worthy of consideration. I am quite sure that errors in diagnosis are often made by a too strict adherence to microscopic "rule of thumb" observation. The indications of malaria as revealed by the microscope may be mixed up with yellow fever, and an absence of these indications may also lead to wrong conclusions. When the two fevers are prevalent at the same time, as recently in Jamaica, such mistakes, especially with acclimatised natives, are very apt to occur.

INFECTION.

I have no doubt, from actual observation, that infection through fomites is sure and powerful, but whether the diseases is spread from person to person, as small-pox, measles, and scarlet fever are, I very much doubt. When I was a student in the Public Hospital, Kingston, Jamaica, many years ago, the cases of yellow fever—very numerous there—were treated in the same wards with other diseases. One morning thirteen sailors were admitted. They nearly all died. I opened and examined five bodies, and took no extra precautions after leaving the deadhouse. The late Dr. Andrew Dunn, of Kingston, did not believe in infection. I was attending a case of yellow fever some miles away, and during the night my shirt was saturated with black vomit. I was not able to change until the next day. I never could trace infection from these and similar occurrences.

TREATMENT.

Dr. Dunn had a large experience in yellow fever, and was most successful in treating his cases. I had the advantage of seeing many of his patients with him. He was essentially a "calomel doctor," and prescribed calomel with a liberal hand from beginning to end. The first case I saw with him was an English official who had just lost his wife from yellow fever. He was in the stage of calm and profusely salivated. This gentleman recovered, but lost all his teeth. Dr. Dunn used to say that nothing pleased him better than to see his yellow fever patients salivated. I had under my care some years ago a clergyman and his wife, and a colonel of the Royal Engineers, his wife and daughter, all with yellow fever at the same time. I treated them with calomel, but without salivating them. They all recovered. Dr. Sternberg gives the perchloride of mercury throughout the whole attack in yellow fever.

As far as our present knowledge extends, there is no drug which has any specific influence over yellow fever. The time-honoured calomel purge to start with seems not only to be the custom amongst the physicians of the old school, but also of the young school. The experienced man must be ready to meet emergencies as they arise. The late Dr. W. B. Keech, one of the medical officers of the Public Hospital, Kingston, when I was a student there, had charge of most of the cases of yellow fever. He had been some time in Cuba, and after the usual calomel purge, would give equal parts of castor oil and olive oil, and, above all things, would starve his patients for two or three days, giving them as much water as they wanted. He would let them have orange-leaf tea, and, if they liked it, small drinks of black coffee. He considered blisters contraindicated as liable to set the kidneys wrong. For suppression of urine he would apply over the loins large and oft-repeated hot linseed meal poultices, and give largely diluted doses of gin and nitre. He was considered very successful in the treatment of yellow fever. He seemed to be a disciple of Dr. James Lind, whose essay on *Diseases Incidental to Europeans in Hot Climates, etc.*, written in 1792, is worth careful reading. A case occurred within my recollection illustrating the benefit of starvation during the early stage of yellow fever. A sailor in order to avoid being sent to the hospital, hid himself under a wharf, taking his blanket and a pan of water with him. At the end of four days he crawled out, his beard and shirt being stained with black vomit. He recovered, having "cheated the doctor," as he expressed it. One of my patients during the late outbreak lived for over three days on wine-glassful doses of warm barley-water taken occasionally. His nurse forced him to take milk and soda once, but this he immediately vomited, and refused to repeat the experiment. Of course, he drank water. A young English lady told me after she had recovered from an attack of yellow fever that she used to throw more than half her nourishment into the utensil, watching her opportunity when the nurse was not looking.

My own opinion, based on experience, is that during the first stage of yellow fever patients should be very sparingly fed. It is better to starve than to over feed them.

CHRONIC DYSENTERY.¹

By ALFRED P. HILLIER, M.D., C.M., B.A.,
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DEFINITION.

ALTHOUGH the chronic form of dysentery is that to which I propose specially to direct attention, it will be necessary to begin by briefly considering the nature of dysentery generally, and the first step to a clear comprehension of our subject will be a definition of the term.

Under the term "dysentery" is embraced a group of diseases affecting chiefly the large intestine. These diseases are mostly similar in their symptoms, but they differ in their etiology and in their pathological results.

GEOGRAPHICAL DISTRIBUTION.

Dysentery occurs both sporadically and in epidemics. In temperate and cold regions it is comparatively infrequent and mild in its occurrence, while in the tropics and subtropical countries Hamilton West, an American writer, ranks it "in malignancy and mortality with yellow fever, small-pox, and cholera as one of the four great epidemic diseases in the world." That this disease, as well as all forms of gastric and enteric catarrh, increase, generally speaking, in frequency and severity as the tropics are approached and the temperature rises, there is no question.

Thus the dysenteric death-rate in the French army for 1872-1880 was 0.22 per 1,000, that of the English army in Egypt for 1884-1888 was 2.24 per 1,000, while in Senegal about 13° N. the deaths from dysentery, according to Doutroulau, form more than one-third of the total mortality. Although these figures doubtless represent approximately the relative frequency of the occurrence of the disease in different latitudes under normal conditions of life, great havoc has been wrought by it at different times under exceptional conditions of living even in the temperate latitudes of Europe. Thus it has often proved the scourge of armies, notably among our troops both in the Peninsula and Crimea. It is the disease of famished garrisons and ill-fed prisoners. And while in the tropics and subtropics dysentery becomes one of the most familiar diseases with which the physician is called upon to deal, yet even in these latitudes it is especially the attendant upon the traveller, the explorer, the hunter, the missionary, the gold prospector—all, in fact, who live a wandering open-air life, sleeping in tents or in the open, exposed to wet and cold or extreme heat, drinking frequently of impure water, and eating at irregular hours and of uncertain rations. I have during my sixteen years' sojourn in different parts of South Africa only once suffered from an attack of dysentery myself, and that was after a forced march during a campaign, when I went for nearly twenty-four hours without food, and then ravenously fed upon some very imperfectly cooked meat.

Dysentery appears to be occasionally, though not usually, contagious; and Sir Joseph Fayrer believes that it is sometimes transmitted by the effluvia of the discharges from a dysenteric patient to other patients in the same ward. I confess that I have not personally observed such a case, although I have frequently treated dysenteric patients in the general hospital ward, but mere negative evidence of course proves nothing.

ETIOLOGY.

Dysentery is such a ubiquitous disease, and certain well-known predisposing causes are so frequently followed by it, that one is compelled to believe that if a micro-organism be indeed the cause, any condition setting up intestinal catarrh will provide a suitable soil for the growth and development of such micro-organism, and that from the readiness of the onset of dysentery in a subject under the influence of these predisposing causes, the micro-organism itself is even more omnipresent than that of tuberculosis. In addition to exposure to wet and cold, extreme heat, impure water or food,

¹ Presented to the Section of Medicine at the Annual Meeting of the British Medical Association, Edinburgh, 1898.

starvation, and irregular feeding must also be accounted predisposing causes.

CLINICAL FORMS AND PATHOLOGY.

Provisionally, dysentery may be considered as occurring in four different forms:

1. *The Catarrhal Form.*—This form may occur as a sporadic or endemic disease. It is the variety almost invariably seen in temperate climates, and is common both in the subtropics and tropics. The large intestine is the part affected, and in rare cases the ileum. There is an injection of the mucous membrane which is covered with mucus, and an enlargement of the solitary glands, causing them to stand out prominently. These occasionally suppurate, and sloughing and ulceration follow. Diarrhoea usually precedes an attack, and at first is not painful. Then follow griping abdominal pains, frequent mucoid blood-stained stools with straining, burning of the anus and tenesmus; later the stools become more gelatinous and bloody. The disease may last from a week to a month, and is usually followed by recovery, though death occurs in cases of severe sloughing and ulceration. The affection also not infrequently—especially in warm climates—becomes chronic. This form of the disease has not yet been assigned any specific micro-organism, although Osler states that the “*Cercomonas intestinalis*” is seen in large numbers.

Amœbic Dysentery.—Some writers, notably Losch, Councilman and Lafleur, Osler and Kartulis, have observed a large number of amœbæ in the stools of dysenteric patients, which are regarded by them as the cause of the disease, and to which has been given the specific name of “*amœbæ dysentericæ*.” It is admitted that the amœbæ are found not infrequently in the stools of healthy men, but Quincke and Roos recognise three forms of parasitic amœbæ, two of which they say are pathogenic. Kartulis at one time believed he had succeeded in cultivating the amœbæ in straw infusion, but this has since been doubted, and all attempts so far to cultivate the amœbæ outside the body are now held to have failed. On the other hand, dysenteric discharges as well as some of the contents of a dysenteric liver abscess, both containing large quantities of the amœbæ, have been injected into the bowels of cats *per rectum*, and a hæmorrhagic discharge, in some cases followed by death, produced. The stools of the cat thus treated were found to contain the amœbæ, and the amœbæ were also discovered in the mucous membrane, though, according to Muir and Ritchie, “the deep infiltration of the submucous coat by the amœbæ, which is so characteristic a feature in the human disease, does not occur in these animals.” Sloughing ulcers with undermined edges occur in the large intestine of men suffering from amœbic dysentery, and there is tendency to affection of the liver in the abscesses of which the amœbæ are abundantly found. Clinically, amœbic dysentery does not differ much from the catarrhal form, although Osler holds that it has certain distinguishing characteristics. It may come on either suddenly or after a preliminary attack of diarrhoea. Subsequently the cause is more irregular and marked by exacerbations and intermissions. High temperatures, both in this and the catarrhal form, are not common, and may be entirely absent. Liver abscesses are formidable complications, especially in India; the course of the disease is longer and more uncertain, and the mortality is said to be higher than in catarrhal dysentery.

Diphtheritic Dysentery.—This is not a common form of disease, and is variously regarded by different writers. Thus Kruse and Pasquale class it with catarrhal dysentery as not being due to amœbæ, but possibly to bacteria. Osler writes of it as a distinct form of dysentery. The bowel is lined with a tough yellowish membrane, with necrosing patches, which leave ulcers when they are detached. Fayrer described a specimen of this kind before the Medical Society of London as follows: “The gut is diseased from the cæcum to the anus; it is swollen and rigid.” While Osler speaks of the walls of the intestine as “thickened, stiff, and infiltrated.”

The Japanese Form of Dysentery remains to be mentioned. It was investigated by Ogata, who failed to find amœbæ, but discovered in sections of the affected tissues large numbers of bacilli—about the same thickness as tubercle bacilli but shorter. He obtained cultures on gelatine, in which the

bacilli produced liquefaction. By injection and feeding with the bacilli the disease was produced in cats and guinea-pigs.

Chronic Dysentery may follow an acute attack—or may be only subacute from the outset. It varies greatly in its duration and intensity. In some cases it lasts for months, in others for years. Exacerbations, sometimes of an acute character, occur, and while in some cases it is so mild as to be little more than chronic looseness of the bowels, and produces no great inconvenience, in others it is accompanied with disordered digestion, a red glazed or cracked tongue, profound anæmia, and a steadily progressing emaciation, while at the periods of exacerbation all the acute symptoms of griping, tenesmus and burning are apt to return.

With these wide differences in the clinical course of the disease there naturally exists a corresponding diversity in the anatomical changes of the affected bowel.

There may be little or no ulceration, and only a roughness or puckering of the bowel, which has a slate-grey or blackish colour. In prolonged cases there is usually a thickening of the submucosa and muscular coat. In the more severe forms ulcers are invariably present.

The stools, which number from four to a dozen in the twenty-four hours, are also variable in character. They sometimes contain mucus, the fæces are thin, frothy, and occasionally have undigested fragments of food. Cases occur in which constipation alternates with looseness. During the exacerbations blood and mucus, together possibly with pus, reappear in the stools. With the exception, perhaps, of malaria and malignant disease, there is nothing which produces such gaunt, living spectres as prolonged and severe chronic dysentery. The disease occasionally produces a narrowing or stricture of the gut. In common with acute attacks it is liable to produce that most formidable of complications with which the physician or surgeon is called upon to deal, a liver abscess. The liability to liver abscess is undoubtedly greater in India and the tropics, where it is a comparatively common disease.

DIAGNOSIS.

The diagnosis in acute attacks is as a rule not difficult, but in countries where chronic dysentery is common there is a tendency on the part of the public to attribute any chronic disturbance of the bowels to this disease, and this impression so far prevails with medical practitioners as occasionally to mislead them. Local affections of the rectum, especially of a syphilitic or malignant character, often produce tenesmus and frequent blood stained mucoid stools.

I can recall three cases in South Africa, two in men and one in a woman, who came to consult me about chronic dysentery, for which they had been undergoing treatment and in whom I found malignant disease. It is therefore desirable to examine the rectum in all obstinate and obscure cases.

COMPLICATIONS OF DYSENTERY.

The two diseases most liable to have dysentery superadded to their other symptoms are malaria and scurvy. In both a chronic form of dysentery is not an uncommon modification.

TREATMENT.

Dysentery in its acute stages has had at different times so many different modes of treatment that I will not attempt here to do more than enumerate them and will pass on to consider more fully the measures advisable in chronic dysentery. Ipecacuanha must be placed first as the great remedy universally used in the tropics. Docker's method of administration is the one generally used in India and is fully described by Davidson. Ipecacuanha has not however the same repute in America, according to Osler, as in India, and even in India other modes of treatment are preferred by some physicians, owing to the heroic character of the remedy and the difficulty often experienced on the part of the patient in tolerating it. The saline treatment had a strong advocate in Trousseau. The sulphates of sodium and magnesium are the salts chiefly used, and both in India and South Africa there are physicians who prefer these salts with their aperient action to any other drugs. Calomel is sometimes tried.

Injections of the bichloride of mercury have been recommended, though owing to the poisonous character of the drug they must be used of very weak strength and with caution. Injections of quinine enemata 1-4,000 or stronger are recom-

mended by Councilman and Lafleur, who have written on their researches with regard to amœbic dysentery.

It is, however, to the chronic form of dysentery that I am specially going to direct your attention, to those obstinate, severe, and exhausting cases which, a burden to themselves and their friends, too often wander from one doctor to another in fruitless search for relief. They try ipecacuanha, calomel, opium, salines, bismuth, Bael fruit, quack medicines, and a host of other things, sometimes with temporary relief, but seldom with cure. The very number of remedies which are used and recommended for this disease testify to its obstinacy to any particular treatment.

There is, however, one line of treatment by drugs which I have found infinitely superior to any other. It is a simple one, and one which, after years of trial of all sorts of remedies, I now almost invariably first resort to. It consists in the administration of castor oil and opium combined at comparatively short intervals, and in small doses. A drachm to 2 drachms of castor oil, with about 4 to 10 minims of tr. opii three times a day, is a favourite prescription of mine. With this should be combined a simple diet largely of milk and broths. In dysentery milk, or in some cases whey, is the diet *par excellence*. So great was Dr. Jameson's belief in milk that when in practice in Kimberley he was very fond of large enemata of warm milk, slowly injected into the bowel with a long tube, both in acute and chronic dysentery.

I frequently use the milk enema, especially in obstinate chronic cases. It thoroughly cleanses and empties the gut, and is more easily tolerated than any medicated and especially astringent lotions. In fact it is not merely tolerated, but it has a bland and soothing effect on the irritable bowel which is most grateful to the patient. Rest is of course an essential in cases of any severity, and even in the milder forms has an undoubtedly beneficial effect.

Hare of Edinburgh has recommended in these chronic cases injections of nitrate of silver, and Osler recommends 20 to 30 grains to the pint, of which, if possible, from 3 to 6 pints at a temperature of 100° should be injected. This may be tried if no progress is made with the foregoing treatment, but it sometimes produces such pain as to be almost immediately rejected.

In conclusion I will merely add this final piece of advice: Before trying any other remedies in chronic dysentery, the physician will be wise to give a full and patient trial to milk, castor oil, and opium.

TREATMENT OF ENTERIC FEVER BY CARBOLIC ACID AT THE BRITISH GENERAL HOSPITAL, NOWSHERA, PUNJAB.

By CAPTAIN R. C. THACKER,
R.A.M.C.

On April 12th I was placed in medical charge of the special enteric wards attached to the above hospital. A most excellent opportunity was afforded of giving a further and more extensive trial to the carbolie acid treatment in enteric fever, and the following has been the result up to the present date:—

Number of cases treated	...	...	...	79
Number of deaths	...	...	...	11
Percentage of mortality	...	...	...	13.9 per cent.

All these cases were, in the first instance, diagnosed in the field hospitals at Laudi Kotai, Ali Musjid, and Jumrood respectively, and on arrival at the base were most carefully examined both by Major Flanagan, R.A.M.C., the Principal Medical Officer, and myself. Only well-marked typical cases of the malady in which there was a concurrence of opinion were at first admitted to the special wards; so that I consider that I may fairly claim that the diagnosis was accurate and above suspicion. Owing to the exigencies of field service numbers of the patients arrived in a very advanced stage of the disease, suffering from cardiac asthenia and low vitality, unquestionably associated with the prolonged physical effort and exhaustion attending long marches in dhoolies, a railway journey of 25 miles from Peshawur, and a most trying climate—circumstances in themselves in no way

conducive to a successful issue in the treatment of this treacherous and fatal malady.

TREATMENT.

Carbolic Acid.—On the arrival of the convoy of patients from the railway station they were invariably at once seen and examined, after being thoroughly washed and cleansed and placed on a comfortable spring mattress with clean sheets and body linen. Carbolic acid was then prescribed, four doses of miv each, well diluted with iced water, were ordered in the twenty-four hours. This was supplemented during the night, if the skin was hot and burning and the temperature running high, by two full doses of ordinary diaphoretic mixture. The formula generally used for the carbolic acid was Calvert's pure carbolic acid miv , spirits of chloroform mxxv , compound tincture of cardamoms mxx , with syrup and water to 1 fluid ounce. This mixture was kept in the ice box, and was thus administered cool and refreshing to the sufferers. Without any exception it was well tolerated by the stomach, caused no unpleasant symptoms, and was thoroughly liked by the patients as a palatable medicine. In fact, in more than one instance it was reported to me by the sister on duty that the patients frequently asked for an extra dose. This, though a trivial incident, showed that the medicine was liked, and that the patient had some faith in its efficacy, a point of no small importance when treating soldier patients.

Dietary.—The principal article of diet consisted of three pints of fresh-boiled milk of excellent and irreproachable quality in the twenty-four hours; 5 ounces were given every two hours, and was supplemented by 1 pint of sound carefully-prepared chicken broth. Two pints of iced barley water flavoured with lemon were also allowed as a cooling drink (4 ounces every hour) if so desired. The enteric evacuations were examined daily with care, and on the first suspicion of "solid" curd appearing in the stools, or the slightest tendency to irritability of the stomach, the milk was either peptonised or alkalisied, the latter being usually carried out by the sister on duty by adding a powder containing sodium bicarbonate, potassium bicarbonate, and sodium chloride of each 6 gr. to each pint of milk. This simple procedure proved most beneficial and effectual in many cases.

Stimulants.—Owing to the weak and prostrate condition of many of the patients on arrival, brandy had in most cases to be administered early in small quantities freely diluted. If grave symptoms supervened, such as a dry, brown, tremulous tongue; quick, weak, and irregular pulse; rapidly failing first sound of the heart, and low muttering delirium, the amount was rapidly increased up to 8 or 10 ounces in the twenty-four hours, with a pint of champagne if necessary and indicated. Stimulants in grave and malignant cases of enteric fever in India are, in my experience, well borne by the patient, and in most cases essential to a thorough and sound convalescence.

Nursing.—The nursing arrangements were efficient, and I would wish to record my thanks and appreciation of the untiring energy and devotion of the sisters.

COMPLICATIONS.

Complications were, I regret to say, frequent and severe, and included hæmorrhage. Cardiac asthenia, with hypostatic congestion of the lungs, hyperpyrexia, perforation, secondary bronchitis and pneumonia, tympanites, nervous symptoms, and phlegmasia.

Hæmorrhage.—Hæmorrhage occurred in four cases. The quantity of milk given every two hours was at once reduced to half, and given iced; stimulants were stopped altogether if admissible, or at least reduced to a minimum. Ice in small quantities was given to suck and allay thirst; ice was applied over the right iliac fossa and abdomen generally by means of ice trays. An enema in the ward of Dover's powder 10 gr., tannic acid gr. 20, in Zij of mucilage of starch, which was kept ready, was administered. At the same time a mixture composed of gallic acid, aromatic sulphuric acid, and liquor opii sedativus was given by the mouth every hour for six doses if necessary. This method was introduced by Dr. Burney Yeo, and he states "that lives have been saved by the precaution of having it kept ready at hand," and I can quite endorse his opinion. Turpentine was freely used in cases of protracted hæmorrhage, and found most beneficial. A combination of turpentine m15 , with ergotin gr. 3, and m10 of liquor opii