

by the loss of the tissues removed will perhaps account for the great popularity of the operation. The immediate complications consist of haemorrhage and shock, both of which are uncommon, more particularly shock. Neither haemorrhage nor shock occurred in any of the 1,064 cases. Most operators see that haemorrhage has ceased, or is insignificant, before the operation is completed. Shock, when it occurs, is the result of insufficient or inefficient anaesthesia.

The remote complications are chiefly the result of sepsis. Acute otitis media occurred in 4 of the 1,064 cases, and one of the four required a simple mastoid operation. The incidence of otitis media can be diminished by careful management before and after operation. It is more common in hospital practice where the patients are treated as out-patients, and is practically absent in private practice where care is taken before and after operation and the patient's surroundings are better. The preparation of the mouth, the avoidance of operation during acute infections, and the rest in bed for three days after operation in a clean home diminishes the incidence of otitis media. In order to avoid operation during an acute infection or in children who are possibly sickening for any infectious fever, such as scarlet fever, measles, etc., the temperature is taken while they are waiting their turn for operation, and if the temperature is above 99° operation is postponed.

Severe scarlet fever and measles are known to follow operation with disastrous results. I have known of two cases in twelve years' experience; such cases do not return to hospital, and are not always observed, but E. W. Goodall and J. D. Rolleston, from a long experience of fever hospital work, both state that they have not seen more than a dozen such cases of scarlet fever or diphtheria following operation in twenty-five and seventeen years' experience respectively. In all cases before operation it is advisable to see that the ear passage is clear and does not contain wax, as a blocked meatus adds to the difficulty of treatment of otitis media. Suppuration of the cervical lymphatic glands is very rare, and I can only remember two or three cases in a period of twelve years; in the series here discussed there were none.

Results.

The results of operations in the carefully selected and well-marked cases are excellent; not only are the symptoms relieved, but there is a great improvement in the general health and comfort, due to the fact that the child sleeps better, its appetite is increased, the hearing improves, the frequent and prolonged colds cease, the flat chest develops, and growth is more rapid. The removal of adenoids in the so-called idiopathic asthma of the nervous, wheezy child has no beneficial effect, and most of these children have no adenoid growth. Idiopathic asthma must not be confused with the intermittent suffocative attacks during sleep, which are due to adenoids, and are cured by the removal of the growth.

A large number of children have attacks of earache and deafness during colds, with retraction of the drums, which frequently suppurate; and if such a case is allowed to continue without operation, the deafness or dullness of hearing becomes permanent, and is beyond cure. The affection of the ears makes operation imperative. In all cases of earache and deafness operated on the ears become normal, except in the older patients, in whom the damage has been done by the long duration of the inflammation. Cases of recent suppuration rapidly heal and the otorrhoea ceases.

The mouth breathing and frequent colds disappear if the patient is made to perform suitable exercises to expand the chest and to promote nasal breathing. No operation is complete unless followed by a course of breathing exercises and the teaching of children to blow their noses efficiently every morning. The parents are told that breathing exercises are as important as the operation, and should be carried out every day for at least six months, commencing a fortnight after operation.

Occasionally a school child will have a temperature, of obscure origin, of 100° with a rise to 102° or more for some weeks following a so-called influenzal cold which on careful inquiry is seen to have been tonsillitis. There is slight tonsillitis with enlargement of the cervical tonsil lymphatic glands. The enucleation of the tonsils cures the fever, and the cervical glands slowly disappear. There are two types of enlargement of the upper deep

cervical set of glands as the result of infection of the tonsils. The first is inflammatory, and accompanies most attacks of acute tonsillitis, and disappears with the tonsillitis. In repeated attacks of tonsillitis the enlargement, which is limited to the tonsil gland of the upper deep cervical group, becomes chronic, but gradually disappears after the removal of the tonsils. The second type of enlargement is tuberculous, is more marked, and there is extension to the other glands of the deep cervical group. If the case is early and the glands are not caseating, removal of the tonsils with suitable antituberculous treatment results in their disappearance, but the majority of hospital cases require removal of the glands in addition to the tonsils.

Nocturnal enuresis has been stated to be due to adenoid growth and its accompanying suffocative attacks during sleep, but in my experience true regular enuresis occurring every night is rarely, if ever, due to adenoids. Very few children with well-marked adenoid growth have this symptom, and I have seen a number of cases of enuresis with absolutely no adenoid growth. Moreover, the removal of the adenoids has not cured the enuresis.

Whatever the function of the tonsil may be its structure and behaviour are similar to that of a lymphatic gland, and it is reasonable to suppose that the remaining lymphatic tissue of the pharyngeal wall, the lingual tonsil, and cervical glands compensate and take on the function of the tonsils and tissue removed, but I have not seen hypertrophy of any of these structures after operation, not even the cervical glands.

I have carefully examined a large number of children six months or more after operation, and have endeavoured to follow up cases, and I have not observed any deleterious effects or disadvantages following removal of tonsils and adenoids. I have not obtained any evidence to indicate that the removal of the tonsils predisposes these children to diphtheria, scarlet fever, or other acute infections, but I have seen several cases of unhealthy spongy tonsils yielding cultures of the Klebs-Loeffler bacillus weeks after the quarantine period had elapsed. E. W. Goodall and J. D. Rolleston both state that in their experience there is no reason to think that children who have had tonsils and adenoids removed are more susceptible to scarlet fever or diphtheria. I have not seen and have no records of tuberculosis of the cervical lymphatic glands appearing after removal of the tonsils.

In conclusion, when a child has a specific set of injurious symptoms which can be definitely attributed to the tonsils and adenoid growth, nothing but benefit results from removal, but there is a need for careful examination and selection of operation cases. An attempt should be made to ascertain and eliminate the cause of the condition under observation before the question of operation is finally settled.

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THE TREATMENT OF AMOEBIC DYSENTERY WITH EMETINE AND BISMUTH IODIDE.

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DURING the months of July and August, 1917, 40 cases of amoebic dysentery admitted to a military hospital in Mesopotamia were treated with emetine and bismuth iodide, used either alone or in conjunction with emetine hydrochloride.

These cases formed in July 25 per cent. and in August 34 per cent. of all cases admitted in which blood and mucus were present in the stools. They also furnished all the severe cases and the deaths from dysentery during the above period. Four deaths occurred, in two of which hyperpyrexia from the intense heat undoubtedly hastened the end. The remaining two were due to peritonitis following perforation of dysenteric ulcers, and occurred in very debilitated subjects two or three days after admission.

The duration of the disease before admission to this hospital varied from three days to a fortnight, the average being about six days. In many cases a history could be elicited of previous attacks of dysentery in either Mesopotamia or India.

All patients treated were natives of India, and came from widely separated districts of that country. As this was the first opportunity I had of making a trial of emetine and bismuth iodide in a series of cases of amoebic dysentery the diagnosis of which could be confirmed, and the results of treatment checked by microscopical examination of the fresh stools, the following points were considered worthy of investigation:

1. The tendency, or otherwise, of the drug to produce vomiting.

2. Its action, either when given alone, or in conjunction with emetine hydrochloride, in

(a) Acute cases showing active amoeboid forms in the stools;

(b) Less acute cases in which encysting forms are appearing in the stools;

(c) Chronic relapsing cases;

the results in all cases being checked by microscopical examination of the stools.

I. VOMITING.

The action of the drug in producing vomiting had to be taken into consideration, as keratin capsules were not available, and the drug had to be administered in the form of a powder or pill. Happily, it was found that the Indian tolerates the drug very well. The maximum single dose of three grains was never exceeded, and not more than four grains were given during the twenty-four hours. The most suitable dose was found to be two grains, in pill form, given once or twice a day, half an hour after a feed of milk, the pills being freshly made from the powder with a little gum excipient. A few of the cases complained of nausea after taking the drug, and sometimes the patient would vomit an hour or two later, but this was readily checked by the administration half an hour before of 15 drops of tincture of opium; tolerance was established in two or three days, and in no case did it become necessary to discontinue the drug from this cause.

II. CLASSIFICATION OF CASES.

The cases divided themselves pretty definitely into the three classes given above, so that the action of the drug can be considered in its relation to each class.

Acute Cases.

In those cases in which the disease had been present three or four days, and in which several stools containing mainly blood and mucus were passed during the twenty-four hours, microscopical examination showed the presence of numerous amoebae of *histolytica* type. In the treatment of this class the best results were obtained by using 2 grains of emetine and bismuth iodide in pill at night and 1 grain of emetine hydrochloride hypodermically in the morning. A more rapid relief of the acute symptoms was obtained by this method than by the use of either drug alone; in fact, emetine and bismuth iodide, when given alone in acute cases, did not appear to have the same rapid action in relieving pain and tenesmus as emetine, but when used in combination with the latter drug in the above manner it certainly shortened the attack and established a more complete and earlier convalescence. The rapidity with which the stools became faecal and lost their blood and mucus was in some cases remarkable. Furthermore, there did not appear to be the same tendency to constipation, which so frequently follows the use of emetine alone.

The microscopical findings showed a rapid decline in the number of amoeboid forms in the stools after twenty-four hours, and by the end of a week the stools were reduced to one a day, were in appearance normal, and apparently free from amoebae in any form.

Case 1.

Havildar Major, admitted August 5th, 1917, with symptoms of dysentery, had been in hospital a fortnight previously with diarrhoea, which cleared up under salines. No amoebae were found at that time in the stools. On the second admission he was passing five or six stools daily, consisting solely of blood and mucus and containing numerous amoebae of *histolytica* type. Emetine 1 grain hypodermically in the morning and emetine and bismuth iodide 3 grains in pill at night were commenced on August 6th; there was slight nausea, but no

vomiting after taking pill. Tolerance was established after two days. On August 10th the dose of emetine and bismuth iodide was reduced to 2 grains. Blood and mucus were absent from the stool on August 8th, and pain and tenesmus disappeared. Stools one daily, semi-solid, until August 14th, when they became solid and free from amoebae. Returned to duty on August 17th. Total emetine injected, 12 grains; total emetine and bismuth iodide given 28 grains.

Case 2.

Driver, admitted July 23rd, 1917, with severe acute dysentery of four days' duration; passing numerous stools containing much blood and mucus. Active amoeboid forms of *E. histolytica* present. Treatment commenced on July 24th with emetine 1 grain hypodermically in the morning, and emetine and bismuth iodide 3 grains at night. Griping and tenesmus relieved after twenty-four hours. Blood and mucus in diminishing quantities present in stools up to August 1st. One normal stool passed on August 3rd which was free from blood, mucus, and amoebae. Patient then transferred to another hospital.

Subacute Cases in which Cysts were Present.

In cases which had passed the acute stage when admitted, and whose symptoms consisted of pain and tenderness along the course of the large bowel, more marked over the caecum and lower part of the descending colon and rectum, and the passage daily of two or three semi-solid or liquid faecal stools containing a little mucus and a trace of blood, good results were obtained by giving 2 grains of emetine and bismuth iodide in pill morning and evening, with an occasional dose of $\frac{1}{2}$ oz. of sodium sulphate. Mucus and blood disappeared rapidly under this treatment, the tongue became clean, and the abdominal tenderness diminished, while, so far as could be judged with the laboratory appliances at disposal, cysts ceased to be found after five or six days of treatment. Treatment was continued until a total of 36 to 40 grains of emetine and bismuth iodide had been taken. The diet consisted of milk, sago, and rice pudding, chicken soup, and eggs.

Case 3.

Sepoy, admitted on August 18th, 1917, complaining of diarrhoea, pain, and tenderness along the course of the large bowel and the passing of small quantities of blood and mucus in the stools, of which he had two or three daily. Duration of illness fifteen days. No history of previous attacks. Two and four nuclear cysts found in stools. After a preliminary dose of oil ricini, treatment was commenced on August 19th by giving 2 grains of emetine and bismuth iodide morning and evening. Blood and mucus were absent on August 21st, and the stools were normal and apparently free from cysts on August 23rd.

Case 4.

Driver, admitted on August 16th, 1917, complaining of diarrhoea, with the passage of small amounts of blood and mucus. Two to three stools daily. Illness of about a fortnight's duration. No history of previous attacks. Cysts in stool containing up to four nuclei. Emetine and bismuth iodide in 2 grain doses twice daily commenced on August 18th. Stools normal and free from cysts on August 21st.

Chronic Relapsing Cases.

Under this category are classed cases which had had one or more previous attacks of dysentery from which they had never fully recovered. When admitted to hospital they were very debilitated and anaemic. Usually of the "follower" class, they had continued their duties long after they should have reported sick. The stools passed—often sixteen to twenty in a day—consisted of blood, mucus and sloughs, while not infrequently blood alone was passed, and in considerable quantity. Great tenderness was complained of along the whole course of the large bowel, and there was much griping and tenesmus. Emaciation was extreme in some cases. These cases furnished all the four deaths occurring during the period under review, and the *post-mortem* examinations showed extensive ulceration and gangrene of the whole of the large bowel from caecum to anus. The stools contained numerous amoebae in all stages of development. Owing to the severity of the symptoms it was necessary to get these patients as quickly as possible under the influence of emetine, in order to destroy the amoeboid forms which were doing such harm to the already damaged coats of the bowel. Emetine hydrochloride, therefore, was given at first in doses of from a half to one grain hypodermically twice daily. Later on, as the symptoms improved, one or two grains of emetine and bismuth iodide were substituted for one of the doses of emetine. Small doses of morphine were used to allay pain and tenesmus, and promote sleep. Stimulants, such as brandy or port wine,

