sitting up in bed, were the immediate causes of the accident, but it could then be noted that there had been an absence of repair. In septic cases, entailing the insertion of a drainage tube, and an undermining of the abdominal wall by suppuration, the