

THE TREATMENT OF ENTERIC FEVER BY THE "EMPTY BOWEL" METHOD.

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THE treatment of enteric fever by the "empty bowel" method is based on the highest scientific principles, and has given most excellent results in this station (Wellington). Our cases in Wellington have been of necessity limited, but we all feel sure that our line of treatment is sound, and deserves a fair trial in other stations where the cases are more numerous, and when a more definite opinion can be formed as to its undoubted merits.

We do not claim our treatment to be "new," but we have, by observation and by gradually combining and eliminating certain points in other methods of treatment, finally adopted a general routine method of procedure in *all* enteric cases, and it is this we shall attempt to describe. It will be seen that we only give the general broad lines of treatment in these cases, as any one who has seen much enteric fever knows that no other disease shows so many different features in individual cases, and that each case, therefore, must more or less be treated on its individual merits.

The following is our method, and we propose to give only the special points in: Dieting; Nursing; Isolation and Disinfection; Temperature Charts; The Stools; Medicinal Treatment; and a few points on the most common complications.

Dieting.—This we all know is a most important point in the treatment of this disease. Here we place the patient on whey, made with the juice of fresh limes. We prefer to make our whey in this manner to using "rennet," for the following reasons: It is much more palatable; the lime juice seems to have a beneficial effect on the course of the disease, as shown below; and cheapness.

This whey requires very careful preparation, and must *always* be made by the nursing sister in charge of the patient, to avoid any possible error, and it is a sound thing for the medical officer himself to see it daily. Limes vary in size; the average lime gives about a drachm and a half to two drachms of juice; it requires four drachms to make a pint of whey; four pints of milk give three and a half full pints of whey, allowing for wastage, &c.; therefore, roughly, eight average limes will make three pints of whey, which we find is ample for a patient in the early stages of the disease.

The way to make it is, the lime juice is added to the warmed milk, and the whole then just brought to the boiling point, and allowed to stand until a firm clot is obtained. The curds are then broken up and removed carefully by straining through muslin. One straining is not sufficient, it must be strained two or even three times. In some of our early cases curds were found in the stools, presumably because the whey had not been strained sufficiently, and maybe some further clotting had occurred in the stomach. For this reason we have pointed out the great importance of the nurse herself preparing the whey. When made it can easily be kept fresh in a covered vessel in the ice-box.

Lime Juice.—The patient is given lime drinks made from fresh limes *ad libitum*, for the following reason: A patient suffering from enteric becomes undoubtedly scorbutic, and therefore the alkalinity of the blood must be, of necessity, diminished. By giving lime juice we claim to prevent, or at least diminish, the symptoms of this lowered alkalinity, such as: (a) Hæmorrhagic tendencies, whether intestinal or otherwise; (b) phlebitis; (c) thrombosis; (d) spongy gums; (e) and in addition, it is possible that the lime juice may have some direct action in preventing salivation from calomel, which we use in our treatment, as we shall show later; (f) perhaps also, continuous drinks of lime juice may have an antagonistic action on the *Bacillus typhosus* itself, as we know the bacillus grows best in a nearly neutral medium.

Chocolate.—We give our patients plain chocolate to suck. It is extremely grateful, and prevents that intense craving for food, which is invariably present. It has also considerable nourishing properties. This was suggested to us by Lieutenant T. J. Wright, R.A.M.C., and is prescribed by Dr. Little, of Dublin.

Pure Vegetable Soup.—This soup, carefully prepared and strained through muslin, is given immediately the temperature reaches normal. It is greedily taken by the patient, and helps to shorten the protracted convalescence so often present.

Ice.—Ice to the head and ice to suck *ad libitum* is ordered; it is soothing to the patient and has also an antipyretic action.

Milk.—We have found that milk in alternate feeds with whey is very acceptable to the patient, about the third or fourth day after the temperature reaches normal, but should be given with the greatest caution. Whey fortified with cream is also a valuable adjunct in the early convalescent stage.

Tea or Coffee.—A cup of weak fresh tea or coffee is absolutely innocuous, and is greedily taken by the patient.

Soda Water.—Under no circumstances should soda water be given. It only causes distension and flatulence.

Beef tea and chicken broth are of no value in the stage of pyrexia, and undoubtedly, at times, do harm.

By adopting this line of dieting we avoid that awful sameness of food which is so distressing to the patient in a prolonged illness of this kind, and yet give nothing that a debilitated digestive system cannot deal with.

Nursing. Nurses.—No disease requires more careful nursing than enteric fever, and therefore it is of vital importance that an experienced nurse is in constant attendance on the patient. *Mere supervision* by the nurse is insufficient. The nurse should *herself* prepare and give the feeds, wash the patient, and change his linen, and take the temperature, pulse, &c.

Cleanliness of the Patient.—The patient must be kept scrupulously clean, and he should be washed all over with soap and hot water at least twice a day. How often do we see a patient, who has been restless and tossing about in bed, drop into a quiet and refreshing sleep after having been washed down in this manner. In addition, his anus and nates should be carefully washed with a soft cloth immediately after each motion, and all soiled linen at once changed.

The Care of the Mouth, Teeth and Gums.—The care of the teeth and gums is also a very important point, and requires constant attention. A soft tooth-brush and Odol, if procurable, are excellent.

Shaving.—If accustomed to shave, let the patient be shaved daily. It adds greatly to his comfort and general sense of cleanliness.

Clothing.—A nightshirt which opens down the side is also a great comfort to the patient, and prevents his being moved more than necessary.

Bed Sores. Their Prevention.—The patient's buttocks should be, from the first, rubbed daily with methylated spirits to harden the skin; but there are other causes of bed sores, viz., want of cleanliness; want of care in seeing that the patient's nightshirt is not evenly drawn down, and is not in folds under his buttocks; want of care in making his bed and careful attention that the sheet is not crumpled underneath him.

Isolation and Disinfection.—All suspected cases should be immediately isolated and kept under observation, as it is impossible to diagnose the disease with any certainty in its very early stage. Afterwards, complete isolation is, of course, essential. All soiled clothing and bedding must be immediately disinfected. All excretions from the body, whether from intestines or bladder, and even

the sputa, should be immediately removed and burnt. It is not impossible to imagine that the sputum of an enteric patient is a source of danger, for how can we otherwise account for bronchitis, which is not a complication, to our mind, but is an almost constant symptom of the disease.

Temperature Charts.—A four-hourly chart is essential. The temperature fluctuates enormously in the twenty-four hours, and a case can easily be lost by simple hyperpyrexia if this precaution is not adopted. The pulse also must be carefully taken and its characters noted. The main danger signals in enteric are a rising temperature with an increase in pulse-rate—a rising temperature is bad, but a rising temperature and, *pari passu*, an increase in the pulse-rate are infallible danger signals; again, also by noting the characters of the pulse can we estimate, with any degree of certainty, whether stimulants are indicated or contraindicated.

The Stools.—Each stool must be kept and seen daily by the medical officer. It is the great indication of (a) whether the dieting is satisfactory; (b) the condition of the bowel.

Another aid to these two important points is the condition of the abdomen, whether flatulent and tympanitic or flaccid and soft; this, we think, cannot be over-estimated as a guide to treatment. Here we insist on the nursing orderly being himself responsible that each stool passed by a patient is placed in a covered receptacle labelled with the name of each individual patient.

Medicinal Treatment.—On admission the patient is given the following: calomel, grs. v.; soda bicarbonatis, grs. x. This is followed by a dose of castor oil with a view to (a) a free and copious evacuation of the bowel, (b) an attempt to prevent, or at least minimise, as far as possible, the absorption of toxic substances; in fact, an “abortive treatment.” In all cases of intestinal poisoning, whether ptomaine, dysenteric or choleraic, we all prescribe purgatives in the early stages with these objects in view; why, then, should we not adopt this treatment in the early stage of enteric fever, which is an intoxication process? Subsequently, we prescribe daily, calomel, gr. i.; bismuthi salicylatis, grs. x., *ter in die*, and castor oil every morning in drachm doses. By this line of treatment we claim, if not to abolish, to at least decrease enormously all the “bowel complications,” which are, after all, the main sources of danger in this disease. We continue this administration of calomel and castor oil daily, throughout the whole attack, and when we see three, four, or even five loose, watery, dark, generally almost black stools, free from curds, we

feel confident that both our dieting and medicinal treatment are satisfactory.

It will surprise any one, even the sceptic, who cares to give the whole treatment a fair trial, to note (*a*) the soft, moist, clean tongue, (*b*) the flaccid and soft abdomen, free from distension and tympanites, (*c*) the almost entire absence of bowel complications, and (*d*) the absence of "enteric smell"; instead of (*a*) the typical, dry, foul "enteric tongue," and its discomforts, (*b*) the tympanitic and distended abdomen, (*c*) the resulting constant fear of hæmorrhage, and (*d*) perforation, which we all must have met when treating enteric fever on other lines.

When we think that, in India certainly, constipation, or at least a constipated state of the bowel is the rule, and at home also, we think, a constipated state of the bowel with intermittent diarrhœa is the common feature of the disease, it will readily be seen that if we take the two main and most feared bowel complications, namely, hæmorrhage and perforation, and consider for a moment how constipation, or a constipated state of the bowels, or undigested food, must of necessity increase the danger of these complications by a purely mechanical effect, namely, the friction of a foreign body "on the necrosed intestinal wall," that *any treatment* which attempts to insure an "empty bowel" must be the *summum bonum* of treatment, and must place the patient in a far more secure and favourable position than he could otherwise be in. How often does one see the whole efforts of treatment directed to control this diarrhœa, which is not really constant but intermittent diarrhœa followed by a constipated state of the bowel, forgetting that the patient's greatest chance of avoiding the two main intestinal complications is by having an empty bowel, and thus allowing the normal peristaltic movement a "free hand," as it were, to prevent, by contraction, these two complications occurring, which, of necessity, are far more liable to occur with a distended bowel. Again, by giving calomel we increase the hepatic secretions, and thus insure a constant flow, if not of an antiseptic fluid, at least of an aseptic fluid, through the diseased bowel, and thus we have (1) asepsis, and (2) "a rested bowel," and we thus place the necrosed intestinal wall in the best possible conditions for recovery.

Calomel may be given without fear throughout the whole attack. We have never found any tendency to salivation or diarrhœa. The former only occurs when the calomel is allowed to accumulate in the system, and therefore, by prescribing castor oil, we eliminate this danger. Again, when adopting this treatment we must draw

attention to the extreme importance of insisting on the care of the mouth, gums and teeth.

Scheube in his book "On the Diseases of Warm Climates," page 474, 1903 edition, advocates calomel in the treatment of dysentery, and claims a "specific action" for the drug, even in preference to ipecacuanha. May we dare to suggest that it is possible that the primary action of calomel is on the liver, and thus, by increasing hepatic secretion, causes the continual flow, if not of an antiseptic, of at least an "aseptic fluid" through the intestine. This must also, surely, be the action of sulphate of magnesia in the treatment of dysentery, &c.

Stimulants.—Avoid stimulants in the early stages unless, of course, specially indicated. The main indications for stimulants are the conditions of the pulse, the mental condition, restlessness, and low muttering delirium.

Special Points on Complications. Relapse.—The most common perhaps, due generally to errors in (a) dieting or (b) nursing. Therefore more particular care should be paid to these points.

Hæmorrhage.—The treatment here undoubtedly is starvation, ice to the abdomen, ice to suck, absolute rest both mental and physical, nursing, and avoid stimulants. Of drugs, we have found adrenalin chloride in small repeated doses very useful.

Hyperpyrexia.—Antipyretic drugs are contraindicated, except perhaps quinine. In India it must be remembered that it often happens that a patient may have, concurrently with an attack of enteric fever, malarial fever. This is shown at once by the four-hourly temperature chart, and is confirmed, of course, by a blood examination; and here quinine may be given, preferably the acid hydrobromate of quinine or the acid hydrochlorate, as being the most easily digested. Otherwise it is best to rely on other means for reducing the temperature, beginning first with ice to the head and ice to suck, then sponging with tepid water, sponging with cold water, sponging with ice-cold water, the ice pack, and finally the ice bath. But here we must point out the danger of this mode of treatment in this country, and it must be used with the greatest precaution on account of shock. In the later stages of the disease one sometimes gets hyperpyrexia, with the patient in a condition unfit to bear the last-mentioned methods of reducing his temperature, and in these cases we have found that sponging with very hot water will often bring the temperature under control, and this line of treatment acts also as a direct stimulant to the patient

Sleeplessness.—We have found sulphonal in small repeated doses acts best, and in prescribing this drug we must remember that it takes some time to act, and therefore should be given about three to four hours before its action is required. Paraldehyde is an excellent hypnotic, and has also direct stimulant properties.

Perforation.—I have mentioned this last, as the only course of treatment is obvious.

In conclusion, in writing these notes on the treatment of enteric fever as practised in Wellington, our only object is mainly to give a general line of treatment for junior officers coming out to this country who, perhaps, have not had the opportunity of seeing many cases at home, and to whom therefore, perhaps, these notes will be of some assistance. But if they propose to follow our line of treatment we must point out that the whole details of our treatment are essential, or otherwise they must meet with many failures.
