THE TREATMENT OF DYSENTERY IN A FORWARD HOSPITAL.

By Captain F. G. Miller,
Royal Army Medical Corps.

[Received November 6, 1944.]

The following review is intended neither as original nor as authoritative. It is merely an account of the experiences gained and lessons learned as an Officer in Medical Charge of the Dyshentery Section of a forward I.G.H. (C) for the period of eight months, May to December, 1943. Cholera and helminthic disorders are not discussed.

(1) A total of 2,114 patients were investigated, all of whom were I.O.R.s. Table I shows the relative incidence of amoebic and bacillary dysentery, the frequency of the former being approximately twice that of the latter. The Bacillary Group includes those who had a bacillary exudate with negative culture and the Diarrhea Group those who were reported to have an "indefinite exudate" with negative cultures and absent Entamoeba histolytica.

<table>
<thead>
<tr>
<th>Number of Cases</th>
<th>Protozoal</th>
<th>Bacillary</th>
<th>Diarrhea</th>
<th>Amoebic Hepatitis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>701</td>
<td>370</td>
<td>975</td>
<td>68</td>
<td></td>
<td>2114</td>
</tr>
</tbody>
</table>

(2) Patients were drawn from a highly endemic malarious area and a proportion of admissions were complicated by a coexisting malaria cachexia, a vitamin deficiency (more especially B4) or active clinical malaria. Cases were normally received on the 2nd to the 4th day of the disease and were usually untreated. Ls. of C. were not easy.

(3) All patients (apart from those needing urgent treatment) were first sent to the Dyshentery Admission Ward, where they remained until diagnosed. They were then segregated in three wards—one for amoebic, one for bacillary and one for miscellaneous dysenteries. The remainder, internal or external hemorrhoids, malaria, chronic malaria cachexia, parapneumonia, etc., were transferred to the other sections of the hospital for appropriate treatment. The simple diarrhoeas and cases with no appreciable disease were discharged. No hospital kit was issued to patients in the Admission Ward—a very great economy in linen, especially during the monsoon. The main advantage of the Admission Ward was that it saved beds for true dysenteries and stopped cross infection. When large numbers of undiagnosed cases of diarrhoea are being received, an Admission Ward is held to be of very great value.

The dysenteric block itself was sited next to the clinical side room—an obvious situation—as the number of Entamoeba histolytica seen is directly dependent on the delay that occurs before the stool is examined. The value of a warm bed-pan (Manson-Baird, 1942) especially in cold weather is emphasized and helps to increase positive microscopical findings.

Much difficulty was experienced in obtaining accurate histories. A history of more than three to four months was seldom elucidated and even this was scanty and inaccurate. It is therefore suggested that a page or so of the I.O.R.'s Pay Book be set aside for hospital diagnoses. The dates of admission and discharge and the diagnosis would probably suffice, the hospital or medical unit discharging the patient to duty or to a convalescent depot entering the date of discharge. This method would not cause much inconvenience and would add materially to one's knowledge of the patient's previous history.
(4) All cases had routine blood slides and a minimum of four daily stool examinations following an initial dose of saline or castor oil. Unfortunately the hospital was without a sigmoidoscope for most of the period under review. Its value in the differential diagnosis of amebic and bacillary dysentery has been fully substantiated. No special dietary scale could be laid down and after the first day all patients were encouraged to eat a full diet. The under-nourished and cachectic were given a special malnutrition diet of up to 5,000 calories. No ill-effects have been noted following this practice. All patients were encouraged to drink 8 pints of fluid per day and each had one pint of water at his bedside. A four-gallon container was also kept in each ward and a convalescent patient was detailed to act as water carrier. Water discipline was especially inculcated in those taking sulphonamide drugs. Intravenous fluids were given in about 50 cases, mostly for acute amebic dysentery, and to a far less extent for the bacillary type. In the anemic it has been found wise to give a pint of whole blood or a pint or two of plasma followed by 4 pints of glucose-saline. A repeat transfusion (plasma or saline) within thirty-six hours has given enhanced results. A total of 8 pints in this period has usually been sufficient. The value of thoroughly washing through the giving set before starting the infusion is emphasized, as fungus growth in the tubing is common in humid weather and can cause severe reactions.

(5) Bacillary Dysentery. 370 cases; 7 deaths.

<table>
<thead>
<tr>
<th>Number of Cases</th>
<th>Shiga</th>
<th>Flexner</th>
<th>Sonne</th>
<th>Schmitz</th>
<th>Boyd</th>
<th>Bac. Es.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shiga</td>
<td>61</td>
<td>137</td>
<td>23</td>
<td>40</td>
<td>8</td>
<td>101</td>
<td>370</td>
</tr>
</tbody>
</table>

Generally these cases were of a mild nature, unless complicated by intercurrent disease. Some had coincident amebic dysentery.

The specific treatment used for sulphapyridine was—2 grammes initially and 1 gramme four-hourly for the first twenty-four hours and 1 gramme t.d.s. on the succeeding two days. Sulphaguanidine was not available. This dosage (11 grammes) was adequate for all cases except one, and he failed to respond to full doses of either sulphapyridine or sulphauguanidine. It has been pointed out (Brewer, 1943) that sulphauguanidine should be continued for two to three days after the stools are normal to avoid a relapse. This observation was not confirmed with sulphapyridine, and no case of relapse was noted. When intravenous fluids were found necessary soluble M & B was given.

Adjunct treatment consisted of mist. pot. cit. 1 oz. q.q.h. (Napier, 1943) and fluids orally (8 to 10 pints per day was the aim). All cases with severe diarrhoea were given mist. 3/15 one oz. at night. Polyvalent serum was used in all Shiga infections, but its efficacy was not proved.

Points in Sulphapyridine Therapy. (i) The I.O.R. tolerates the drug poorly. Although I have no statistical proof, I have the impression that he tolerates this drug much better in diseases other than dysentery—more especially pneumonia.

(ii) The drug controls diarrhoea so quickly that a coincident amebic infection is often overlooked. It is for this reason that sulphapyridine is now only given in the severe cases.

(iii) Anuria: Much has been written of late on this complication (Burt-White and Johnson, 1943 and Cunniffe, 1943) and here one can confirm that the danger is a real one and must constantly be borne in mind. The average I.O.R. is notoriously loath to take sufficient fluids, and so renders himself very liable to crystal formation. Language difficulties (in the absence of specific questioning or routine urine examinations) may lead to a tardy recognition of this condition. Although no case of anuria occurred in the wards, several such were received as transfers, all necessitating cystoscopy, and in one nephrostomy. Nine cases of haematuria or dysuria and one case of renal colic with hematuria occurred in the wards but responded to the routine early treatment. Briefly this was: (a) Stop sulphapyridine; (b) increased fluids and alkali; (c) hyoscyne hyd. grs. 1/200 and atropine sulph. grs. 1/100 (hyoscine preferred to morphia as the latter temporarily inhibits the secretion of urine (Minnett, 1942); (d) saline infusion and/or external ureteric massage; and (e) cysto-
In the early haematuria the first two or three treatments sufficed. Flynn (1943) has fully described the treatment of sulphapyridine anuria and his procedure should be of especial help in units without a cystoscope.

(iv) The same care as is used in administering anti-malarial drugs was found necessary in giving sulphapyridine, and all tablets were given either by a sister or a M.O. The complications that arise if this care is not taken need not be enumerated.

Results of Sulphapyridine Therapy.—Compared with the saline treatment sulphapyridine reduced the average duration of stay in hospital from fourteen to eleven days. These figures compare unfavourably with those received from the Middle East (Paulley, 1942; Bulmer, 1943; Brewer, 1943) but are probably explained by: (i) the higher incidence of concomitant disease; (ii) the relatively poorer physique; and (iii) the delay in treatment (twenty-four—ninety-six hours) which was the lot of this series.

Cause of Death.—7 cases. 1·8 per cent: This was usually the effect of an intense toxemia on a debilitated subject. Three cases had a coexistent bronchopneumonia.

Results of Sulphapyridine Therapy.

(6) Amobic Dysentery.—701 cases; 10 deaths.

Owing to shortage of beds all amoebic dysenteries who were fit to travel and whose diarrhoea was controlled were evacuated down the line after the sixth injection of emetine. Our main interest was therefore one of diagnosis. The acute amoebic dysentery was severe, often simulating an acute Shiga infection, but diagnosis was not difficult, the vegetative forms of E. histolytica being easily found. Difficulty arose when there was a double infection. Amoebic dysentery, like malaria, can simulate many diseases. The following are some of the preliminary diagnoses made and indicate the various forms it can take: sprue, malaria cachexia, chronic intestinal obstruction, constipation, appendicitis (acute and chronic), perinephric abscess and intestinal tuberculosis. The latter is common in I.O.R.s (Napier, 1943) and may coexist with amoebic infection. E. histolytica can cause an acute appendicitis necessitating operation. The most constant symptoms were a decline in physical well-being (usually gradual) and an intermittent diarrhoea. The latter history may only be obtained in response to direct questioning. No very constant signs were noted on physical examination, but in those with poor abdominal musculature a thickened caecum or descending colon was often felt. The white cell count is often raised, sometimes as high as 20,000 per c.m.m., with a relative increase in granulocytes. An eosinophil count was not an aid to diagnosis.
Most cases responded well to emetine, daily injections of 1 gramme with a three days' rest preceding the second course of three injections. Patients were normally evacuated on the seventh day of treatment. Sulphapyridine was also given to those with severe and uncontrolled diarrhea and proved a very valuable adjuvant.

Cause of Death.—10 cases; 1·4 per cent.
Of these 10 cases 4 perforated, one had gangrene of a section of the descending colon and the rest had extensive ulceration.

(7) Amœbic Hepatitis and Amœbic Abscess.—68 cases.
There is little fresh that can usefully be said of amœbic hepatitis or amœbic abscess, except to confirm the value of therapeutic emetine. A right pleural effusion or signs of consolidation in the right lower lobe were common presenting symptoms in this series.

Hygiene.
The dry-pan type of latrine was used and the container or bedpan emptied into a large receptacle. The bedpan was then washed with cresol and re-washed with water. Fluid refuse was deposited in an Otway Pit and the solid refuse burnt in an ASH incinerator. This drill was rigidly enforced but had to be checked frequently. The need for intelligent sweepers who will not be transferred to other sections is obvious.
I cannot conclude a review of the dysenteries without a word of praise for the ASH incinerator. It is as big an advance in the prophylaxis of bowel disorders as sulphapyridine is in the treatment of bacillary dysentery.

Summary.
The administration of a dysentery ward in a forward Field Hospital and the investigation and treatment of 2,114 cases of diarrhoea and dysentery are discussed. Amœbic dysentery was found to be twice as frequent as bacillary in this area.
I am much indebted to Lieutenant-Colonel R. N. Tattersall, R.A.M.C., for his helpful advice and criticism during the period under review, and to Captain T. E. Parry, R.A.M.C., for the excellent co-operation between ward and laboratory.

REFERENCES.
Brewer (1943). B.M.J., January 9, p. 36.
Cunniffe (1943). Ibid., July 3, p. 11.
Napier (1943). "The Principles of Tropical Medicine."
Manson-Bahr (1942). "Manson's Tropical Diseases."