THE DIAGNOSTIC IMPORTANCE OF THE STOOLS IN THE DYSENTERIES.

By Captain R. Aldin, M.D., D.C.P., D.T.M.

When a medical officer is treating a patient with enteritis in the tropics he should insist on an immediate preliminary pathological report on the faeces and should be in a position to appraise the laboratory findings. If he does not do this he may be in doubt as to the correct diagnosis during the time that may elapse before a complete laboratory diagnosis is made, thus failing to make full use of the laboratory services and denying himself a useful guide to treatment.

The pathologist, by the microscopic examination of the stools, may sometimes make a diagnosis in a few minutes and can nearly always give a useful preliminary report followed some days later by a report on the cultural findings. Where there are no laboratory facilities, the medical officer, by the daily naked-eye inspection of the stools, may sometimes make a fair guess at the diagnosis.

An example occurred recently in this hospital. The patient, a surgeon, developed an acute enteritis with a rise of temperature. A negative blood film made malaria unlikely but did not exclude the possibility. It was doubtful whether the illness was a specific dysentery, amoebic or bacillary, an enteritis due to food-poisoning, a dietetic indiscretion or perhaps the abdominal form of malaria. A direct examination of the faeces showed red blood cells, degenerate pus cells and almost no faecal debris or bacteria. A tentative diagnosis of bacillary dysentery was made and the appropriate treatment started at once. The patient made a rapid recovery. Some days later a Newcastle strain of dysentery was isolated from the faeces.

Dysentery is an indefinite clinical term meaning the passage of blood and mucus in the stools; it is not always an acute illness, it may be sub-acute, transient or sub-clinical. In some forms of bacillary dysentery there may be neither blood nor mucus but only an enteritis.

The physician and pathologist should work in close collaboration. In bacillary dysentery sulphonamides are most effective if given in the first few days. To give such drugs in non-bacillary dysentery is foolish and dangerous. Emetine given to patients with bacillary dysentery undoubtedly increases the mortality (Findlay, 1942). Both preparations are useless in other forms of enteritis.

Manson-Bahr (1943) has for years taught the importance of cyto-diagnosis, that is, the study of the bowel exudate; but its significance is not generally recognized. As the matter is barely touched on in many textbooks the newcomer to the tropics is often unaware of its diagnostic significance.

The stools in the acute diarrheas of the tropics fall into five main groups: (1) The bacillary exudate characteristic of bacillary dysentery; (2) the indefinite exudate; (3) the amoebic stool; (4) the specimen showing a parasite (other than E. histolytica), its ova or larvae; (5) the negative stool.

(1) The Bacillary Exudate.—In acute Flexner dysentery, after the initial emptying of the bowel, the stools are watery, containing little or no faecal matter. Shreds of what look like mucus but really are masses of degenerate pus cells are suspended in a brownish fluid often flecked with bright red blood. The stools may be composed almost entirely of whitish, tenacious, gelatinous mucus. They are usually more numerous, smaller in quantity and the blood tends to be brighter in colour than in E. histolytica infections. It is said that when the stools are semi-solid they tend to flop out when the bedpan is turned over.

Microscopically many pus cells are present; after the first day they become degenerate showing pyknotic changes, due probably to the toxins of the dysentery bacteria. The pus cells may be scattered but are more often in masses of closely packed cells.

Red blood cells are also seen. They tend to be scattered and not aggregated in rouleaux. (This depends in part, of course, on how the preparation is made.) The red blood cells are
for the most part “fresh,” that is, they are not dehaemoglobinized or degenerate. Exclusive of the red blood cells 90 per cent of the cells are degenerate polymorphs. The remaining cells are shed epithelial cells, macrophages, mononuclears and occasionally eosinophiles. In the wet preparation it is almost impossible to recognize the last two types of cell. The macrophages are easily recognized as large mononuclear cells which contain ingested fecal debris, fat globules and, rarely, red blood cells. They are said to be feebly motile but are never actively motile like E. histolytica.

In acute Shiga dysentery the stools resemble those of Flexner dysentery. The onset of the illness is not usually so sudden.

Acute or fulminating cases of Sonne dysentery are rare. The stools are watery, sometimes unstrained with blood but containing mucus. Fecal material and organisms are scanty but the picture is not so striking as in Flexner dysentery.

To sum up, in acute bacillary dysentery the stools are almost entirely composed of exudate, pus cells and red blood cells being suspended in a watery medium.

(2) The Indefinite Exudate.—After the first few days the pus cells decrease in number, degenerate changes are more marked, the red blood cells disappear and the macrophages increase; fecal matter and the normal coliform organisms reappear. This is the indefinite exudate and is not unlike that of amoebic dysentery apart from the absence of vegetative and cystic E. histolytica. The common intestinal flagellates, Lamblia intestinalis, Chilomastix mesnili and Trichomonas hominis are often seen. It would seem that they were driven from their normal habitat by the violence of the peristalsis.

(3) The Amoebic Stool.—In acute amoebic dysentery the stools are less numerous than in bacillary dysentery. Macroscopically they tend to be foul-smelling and bulky, containing much fecal material intimately mixed with dark red blood and mucus. Occasionally the blood is bright red and on the surface of the stool, suggesting bleeding from hemorrhoids. The stool is semi-solid and is said to stick to the bedpan. Microscopically vegetative amoebae are present, usually in considerable numbers. The red blood cells tend to be in clusters; they are often “old,” that is, dehemoglobinized and “ghost-like.” Macrophages and mononuclears are present but pus cells are relatively scanty. Fecal debris and motile organisms are normal. Charcot-Leyden crystals are often present and if no amoebae are seen the stools should be examined repeatedly for the parasite.

Sometimes the pathologist will report the presence of vegetative amoebae but will note that none show ingested red blood cells. A diagnosis cannot be made on this finding alone and further examinations are necessary. The so-called “rounded-off” or “coiled-up” amoebae may be seen. These terms are applied to amoebae in the process of encystment. The change takes place in an hour or two after the stool has been voided and once this change has taken place the pathogenic E. histolytica cannot be differentiated from the harmless E. coli. Again a definite diagnosis cannot be made and the stools should be examined repeatedly. The sigmoidoscope should be used to obtain a direct smear or else a rectal swab may be tried. The clinician should remember the all-importance of ensuring that the specimen reaches the laboratory as soon as possible after it has been voided; diagnosis is possible while it is still warm but after an hour it may be valueless for the diagnosis of amoebic infection. Cysts are not usually present during the acute phase.

In some countries double infections of bacillary and amoebic dysentery are common. If E. histolytica is found the pathologist should send an immediate report but should also carry out the routine examination for dysentery bacteria.

(4) The Stool showing a Parasite (other than E. histolytica), its Ova or Larvae.—The stools in bilharzial dysentery may resemble those of either bacillary or amoebic dysentery. The finding of the characteristic ova clinches the diagnosis. The possibility of a mixed infection must not be overlooked; bacillary dysentery commonly occurring as a terminal event.

An uncommon cause of enteritis simulating a mild dysentery is Strongyloides stercoralis. This parasite is widely distributed in the tropics and usually causes no symptoms. It is said, however, that it may cause an intractable diarrhoea. The presence of the parasite can be:
shown by demonstrating the larvae in the faeces. The therapeutic test may be useful in determining whether the parasite is the cause of the enteritis or merely an incidental finding. Gentian violet in full doses is a specific.

*Giardia intestinalis* is said to be a common parasite in the intestinal tracts of young children; in England 37 per cent showing the parasite in the stools (Hoyle, 1943). This usually harmless parasite seems at times to take on pathogenic qualities, causing an infective and at times fatal enteritis in infants (Ormiston, et al., 1942). It is listed as one of the rare causes of enteritis in adults. Microscopically the parasite is easily recognized. Unless it is found the diagnosis cannot be made. Treatment usually fails unless mepacrine, which is a specific, is given (Chopra et al., 1938). Although the parasite is widely distributed in the tropics, 6 to 16 per cent of the inhabitants being infected (Manson-Bahr, 1940), it is found in only about 1 per cent of adults in West Africa.

*Chilomastix mesnili* is usually regarded as a harmless saprophyte of the bowel. It is said not to be uncommon in the stools of young children; in England being found in about 6 per cent (Hoyle, 1943). In West Africa it is not infrequently seen in the stools of adults and can be distinguished microscopically from the commoner and non-pathogenic *Trichomonas hominis*.

An African soldier suffering from enteritis was recently admitted to this hospital. The faeces were swarming with *C. mesnili*, three of four parasites being seen in every high-power field. No other cause for the patient’s dysenteric symptoms was found. Mepacrine was given without improvement; the parasite still abounded in the stools. Stovarsol was then given. The enteritis cleared up quickly and the parasites disappeared immediately.

Another similar patient was also treated in the same way in this hospital. If stovarsol is a specific, as these two cases suggest, it might be used as a therapeutic test to determine whether the parasite is the cause of the enteritis or merely an incidental finding.

Balantidial dysentery is rare; clinically the condition closely simulates amebic dysentery. The diagnosis can only be made by finding the pathogen in the faeces.

(5) The Negative Stool.—Enteritis simulating mild dysentery due to unsuitable food is not uncommon in the tropics. In West Africa, yam, cassava and other cellulose-containing vegetables sometimes cause an enteritis in Europeans who are not accustomed to such a diet. An examination of the faeces may suggest a diagnosis.

A European serjeant was recently sent to the laboratory for stool examination. He stated that four days previously he had developed severe enteritis (twelve stools in ten hours) with griping pains. The diarrhoea continued the following day, the stools being watery but unstained with blood. When seen he was still having frequent motions and griping pains. Macroscopically the stools were well formed, free from blood and mucus but containing particles of undigested foodstuff. Microscopically no red blood cells, pus cells, macrophages, crystals, amebae, cysts or ova were seen. Motile organisms and faecal debris were normal. There were, however, numerous (fifteen in one high-power field) large vegetable cells about a hundred μ in diameter. With iodine they showed a marked starch reaction. They were thought to be from yam or cassava. The patient recovered quickly without any specific treatment. It was subsequently learnt that he had eaten peanuts and had had a meal of yam shortly before the onset of the enteritis. It must, however, be remembered that anything that causes a rapid passage of the intestinal contents may cause the appearance of undigested foodstuff in the faeces.

In the enteritis associated with food poisoning, that is infection with the Salmonella group, the faeces are poor in cellular elements, red blood cells are not often seen and, perhaps, most important, faecal debris and bacteria are present, in striking contrast to the stools in acute bacillary dysentery.

In West Africa enteritis is the symptom heralding the onset of an attack of subtertian (malignant) malaria in 10 per cent of cases (Hughes, and Bomford, 1944). It is usually a simple diarrhoea, six to sixteen stools being passed in the twenty-four hours. Macroscopically the stools are watery containing neither blood nor pus. Microscopically occasionally red
blood cells and pus cells are seen. In about 1 per cent of cases the presenting symptom is dysenteric. The patient may have as many as thirty motions in the twenty-four hours, the stools containing blood and mucus. Microscopically red blood cells and pus cells are seen, a picture suggestive of the indefinite exudate seen in the recovery stage of bacillary dysentery. Such findings in a malarious country would suggest the need for a blood examination; even if plasmodia are found the pathologist should not neglect the routine cultural examination of the faeces for it must not be forgotten that malaria may occur in a dysenteric patient or that dysentery may light up a latent malaria.

Very occasionally severe attacks of subtertian malaria may be complicated with a blood-stained discharge or intestinal hemorrhage. The blood is very dark and is derived from petechial hemorrhages in the intestinal mucosa.

The medical officer in the tropics is liable to develop a fixed idea that all dysenteric symptoms are due to acute infections. Several negative reports should suggest the need for a complete examination; many diseases such as neoplasm, idiopathic colitis and haemorrhoids may simulate dysenteric symptoms.

It cannot be repeated too often that laboratory reports should always be interpreted in the light of the clinical findings; they are merely aids to diagnosis and not a final diagnosis. For example, intestinal flagellates are common in the stools, especially in the tropics, and are often numerous in dysenteric stools, but they are probably rarely the cause of the dysenteric symptoms.

**Summary.**

An immediate microscopic examination of the faeces will often indicate the correct treatment at a time when it may be of most value. In some conditions such an examination will at once give a definite diagnosis—a diagnosis that cannot be made in any other way. In bacillary dysentery the stool is almost entirely composed of exudate while in amebic dysentery it is a faecal specimen in which the exudate is scanty. In other types of dysentery the causal organism may be found. Negative reports are not without value.

I wish to thank Lieutenant-Colonel E. G. R. Grant, R.A.M.C., for permission to forward this paper, and Corporal E. K. Asima, W.A.A.M.C., for technical assistance.