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## ⌘ DYSENTERY IN BURMA (MILITARY STATIONS) WITH A NOTE ON SOME POST-DYSENTERIC INFECTIONS

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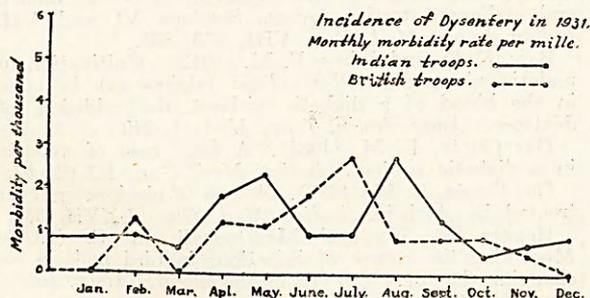
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NUMEROUS observers in the East have stressed the importance and prevalence of bacillary dysentery, particularly when due to infections with the *B. flexner* group. This statement has been corroborated from time to time by various workers in several parts of India. The following summary of results obtained during 1930-31 in the Military District (comprising mainly Mingaladon, Rangoon, Mandalay and Maymyo) is in line with other findings, in spite of the belief among some local medical practitioners that in Burma the protozoal infections play quite an important part in the incidence of dysentery.

The monthly incidence of dysentery among British and Indian troops during 1931 is shown in the attached graph. The figures on the graph represent the monthly morbidity rate per thousand and show that the disease is prevalent amongst the Indian troops throughout the year.



**Laboratory technique.**—The standard technique employed by all the military laboratories in India was used in dealing with the stools containing blood and mucus. A brief summary of the methods in vogue is as follows:—

(1) The stool, after testing the reaction with litmus paper, is examined microscopically for its exudate. From the stool a little of the mucus is picked up on a platinum loop, stirred in a test tube of sterile saline (to remove any extraneous bacteria, etc.) and plated out on bile-salt-litmus lactose-agar. After 24 hours incubation, suitable colonies are picked out and tested

for motility by a hanging drop preparation; on their proving non-motile they are transferred to glucose and mannite sugar media containing Andrades' indicator. The organisms fermenting glucose or glucose and mannite are further inoculated from these tubes into lactose, dulcitol, and peptone tubes (for the indol reaction). Finally, serological reactions are used to confirm the result of the biochemical reactions.

(2) No diagnosis of amoebic dysentery is based on the exudate alone and, if in addition to the pathogenic amoebæ, a bacillary type of exudate is present, an attempt is always made to isolate the causative bacilli by the cultural methods detailed above. The presence of a scanty exudate, consisting of a few lymphocytes and eosinophile cells, sometimes with Charcot-Leyden crystals is taken as an indication for a prolonged search, hence attention is always concentrated in such cases on finding the *Entamoeba histolytica*.

Adopting the above methods we obtained the following results:—

1. Total number of cases with mucus or blood and mucus 269.
2. Number of cases from which *B. dysenteriae* were isolated—126.
3. Number of cases in which *Entamoeba histolytica* was found—34.
4. Number of cases showing bacillary exudate but pathogenic amoebæ or bacilli were not found—46.
5. Number of cases showing indefinite exudate—106.

Taking the above figures into consideration of all the cases showing mucus and blood we find that:—

(a) 63.9 per cent. were of bacillary origin (including those from which *B. dysenteriae* were isolated and those showing bacillary exudate).

(b) 12.6 per cent. were of amoebic origin.

The rest, 23.5 per cent., were classified as indefinite (no specific exudate, no pathogenic amoebæ or cysts or dysentery group of organisms having been detected).

Of the 172 'bacillary' cases noted above *B. dysenteriae* was isolated from 73.2 per cent., or taking the indefinite exudate into consideration from 53.6 per cent.

The following summary shows the variety of the organisms encountered:—

Total number of cases from which <i>B. dysenteriae</i> were isolated	..	126
Number of cases showing <i>B. flexner</i>	..	102
" " " " <i>B. shiga</i>	..	11
" " " " <i>B. schmitz</i>	..	8
" " " " <i>B. sonne</i>	..	3
" " " " <i>B. Morgan No. 1</i>	..	1
" " " " <i>B. carolinus</i>	..	1

Regarding the classification of streptococci it may be mentioned that main reliance has been placed on the hæmolysis and fermentation of lactose, mannite, and salicin. The biochemical reactions of other sugars differ from the recognised strains, but it cannot be definitely asserted that these strains in question are distinct entities. The following is a description of the four cases which could be followed up:—

*Case 1.*—N., a middle-aged lady, was suffering for the last four years from intense itching at night. There was a transitory dark pink macular eruption which

TABLE I

Strain	Morphology	Hæmolysis	Lactose	Mannite	Salicin	Glucose	Dulcitol	Saccharose	Maltose	Inulin	Inosite	Adonite	Galactose	Lævulose	Dextrin	Indol	In streptococci identification based on hæmolysis, lactose, mannite and salicin only	Clinical signs
W	Short chains ..	N	+	-	+	+	-	+	+	-	-	-	-	-	-	-	<i>S. mitis</i>	Diarrhœa, history of <i>B. sonne</i> infection previously.
CI	Do. ..	N	+	+	+	+	-	-	+	+	-	-	-	-	-	-	<i>S. faecalis</i>	} ? Sprue, anæmia, etc.
II	Do. ..	N	+	-	+	+	-	-	-	-	-	-	-	-	-	-	<i>S. mitis</i>	
M	Do. ..	N	-	-	-	+	-	±	-	-	-	-	-	-	-	-	<i>S. ignavus</i>	Anorexia, epigastric distress and diarrhœa.
MS	Do. ..	N	+	-	+	+	-	+	+	-	-	-	+	+	-	-	<i>S. mitis</i>	Do.
B	Long chains ..	N	-	-	+	+	-	-	-	-	-	-	-	+	-	-	<i>S. equinus</i>	Do.
P <sub>1</sub>	Short chains ..	N	+	-	+	+	-	-	-	-	-	-	-	+	-	-	<i>S. mitis</i>	'Presprue' condition diagnosed by his doctor.
P <sub>2</sub>	Do. ..	N	+	-	+	+	-	+	+	-	-	-	-	+	-	-	Do.	Diarrhœa and dyspepsia.
G																	<i>Staphylococcus citreus.</i>	Loss of weight, pain in the appendix region and diarrhœa (early morning).
V	Do. ..	H	+	+	-	+	-	-	+	-	±	-	+	+	-	-	<i>S. hæmolyticus</i>	History of dysentery and malaria, spleen and liver enlarged, loss of weight with diarrhœa.
S	Do. ..	H	+	+	-	+	-	-	+	-	±	-	+	+	-	-	Do.	Diagnosis as tabes mesenterica or chronic appendicitis.
N	Gram-negative bacilli.	Not tried.	-	-	-	+	-	-	-	-	-	-	-	-	-	-	<i>B. para-dysentericus.</i> (Castellani).	See below.
X	Short chains ..	N	+	+	+	+	-	-	+	+	-	-	-	-	-	-	<i>S. faecalis</i>	Do.

+ = Acidity in the media.  
N = Non-hæmolytic.

disappeared during the day. The rash differed from the usual urticarial eruptions being very slightly raised above the surface of the skin. The itching led to sleepless nights followed by languor and weakness during the day. There were vague pains in the abdomen, signs of indigestion and toxic headaches. Appendicitis was suspected and the appendix duly removed without any relief of symptoms. Various prescriptions were tried internally and externally for the skin condition unsuccessfully. There was a history of having passed blood and mucus before the onset of the trouble. On plating out *B. para-dysentericus* (Castellani) was isolated from which a vaccine was prepared and administered. The condition has not returned for about 18 months.

Case 2.—S., a girl of 18 years, came to Maymyo for change of climate. Every evening she got a temperature of 99—100°F.

There was tenderness in the abdominal region and sometimes diarrhoeic motions were passed. She had lost weight and her condition had been diagnosed as tabes mesenterica. *Streptococcus hæmolyticus* (see table above) was isolated and an autogenous vaccine prepared. Since the administration of the vaccine (9 months interval) her health has given her no trouble and she has been able to pursue her studies successfully.

Case 3.—B., a retired engineer, 75 years of age, was suffering from diarrhoea off and on for years. There was anorexia, indigestion and gradual loss of weight. From the stools *Streptococcus equinus* was isolated and an autogenous vaccine administered. The condition improved miraculously, the weight increased and the diarrhoea stopped. The case was followed for two years but his 'sprue condition' as he called it did not return.

Case 4.—X., an old man aged about 55 years, rather obese, developed an evening temperature usually rising to 101°F. At the time of examination of the stools he was losing weight, suffering from diarrhoea and complaining of pain in the hepatic region. He had passed mucus in his stools years ago and his habits had been intemperate for the last 20 years. *Streptococcus faecalis* was isolated from the stools and an autogenous vaccine duly administered. His abnormal temperature never returned (during 8 months) though off and on he got diarrhoea and 'liver'. He gained in weight, developed a good appetite, and the occasional diarrhoea did not seem to bother him as he was aware that it was due to indiscretions in liquid and solid nourishment.

Another case which requires special mention, being of clinical importance, is that of a retired extra-assistant commissioner who came to one of us suffering from 'piles'. He stated that about five months previously he had attended a marriage feast, which he fully enjoyed and ascribed constant bleeding to that particular occasion. He tried several treatments, local astringent applications as well as internal remedies for the 'hæmorrhoids'. No mass was projecting externally but the stools with blood and mucus showed vegetative forms of *Entamoeba histolytica* in large numbers. Administration of emetine stopped the bleeding 'miraculously' as the gentleman described it.

One case showed vegetative forms of *Giardia* and another had *E. histolytica* cysts during the acute stage.

#### Post-dysenteric infections

This is a record of study of 13 patients, who though they had got over the acute stage of dysentery were still having some clinical symptoms referring to the gastro-intestinal tract. Almost all of them were chronic cases,

giving a history of old dysentery and were having flatulence, diarrhoea, 'acidity' in the stomach, indigestion, tenderness in some part of the abdominal region together with certain other toxæmic symptoms.

The technique followed was similar to the one described above, the stools being plated out on litmus-lactose-bile-salt agar media. With a magnifying lens the streptococcal looking colonies were found in large numbers in all except two cases. As it was a different picture from the normal, vaccine treatment was tried in these cases with decided benefit. Much stress has not been paid to this point as it was not possible to follow up all the cases but those recorded in Table I are interesting.

The exceptions referred to above were *Staphylococcus citreus* and *B. para-dysentericus* (Castellani). Table I shows the biochemical reactions of the organisms isolated.

#### A PRELIMINARY NOTE ON THE ABSORPTION OF 'MAKARADHWAJA' (SULPHIDE OF MERCURY)

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Indigenous Drug Series No. 37

'MAKARADHWAJA' is a well known inorganic preparation of the Hindu Pharmacopœia. Its use can be traced to the time of Bhabamistra, the renowned Hindu physician, who lived in the early part of the 16th century. Since then, the preparation has been in constant use and is to this day held in very high esteem by the Ayurvedic practitioners. This drug has such a great hold on the minds of the people in India that many practitioners of Western medicine also use it. There is probably something of real value about it, as it has resisted the ravages of time for many centuries and is universally esteemed to the present day.

*Preparation of 'makaradhwaja'.*—It is necessary at the outset to outline the process of preparation of this drug, as according to the Ayurvedic Pharmacopœia a great deal depends on the method adopted. Various methods of preparing the drug have been described in books on Hindu medicine. The description given below has been kindly given to us by an eminent practitioner of Ayurvedic medicine in Calcutta and is believed to be the standard method laid down in books of the Hindu materia medica.

Eight parts of pure mercury and one part of gold-leaf are mixed together to form an amalgam. To this mixture, sixteen parts of sublimed sulphur are added and the resulting mixture is rubbed very thoroughly in a stone mortar with a stone pestle for 24 hours or more