

A CASE OF AMŒBIC DYSENTERY OCCURRING IN A MAN WHO HAS NEVER BEEN OUT OF SCOTLAND.

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THIS case appears worthy of record for several reasons, but chiefly because it is the first case originating in Great Britain diagnosed during life. A similar case, complicated by abscess of the liver, in a man who had never been out of England, occurred a few years ago in Birmingham, and was reported by Saundby and Miller.¹ Unfortunately the condition was not recognised during life, its true nature only being revealed at the post-mortem examination.

Amœbic or, as it is sometimes erroneously termed, tropical dysentery is not confined to tropical or subtropical countries, but occurs in temperate climates; for example in North America and in Europe. Until recently it was stated that Great Britain, Scandinavia, Spain, and Portugal were the only European countries from which cases of the disease had not been reported.

Until the Birmingham case was published the disease had not been reported in Great Britain, though there is little room for doubt that cases which remained unrecognised have occurred in the past. It is hoped that the description of this case, with the methods employed for the detection of the entamœbæ in the stools, may prove helpful to medical men at home, and possibly lead to the detection of other cases.

How did the patient become infected? As will be seen from the appended notes of the case, he was a ploughman who had never been out of Scotland. As a result of a thorough investigation of his home surroundings, in which I was greatly assisted by Drs. Macdonald and Maclagan of Dunbar, under whose care the patient had previously been, some interesting facts were elicited.

A few weeks before our patient was taken ill a woman on an adjacent farm had suffered from somewhat similar symptoms. She had, however, recovered in the course of a fortnight, and the case was apparently one of simple colitis. Nevertheless, to make sure of the diagnosis her stools were examined, and neither amœbæ nor spores were found.

The question whether persons apparently in good health may be "carriers" of pathogenic amœbæ has been often discussed.²

On further inquiry it was found that towards the end of 1910 a time-expired soldier had returned from India, and lived in a cottage adjacent to the one occupied by the patient. The soldier had not suffered from dysentery but stated that many men of his regiment had been in hospital with the disease at Bangalore.

The stools of this man on examination revealed the presence of fairly numerous spores, but whether they were the spores of *entamoeba histolytica* could not be determined by mere microscopic examination. Portions of the stools were daily administered, with its food, to a cat for a fortnight. Up to the present the cat has not developed any symptoms.

On inquiry into the water supply it was found that during the drought of last summer the ordinary supply conveyed by pipes from the Lammermoors had given out, and consequently the patient had been accustomed to obtain his drinking water from a pipe fed by a "surface" spring in a stackyard. The water from this spring had formerly been greatly prized by the farm servants, but they had temporarily ceased using it on account of contamination from a midden.

Hay infusion is considered a good medium for the growth of amœbæ. It was found that on the East Lothian farms, as in other agricultural districts, the men do not use privies, but are accustomed to defæcate in any place outside which may appear suitable to them. It is therefore not improbable that the returned soldier, supposing that he was a "carrier" of amœbæ, had contaminated the source of the spring. With the onset of the hot weather of last summer the amœbæ found in the water of the stackyard a suitable medium for development.

It is reassuring to know that the pathogenic amœbæ, including the *entamoeba histolytica*, will only flourish in association with high atmospheric temperature, the requisite minimum being 75° F. There is no doubt pathogenic amœbæ are often imported into this country by dysentery patients returning from abroad, but it is only under exceptional climatic conditions, such as obtained last summer, that they are likely to cause fresh infection.

Another possible but improbable solution of the question would be that harmless amœbæ, so common in the intestinal canal of healthy persons, may under certain conditions assume pathogenic functions.

CASE.—T. P., aged 28, a ploughman, residing near Dunbar, was admitted to Ward 34 of the Royal Infirmary, Edinburgh, on the 19th November 1911, suffering from chronic diarrhœa.

History.—About seven weeks before admission he began to suffer from diarrhœa, the stools being of a very watery character and numbering three or four a day; the diarrhœa commenced suddenly one morning, the patient having been perfectly well the previous day. The stools for the first week did not contain blood, and defæcation was unaccompanied by pain during the first fortnight; later the stools became “slimy,” and contained whitish specks like pieces of mutton fat. As the disease progressed the stools became more numerous. They were slimy as before, and contained blood and whitish masses, evidently portions of mucous membrane. The patient states that about a fortnight before admission he was free from diarrhœa for two days and did not pass any blood during that time.

Previous Health and Social Conditions.—He has never had any serious illnesses. His parents, two brothers, and four sisters are alive and well. He has never been out of Scotland.

Physical Examination.—The patient, though somewhat anæmic, is a well-developed muscular man. Nothing abnormal can be found except in the digestive system.

Digestive System.—Complains of continual uneasiness over the lower part of the abdomen, with severe griping and bearing-down pains before and directly after defæcation. The stools are watery and of a reddish colour owing to admixture with blood; they contain white specks and shreds of mucous membrane with numerous amœbæ (to be described later). Tongue moist and clean. Abdomen, nothing abnormal on inspection; on palpation pain is elicited on pressure over the region of the colon. Nothing abnormal to be found on rectal examination. The liver is not enlarged, and there is no jaundice.

Blood and Temperature Chart.—In the early stages of this disease there is often irregular fever, and the blood shows a moderate leucocytosis of 16,000-18,000 per c.mm.

In this case, while in hospital, the temperature was only above normal on one day; the blood throughout did not give a higher count of leucocytes than 8200 per c.mm.

It may be well to state here that in the later stages of these cases pain and discomfort on the hepatic region with slight rise of temperature and a leucocytosis of 12-18,000 are signs of implication of the liver, and call for energetic treatment with ipecacuanha with a view to prevent the formation of an abscess in the liver.

Progress.—The patient while in the wards presented the usual typical symptoms of amœbic dysentery, especially the tendency to

relapse when the condition had much improved. Under treatment with large doses of ipecacuanha he had by the end of December 1911 improved so much that he was allowed up. He was at this time passing one semi-solid stool a day. In a few days, however, the condition became as bad as before, the stools numbered 6 or 7 a day, and contained large quantities of blood. In the course of a week under ipecacuanha and rectal injections of quinine the stools were diminished in number and free from blood. He is now (10th February) almost convalescent, passes only one stool *per diem*, and is rapidly regaining strength.

During the last 10 days amœbæ could not be found in the stools.

Diagnosis.—While the symptoms may be of help, detection of the amœbæ in the stool is the only certain method of diagnosis in this disease. In old-standing cases which have passed into the spore-forming stage examination of the stools is often inconclusive, and it is then necessary to carry out feeding experiments on animals.

Method of Examination of Stools.—Only the liquid part of the stools should be examined. Therefore if the patient is passing solid stools a saline purgative should be administered prior to the examination. Both unstained and stained films should be examined.

If it is desired to observe the movements of the amœbæ the stools should be passed into a warm bed-pan and, without being allowed to become cold, examined on a warm stage. In any case the examination should be carried out as soon as possible. If a stool is allowed to stand for a day or two the amœbæ become disintegrated and absorbed; in fact it is sometimes difficult to find them in a specimen which 12 hours previously showed them to be present in great numbers.

For detection in an unstained specimen it is simply necessary to take up a small portion of the stool on a platinum wire, spread this on a slide, and, after putting on a cover-glass, apply gentle pressure to spread out the film in a thin layer. It must be borne in mind that in examining unstained specimens it is essential to *cut off the light as much as possible*; neglect of this precaution often greatly increases the difficulty of examination.

On examination with a $\frac{1}{3}$ -in. objective, if the stool has been allowed to cool and the amœbæ are dead, small round refractile bodies (closely resembling in appearance oil globules) will be seen in the darkened field. With higher powers these will be found to



Film of stool from case of amoebic dysentery originating in Scotland, showing various forms of the *entamoeba histolytica*. Stained thionin blue.

present a well-defined outline; the interior appears granular, and may show a faint nucleus and, possibly, both red corpuscles and leucocytes.

Stained Specimens.—Disappointing results are often obtained by the use of inappropriate methods of staining the film. I recollect once staining a slide (in which I had been watching the movement of numerous amœbæ) by Leishman's method, with the result that I was unable to find a single stained amœba.

The best stain for diagnosis is thionin blue. The film may be allowed to dry, or fixed while still wet with osmic acid (and then treated with a saturated solution of corrosive sublimate) or with formalin (40 per cent.) 1 part, methylated spirit 9 parts. This was the method employed in the slide illustrated in the colour plate. Allow the stain to act for 10 to 15 minutes, wash in water, clear with 2 per cent. acetic acid in water for a second or two, pass through alcohol and xylol, and mount in neutral Canada balsam or paroleine (as recommended by Coles).

The result is seen in the coloured plate. The numerous amœbæ of different sizes and shapes were all drawn from one slide. They vary in size from 10 to 50 μ , and show the characters of the *entamœba histolytica*, which are as follows:—I. The amœba is large, the outline well defined, due to the presence of a distinct ectosarc. II. The nucleus is eccentric and stains faintly. III. Contents include red and white blood corpuscles and bacteria. Some amœbæ have been fixed while still living and show projecting pseudopodia, others show binary division.

A disadvantage attending the use of thionin blue is the tendency of the specimens to fade. Heidenhain's iron hæmatoxylin not only gives more permanent results, but is useful in studying the nuclear elements.

Although the symptoms and the amœbæ found in the stools were typical, it was considered advisable to make cultivations from the stools to ascertain whether any bacilli of the Flexner group were present. This was done with a negative result.

CULTIVATION OF ENTAMŒBÆ.

Many people have claimed success in the cultivation of pathogenic amœbæ.

Craig³ says: "The entire subject of the cultivation of the parasitic amœbæ of man is in a chaotic condition, and much more work will have to be done before it can be accepted that any of

the parasitic amœbæ of man have been cultivated." Greig,⁴ as a result of the special inquiry on which he had been engaged on dysentery and liver abscess in Bombay, states that "the specific identity of the amœbæ in fresh stools and those in cultures was not clearly established, and the interpretation of the results of cultivations presents peculiar difficulties."

Many attempts were made to cultivate the amœba present in this case on Musgrove and Clegg's medium in combination with various symbiotic bacteria, but they were invariably unsuccessful.

Experiments on cats were carried out as follows:—I. Regular feeding with stool of the suspected "carrier." II. Feeding with stool of patient which microscopically showed spores and a few amœbæ. III. Injection into the lower end of the small intestine of a cat of 10 c.c. of liquid stool as II. Sufficient time has not yet elapsed for an opinion to be formed as to the results of these experiments.

Prognosis.—It is necessary to be very guarded in giving an opinion regarding the future progress of a case of this nature; in addition to the great tendency to relapses, even after long periods of quiescence, it must be borne in mind that abscess of the liver may occur months or years after the attack of dysentery.

TREATMENT.

Although the treatment by saline affords satisfactory results in bacillary dysentery, there is no doubt that in the amœbic form the best treatment consists in the administration of powdered ipecacuanha in 20 to 30 grain doses, combined with the use of solution of quinine for lavage of the colon. (An American writer has recently advocated the use of enormous doses of subnitrate of bismuth.)

Abscess of the liver is less likely to occur if ipecacuanha has been freely administered.

There are various methods of administering these large doses of ipecacuanha, all being, of course, devoted to the prevention of vomiting. (Ipecacuanha *sine* emetin has been recommended for use, but does not afford satisfactory results.)

Whatever method is employed, it is essential that when the dose is administered the stomach should be as nearly empty as possible, and that afterwards the patient be kept perfectly quiet in bed.

In places where the assistance of a skilled pharmacist is not

available, as in most tropical countries, the drug has generally to be administered in the form of a pill or suspended in some bland fluid, the patient being prepared by cutting off food and drink for 2 or 3 hours previously, with a good dose of opium or chloral half an hour before giving the ipecacuanha; it is also advisable to apply a sinapism over the epigastrium to assist in preventing vomiting.

Another method consists in making up ipecacuanha in pills, coated with some material which will resist the action of the gastric juices and dissolve in the small intestine. Salol and keratin have been recommended for this purpose. Personally I have had the most satisfactory results from the use of gelatine with the addition of a small quantity of formalin as a coating. It is absolutely necessary that the pills should be freshly and skilfully coated. If kept for a few days, or if an excessive amount of formalin is used, they are apt to become hard and insoluble, and are passed unchanged through the intestine.

It is well to diminish the dose of ipecacuanha after two days and discontinue it for a while at the end of 10 days. The administration should be recommenced if any exacerbation of the symptoms develop.

In conclusion I desire to express my thanks to Professor Wyllie for handing over the case to me for observation; also to his resident physicians for the great assistance they have afforded me in the investigation. To Dr. J. M. Murray, Clinical Assistant in Ward 34, belongs the credit of first detecting the presence of amœbæ in the stools of this case.

REFERENCES.—¹ "A Case of Amœbic Dysentery with Abscess of the Liver in a Patient who had never been out of England," *Brit. Med. Journ.*, 27th March 1909. ² Vincent, "Les Porteurs d'amibes," *Bull. Soc. Path. Exot.*, 10th February 1909. ³ *The Parasitic Amœbe of Man*, 1911. ⁴ *Scientific Memoirs of Officers of the I.M.S.*, No. 47, 1911.