

the poisons were in any way antagonistic to each other is another matter. Be this as it may, we shall have no hesitation in trying strychnia again should the opportunity occur.

A STUDY OF INDIAN FEVERS.

BY SURGEON-CAPT. R. ROSS, I. M. S.

IN the June number of the *Indian Medical Gazette*, I gave an analysis of five cases of febricula, accompanied by abdominal tenderness, in which I ventured to maintain that the fever arose entirely from slight intestinal lesions. The present paper is a short résumé of a similar enquiry extended to *all* cases of Indian fevers. I wish to determine:—

1st.—What is the percentage to all cases of fever, of those suffering also from abdominal symptoms?

2nd.—How far, in these cases, does the fever depend on the intestinal lesions?

A few preliminary words about "abdominal symptoms." These are generally pain, diarrhœa, constipation, tympanitis, local and general, furred tongue, bad breath, and, *above all*, abdominal tenderness discoverable on deep palpation. There is the colicky pain due to occluded gas, and also pain in tender spots during movement (needing to be distinguished). Diarrhœa in these cases generally presupposes some local inflammation, and tympanitis presupposes thrombosis, but may occur after over-purgation. Constipation should always be studied with reference to the ingesta. Abdominal tenderness does, I think, almost always denote some local inflammation or ulceration. It is of two kinds, with dull or acute percussion note. The furred tongue (brown, yellow, or white) is a pretty certain index of the state of the intestines, being most disordered when the alvine discharges are most accumulated and offensive. When ulceration remains, but the bowels are no longer in a septic condition, the tongue retains a fine white fur, but is nearly clean. I fancy it is often quite clean when only the lower bowel is attacked.

From 15th April last all cases of fever were examined as to abdominal tenderness. Out of sixty-three consecutive cases of fever contracted in Bangalore, fifty-four, or eighty-six per cent., had tenderness. Out of thirty-one cases contracted in Assam, twenty-nine, or ninety-four per cent., had it. Out of thirty-seven cases lately arrived together from Burma and returned "ague" mostly, thirty-one had tenderness; but of the six others, three were convalescents and should be omitted, so that we get ninety-two per cent. in this case. These men were mostly native troops and followers, and may have deceived me one way or the other with respect to their symptoms; but as nearly all other patients, European and native, men, women and children, officers on leave, and especially members of the

Survey Department recently arrived from reputedly malarious parts, have had evident abdominal tenderness, I am forced to the conclusion that this exists in about ninety per cent. of *all* fever cases, though I can venture to speak only of the cases I have seen.

If to this proportion we add the few cases which have had diarrhœa and tympanitis without tenderness, or which have been too stout to be properly examined, very few cases (say, three to five per cent.) of fever without abdominal symptoms remain. Such a large proportion *with* them is astonishing, and is in excess of numbers given in former reports (see, for instance, the Chaman Railway Report—March number); but it may be explained by the particular care given to the study of the tenderness in my cases, the smallest sore spot being taken into evidence.

This answer to the first question will, of itself, lead us far in the answer to the second; for where so many fever cases suffer from a local lesion, there must be more than an accidental or incidental connection between the fever and the lesion. Supposing that all these cases of fever suffered from some primary blood infection, malarial or other, what *can* possibly be the explanation of its inveterate incidence on the digestive tract? Is it not much more simple to conceive rather that the fever depends on the intestinal lesion?

The point can be decided, I think, pretty satisfactorily in most given cases of fever by two methods:—

1st.—By studying carefully the abdominal symptoms, especially the tenderness in connection with the variations of temperature.

2nd.—By studying carefully the effects of purgatives.

For, in the first case, if a fever declines gradually as the local lesion improves, it is not unlikely that the former is dependent on the latter: and, in the second, if a purgative suffices to cause permanent defervescence, it is not unlikely that the fever was in some way connected with the contents of the bowel.

The ninety-four consecutive cases from Bangalore and Assam were nearly all treated with nothing but castor-oil. Out of these, forty-nine lost their fever entirely shortly after the purgative, being all probably cases of the nature of the first four quoted in my paper of June. Sixteen lost their fever within forty-eight hours, either from the purgative not having acted on the first day, or from the local lesion having been irritated temporarily by it, as in my last case quoted in June. Of the remaining twenty-nine cases, most were detained in hospital for weakness, and for continued abdominal tenderness, several (from Assam) acquired dysentery and pneumonia, but only five cases out of the ninety-four failed to react to the purgative with any certainty.

Let it be noted that many of these patients were quite ignorant of having any abdominal

tenderness or other symptoms, until careful examination revealed them. They would ordinarily have been returned as febricala, simple continued fever, remittent and ague; but the result of the enquiry was to suggest very strongly that in the large majority of them the fever was due entirely to intestinal lesions, while in a very few only could it have been due to any specific blood infection, such as the name malaria indicates.

A further analysis of many cases, most interesting among which have been cases of reputed old-standing malaria from Burma, has not only led me to the same conclusion, but has given a better knowledge (so far as I can judge) of the actual relations between the fever and the lesions. These relations are best illustrated by examples.

POINT I.—*Fever, depending on retained septic discharge, can exist without appreciable abdominal tenderness.*

Case 1.—Sapper Yegamburum, age 24. Admitted into hospital on 11th May 1892, lately returned from Assam, where he often got fever which lasted for three or four days. Yesterday morning had no motion, but felt well. At 14-0, however, he passed a pultaceous one, which was followed by fever. Fever passed off in the night. Bowels open at 5-0 this morning and a rigor at 6-0.

Present state.—Tongue furred, skin dry. *No abdominal tenderness* discoverable. Temp. 103·0 at 7-52. At 9-0 bowels once natural. Temp. 102·1. A Seidlitz powder given. At 11-0, temp. 101·4; at 12-0, temp. 101·4; at 14-0, temp. 102·4; copious motions of offensive black faecal matter up to this observation. At 15-0, temp. 103·4; at 16-0, temp. 104·0; at 17-0, temp. 103·2; at 18-0, temp. 102·0; at 19-0, temp. 102·4; at 20-0, temp. 103·3; at 21-0, temp. 103·6; at 22-0, temp. 104·0. At this hour patient slept; fever abated during night. Next morning (12th May 1892) bowels not moved; tongue much cleaner; *no abdominal tenderness*. At 7-0, temp. 98·0; at 10-0, temp. 98·4; at 12-0, temp. 98·4; at 16-0, temp. 99·3. *No motions to-day.* Diet had been cunjee only, yesterday and to-day. On 13th May 1892, Ol. Ricini *ziii* was given. There was no more fever; patient discharged well on 14th May 1892. Tongue clean; *no abdominal tenderness.*

In this case note the second rise of temperature after action of purgative on 11th May 1892. This is a common symptom, and is probably caused by irritation of congested tracts of intestine. The second purgative on 13th May 1892 was given in consequence of the slight rise to 99·3 on the previous evening.

Case 2.—Rev. W. E. D. Seen first on 18th June 1892. Had had fever with slight diarrhoea for two days, during which he had eaten scarcely anything; patient was given to attacks of fever

with diarrhoea, and eat much meat usually. Seen at 19-0. Temp. 103·6. Tongue furred, thick-white; breath offensive. Feeling very chill and shivering. One purgative Cockle's pill given immediately. *No abdominal tenderness.*

During the night says he must have passed over twenty-four motions of offensive black faecal matter, which, as he had eaten nothing scarcely for 48 hours, must have been long retained in the intestines. Next day was much relieved; tongue cleaner; temp. 101·0. Evening, temp. 99·2; much better, but headache slight, and weakness. No more fever; diarrhoea again some days afterwards. In this case there was *no doubt* that the whole fever was caused by the accumulated septic alvine discharges, which, however, had probably caused little or no intestinal inflammation.

Cases like these are comparatively rare, because, generally, the septic intestinal contents have caused some inflammation, giving rise to abdominal tenderness.

POINT II.—*Abdominal tenderness may exist without fever, though generally causing malaise and other disorders.*

Case 3.—Ram Narrain, age 35, a servant. 7th May 1892.—Came to hospital complaining of severe "catching pains" in middle of back and upper part of abdomen, giddiness, dimness of sight, general aching pains and malaise, from which he has been suffering for one month.

Present state.—Tongue furred, yellow, but not dry. Bowels very constipated. Abdominal tenderness well marked, close above umbilicus, in epigastrium and left iliac, where the percussion note was dull. At 17-30 temp. 98·0. He says he has had no fever.

8th May 1892.—Still complains of the above symptoms. Purgative given, followed by three motions. Temp. normal all day.

9th May 1892.—Tongue still furred, and abdomen dull and tympanitic in various places. More purgation desirable. Ol. Ricini given, followed by two motions. In the evening "catching pains" and pains in limbs much better. Next day the tongue was nearly clean; felt nearly well. Chlorine and quinine antiseptic mixture was ordered. Abdominal tenderness much improved. Was discharged on 12th, though a little tenderness still remained; and was cautioned as to diet. Tenderness was due probably to slight catarrhal ulceration causing malaise, &c., when bowels were confined.

Cases of tenderness without fever are very common; but I have not space for more, especially as this part of the subject covers much ground. In fact it will be seen that fever is only an incident of abdominal tenderness. Diarrhoea and dysentery (of course), rheumatism and perhaps even pneumonia are other incidents of which I hope to give cases elsewhere.

POINT III.—*Both abdominal tenderness and fever may be removed by a single dose of purgative.*

I have already given four cases illustrative of this point in the June number. Here is another.

Case 4.—Bullock-driver Syed Cawder, age 30.

2nd June 1892.—States he has been getting fever for four days every evening regularly. Had one natural motion yesterday, but not this morning.

Present state.—Conjunctivæ red, skin dry, tongue furred. Denies having abdominal tenderness, but on palpation found dull sore spots below umbilicus, right lumbar, left iliac and epigastric regions. *Ol. Ricini statim.* Bowels at 9-30, 11-0 and 14-0. Also in the night at 22-0, 3-0, 5-0 and 6-0, roughly (*i.e.*, diarrhœa, showing considerable local trouble). Temp.—99·4 at 6-30, 101·8 at 8-0, 101·0 at 10-0, 99·8 at 14-0, 100·0 at 18-0, 101·5 at 20-0 (note second rise after purgative). Had some fever during the night.

3rd June 1892.—Temp. 99·0 at 6-30, 98·3 at 10-0, 98·8 at 17-0. Felt much better. Tenderness reduced to one tympanitic spot. Tongue much cleaner. No fever. Nearly well by evening.

4th June 1892.—No tenderness. Tongue clean. Quite well. Discharged on 6th. These cases are exceedingly common, being generally called febricula or one-day ague. The usual empirical treatment is a purgative, which acts simply by expelling the cause of the disease, the septic bowel contents.

POINT IV.—*If no purgative is given, the fever and tenderness remain as before.*

Case 5.—Sapper Nindramuttoo, age 19.

13th May 1892.—Came to hospital at 14-0 complaining of fever, which he says began yesterday at 6-0, continuing to the present time. Bowels not moved since commencement of fever.

Present state.—Tongue very furred. Abdominal tenderness well marked to right and above umbilicus. *Pulv. Jalap. Co., grs. 40 statim.* Did not act at all. Temp. 102·0 at 14-0, and 103·8 at 16-0.

14th May 1892.—Same state, fever all night, bowels once loose at 6-0 (16 hours after purgative), headache. Small dose of mag. sulph., which acted twice but insufficiently. Severe headache and hacking cough toward evening, with pain in tender abdominal spots. Temp. 104·0 at 7-0 and 103·0 at 16. Fever all day.

15th May 1892.—Bowels five times (diarrhœa) during the night, giving great relief to all symptoms. Tenderness less, tongue cleaner. Antiseptic mixture ordered. Temp. 97·0 at 7-0 and normal all day; three more pultaceous motions. No more fever, but abdominal tenderness not gone until 17th when patient was discharged.

This case illustrates well how all symptoms remain until purgation is effected, either naturally or artificially. The frequency of such cases depends on the treatment.

POINT V.—*A purgative will often remove the fever though the tenderness remains for some days.*

Case 6.—Driver Chinnasawmy, age 32.

18th April 1892.—Came to hospital complaining of fever for three days. No pain in stomach, but much in back and both knees. Bowels not moved yesterday or to-day.

Present state.—Tongue yellow, furred; abdominal tenderness acute, dull on percussion, chiefly round umbilicus. *Ol. Ricini* at 9-15; motions at 11-0, 11-20, 12-0 and 14-0. Temp. 100·4 at 9-15, 102·0 at 11-0, 102·8 at 14-5, 101·4 at 17-0, 103·4 at 20-0 (note second rise after purgative). Diet, *cunjee* only.

19th April 1892.—Slept fairly well, and perspired during night. Tongue still furred, tenderness a little better, abdomen somewhat tympanitic, but feels better. Bowels at 5-0, 11·30 and 14·0. Diet, rice and *cunjee*. Temp. 98·5 at 6-40, 98·0 at 11-30, 98·6 at 14-20, 99·0 at 17-0.

20th April 1892.—Felt much better, but a little more castor-oil given, as tongue was not quite clean and tenderness remained. There was no more fever, but tenderness did not disappear until 26th April 1892, that is eight days after admission, when patient was discharged.

In this case, as in Case III, the tenderness was probably due to ulceration, but here it was accompanied by fever and not by mere malaise.

Case 7.—J. W. R. A., age 19. Had been having fever off and on for one month and came to me on 7th May 1892, a week previous to which date his temperature had been carefully taken several times a day, showing him to have been suffering from a typical remittent. It was suggested that he might have enteric, but he was quite unaware of any abdominal lesion. He had been constipated for some days. When I saw him his tongue was thickly furred yellow, and there was a very tender spot (dull) to left of umbilicus, and another in epigastrium. Abdomen was not tympanitic: he was well nourished and had no diarrhœa. His temperature was 100·0 at 6-0, and had been running to 102·0, but diaphoretics had been given.

A Seidlitz powder was administered *statim*, to be followed by antiseptic medicine, and diet was strictly reduced; but the purgative did not act, and the case consequently ran the course of Case V, the temperature remaining high until he was thoroughly purged on the 9th, after which it sank permanently to normal and subnormal, with remission of all symptoms save tenderness in a spot to left of umbilicus. Worms, under sautonine, were passed on 12th, diet and antiseptic medicine being steadily continued, except that the former

was increased slightly. This increase was, however, premature, and on 18th the patient was worse again. On diet being again reduced and enemata used, he immediately recovered, though the abdominal tenderness did not entirely disappear until the 29th, when the case was closed. I regret that it is too long to be given here *in extenso*, for it was most accurately taken, and shows clearly how the fever depended not so much on the ulceration as on its septic condition. Observe that the tenderness lasted for three weeks after I saw the patient, and had been present probably for one month previously. It was almost certainly due to non-specific ulceration, caused possibly by round worms.

Case 8.—Sapper Kanagan, age 22. This is a similar case, and is much too long to report fully here. He had persistent tenderness above the umbilicus and in other places, which lasted, to my knowledge, for thirty-eight days. Loose motions were frequently passed, being further evidence of intestinal lesions, and his spleen was enlarged. He came to hospital on four occasions for fever, between 2nd May 1892 and 9th June 1892, and on each occasion the fever was reduced by antiseptic treatment recurring again owing to the patient's want of caution in diet. The patient persisted in eating too much, as was quite evident from the large amount of his stools.

These two last cases are typical of a large number of cases of fever. I have lately had some dozen or more in the Survey Department from Burma. The illness depends solely on longstanding non-specific ulceration of the intestines. The fever is entirely under the control of the medical man and the patient, and occurs only when the bowels are allowed to become engorged with food residues, though exposure and exercise undoubtedly aggravate the local lesions. Such cases are continually mistaken for inveterate malaria, with results which may be imagined. Most of the patients are astonished when the abdominal tenderness is first discovered to them, though, when they observe its continuance and the inevitable result of careless eating, their ideas concerning the cause of their illness become considerably reformed.

POINT VI.—*For some cases the fever may depend directly on intestinal inflammation, and not so much on a septic condition of the intestines.*

Case 5 in the June number is an illustration. Also consider

Case 9.—Sapper Moonisawmy, age 19. Admitted 26th May 1892. Tongue furred, tenderness below umbilicus, occasionally loose, yellow motions, fever beginning with rigor yesterday afternoon. Temp. 102.5 at 16-0.

27th May 1892.—Tongue very much furred. Well purged by castor-oil. Temp. up to 102.0 nearly all day.

28th May 1892.—Improved, tongue cleaner, tenderness continues in same spot, and abdomen rather tympanitic. Antiseptic mixture. Bowels thrice, pultaceous and yellow. Temp. up again to 101.0 all the afternoon.

29th May 1892.—Tenderness improved but tongue worse. Bowels twice, pultaceous and liquid. Pain below umbilicus. Temp. up to 100.0 this afternoon.

30th May 1892.—Much same state. Oil given again. Temp. up to 102.4.

31st May 1892.—Tenderness improved to-day. One liquid yellow motion at 16-0. Temp. up to 102.0.

1st June 1892.—Tenderness gone. Bowels not open to-day. Feels much better. Temp. up to 99.5 only.

2nd June 1892.—Bowels once, natural. Tongue quite clean. No tenderness. No more fever. Discharged on 8th June 1892.

In this case the state of the motions afforded an inaccurate check on inductions derived from the tenderness; and it was quite evident that the fever depended on the local inflammation. The purgative of 30th did more harm than good. Cases like this, however, are comparatively rare, and it is more than doubtful whether a strict diet would not expedite the cure. Here the diet was very unsatisfactorily controlled, as is evident by the large quantities of feces passed. In short, it is more than probable that antiseptic precautions will have as much effect in all sorts of intestinal lesions as they undoubtedly have in external wounds.

These cases, then, I think, will be found to be typical of nearly all the varieties of Indian fevers due to intestinal lesions and disorders—a class consisting probably of nine-tenths of all fever cases and including many cases erroneously attributed to specific enteric or malaria. The examples will have suggested that much of the fever is dependent more on intestinal sepsis than on the lesions themselves; and, in fact, the fever appears to me to bear quite an episodic relation to the abdominal tenderness, which is the principal symptom of the real disease, the local lesion.

With respect to those rare cases (5 per cent. of my cases) which have no apparent abdominal symptoms, many appear to me to be affected by purgatives in a marked manner. To those alone which are not so affected can we attribute a true malarial or primary blood-infection. Such cases are probably the true intermittents; but I venture to submit that all fevers of an intermittent form are not necessarily malarial. In them, as in other forms, the question must first be answered, as to whether the fever does or does not depend on intestinal lesions. An intermittent form of fever may easily occur as the result of periodical exacerbations of a non-specific ulcer. Tertian and quartan varieties should be most

closely studied as they are more distinct from the common bowel-fevers I have described. Up to date I have only been able to study two tertian cases, both of which *might* have been due to intestinal causes. The crux of the whole study lies in the interpretation put upon the abdominal tenderness. I see that in the Chaman Railway Report, already referred to, the tenderness has been often considered to be merely muscular, that is, I suppose, in the external abdominal muscles. I have very rarely found this to be so in my cases. The differentiation can easily be effected by the use of light and deep pressure alternately. The following method, however, is still more decisive:—Get the patient to set the abdominal muscles by straining; if now the tenderness, before present, is no longer felt on pressure on the affected spots, it could have been due only to lesion of the intestines which are now protected from the pressure by the rigid muscles. The passage of loose, pultaceous or slimy motions affords an excellent check on the conclusions based on a study of the tenderness; and with common care there can be but small doubt in our inductions.

To those who care about studying Indian fevers on these lines, one word as to diet is most essential. It should be as little in *quantity* as possible. Quantity is far more important than quality. Until purgation is effected, one small cup of chicken-broth with a little softly boiled rice, a little bread and butter, or a little milk cunjee is quite sufficient for the 24 hours; nor should this amount be increased until the symptoms are sufficiently improved. If the patient be at all overfed, or too richly fed with eggs, &c., the lesions will remain open and the fever continue for days or weeks, and there will be frequent diarrhœa. Indeed, the quantity of dejecta is an accurate measure of the quantity of ingesta. These remarks refer to *acute* cases chiefly. In my experience, purgatives, enemata, antiseptics, artificial digestants are of little avail so long as the food is in excess of the requirements of the system, such excess being simply passed on in the intestines, broken up but unused.

In fact it is for the sake of the treatment that the discrimination between bowel-fevers and primary blood-infections *during life* is so important. The matter is also interesting etiologically. See, for instance, the discussion on Indian fevers and on the abortive-enteric and malarial theories running through numbers of the *Indian Medical Gazette* for 1887 and 1888.

The two following, almost axiomatic, principles will guide us:—

Principle i.—In any case of fever with symptoms denoting intestinal lesions, it is more simply rational to ascribe the fever to those lesions, until the reverse is proved.

Principle ii.—If the course of any fever be materially changed by a purgative, or by the

intestinal antiseptic treatment, it is probable that the fever depends in some way on the digestive tract.

NOTES ON SOME SURGICAL CASES.

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THE cases which are the subject of the following notes, have been operated upon in stations widely scattered over the whole province of Bengal, Mymensingh, Champarun, Bakerganj, Darjeeling, Midnapur, Purnia, and Saran.

The first series comprises several cases of operation for large malignant tumours, epithelioma of the lower jaw (two); of the tongue and floor of the mouth; of the eye-ball; of the penis (two); and one of melanotic sarcoma of the orbit. Of the seven cases, two died within 24 hours, and the other five recovered for the time being, though one at least died some nine months later, probably of recurrence of the growth. In the *Indian Medical Gazette* for March 1887 I published notes of some similar operations for malignant tumours, *viz.*, two cases of excision of the upper jaw for sarcoma, and one of excision of the rectum for epithelioma. One of the two former cases died, also within 24 hours; the other two recovered. In my small experience of operations for large malignant tumours, all cases which have not died within the first 24 hours, chiefly from shock, have recovered for the time being.

The next two cases are those of tumours, not important in themselves, but somewhat singular in character. Then follow a case of removal of the whole clavicle, and one of repair of a perineal fistula.

The next are five cases of stone, a selection from a number of cases of lithotomy (as well as a few of litholapaxy); which I have performed. The first two are given simply as a contrast, both in the manner in which the operation was performed, and in its result. Each of the other three cases is distinguished by some peculiarity. In two at least of the five cases litholapaxy would have been a better operation, but in neither case were the crushing instruments available. Few charitable dispensaries in the province possess these instruments. Out of seven districts in which I have served, Chapra dispensary is the only hospital in which I have seen a set of litholapaxy instruments, and here they have only been procured a few months ago. Indeed, there are few dispensaries which can afford to pay the very high price which a set of these instruments costs. All or nearly all hospitals could profitably expend much more money than can possibly be found for their maintenance. And while this is the case, and while stone is not a common disease in most parts of the province, such money as can be budgeted for the support