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DISCUSSION ON TYPHOID FEVER.

THE MEDICAL TREATMENT OF TYPHOID FEVER.*

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As yet we are not able to speak of a specific treatment of typhoid. We are unable to destroy or counteract the typhoid bacilli, or prevent or even limit the effect of their toxins in the human subject. The results obtained by immunizing and curative inoculations in hydrophobia, tetanus, and diphtheria, have naturally led to a search for similar antitoxic principles in typhoid. Hammerschlag and v. Jaksch have reported a number of cases treated by serum taken from convalescent typhoid patients. Beumer, Peiper, Klemperer, and Levy have obtained a serum by treating dogs with gradually increasing doses of bouillon cultures of typhoid bacilli, which was found sufficient to immunize susceptible animals, such as mice and guinea-pigs. With these measures they were also able to effect a cure some time after infection had been induced. They tried the serum in a few cases of typhoid in the human subject, but with no definite result, except perhaps, to show that it could be used without inducing any unpleasant or dangerous symptoms. Other interesting work of this character has been carried out with the serum of convalescents and immunized animals, but the result, although apparently effective in the disease as it is met with in susceptible animals, still has been disappointing when applied to counteract the disease in the human subject.

In this connection I will refer to a form of treatment which is very old, but has lately been revived by a few physicians in the United States

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the great endemic disease of the present epoch of our civilization, at least seven more lives than by any other plan." (J. C. Wilson, American Text-Book of Applied Therapeutics.) Since the opening of the Royal Victoria Hospital on the 2nd of January, 1894, this method has been the routine treatment of typhoid fever. In the following table the number of cases admitted each year, with the number of deaths and the percentage mortality are recorded.

TABLE I.

CASES OF TYPHOID FEVER ADMITTED INTO THE ROYAL VICTORIA HOSPITAL DURING THE FIVE YEARS ENDING DEC. 31ST, 1898.

Year.	Number of cases.	Number of deaths.	Percentage Mortality.
1894	84	3	3.5
1895	84	4	4.7
1896	72	0	0.0
1897	75	7	9.3
1898	93	4	4.3
Totals	408	18	4.4

The bath treatment was carried out in every case where the temperature rose above 102.2º F., except where there was some especial complication, as haemorrhage, or symptoms pointing to perforation.

The following table shows the cause of death in the eighteen fatal cases, with the percentage mortality from each cause :—

TABLE II.

CAUSES OF DEATH IN EIGHTEEN CASES.

	1894.	1895.	1896.	1897.	1898.	Percentage Mortality.
Perforation	..	3	..	2	1	1.47
Intoxication	1	..	..	2	2	1.22
Haemorrhage	1	..	..	1	1	.73
Septico-Pyaemia	..	1	..	..	..	.24
Suppurative Cholecytitis	..	..	..	1	..	.24
Broncho-Pneumonia	1	..	..	..	..	.24
Abdominal Distension	..	..	..	1	..	.24

In our 408 cases we have nine deaths from perforation and haemorrhage, being exactly one-half.

If a large series of cases of typhoid fever treated by measures other than by bath treatment are taken, it is found that perforation and haemorrhage taken together cause only about one-fourth of the total deaths, while under the bath treatment the mortality from these two causes amounts to one-half of the total mortality.

The following table, prepared by Dr. F. E. Hare, late resident Medical Officer of the Brisbane Hospital, shows the modification which has been

imprinted upon the constitution of the typhoid mortality list by the introduction of the bath treatment :—

Causes of death in typhoid.	According to Murchison.	Brisbane Hospital before bath treatment.	Brisbane Hospital after introduction of bath treatment
Perforation....	3.0	3.0	2.9
Haemorrhage	1.4	1.88	1.2
Other causes..	12.8	9.73	3.4
Total mortality, per cent.	17.2	14.5	7.5

There is no doubt great difficulty to be encountered in the endeavor to carry out the bath treatment in private practice, but that it is possible to do so, even in remote country districts, the letter of Dr. Gordon, of Alywin, in the November number of the Montreal Medical Journal, will, I think, prove convincingly. A good deal has been written about the harshness of the treatment, and, no doubt, many patients complain of it at first, but as a rule, they soon find out that they are much more comfortable after it, and are usually glad to bear with patience the immediate disagreeable effects. It is, of course, impossible to carry out this treatment in private without the assistance of one or two skilled nurses. Portable baths can now be obtained, and, provided the practitioner can obtain the assistance of one skilled nurse, there is no valid excuse for its non-employment.

It is said by some observers that relapses are more frequent after the bath, than after other methods of treating the disease. There is however, no proof of this. It is strange what confusion exists as to the real meaning of relapse in typhoid ; and this is the reason for the great discrepancy of opinion as to their frequency, ranging between two and four per cent.

Many include all after-febrile attacks, no matter what their duration may be, under the head of relapses, while others call relapses those exacerbations of pyrexia which occur during the course of the disease. Taking a large series of cases, relapses may, in a rough way, be set down as occurring in from about 3 to 12 per cent. of all. In 325 of the 408 Royal Victoria Hospital cases, where particular pains were taken to closely investigate this point, it was found that relapses occurred in about eight per cent. of the cases. This proportion is exactly the same as in Osler's and Liebermeister's series, and is not any larger than that given by observers in different countries where other plans of treating the disease have been followed.

The reduction of temperature affected by the cold bath although an important factor, is not the chief one in its beneficial effects. The most obvious effects are seen in the nervous, respiratory, and vascular systems.

The marked stimulating effect of the cold on the peripheral nervous system, and reflexly on the nerve centres, is undoubtedly a powerful means in preventing the supervention of a low typhoidal state, which is so common a feature of severe cases treated on the expectant plan. Robin has shown that the processes of oxidation are decidedly reduced during the course of this disease. He has further pointed out that the cold bath increases oxidation, there being a distinct increase in the exchange of gases and in the whole process. He considers that the beneficial effects of cold bathing are due to this increase of oxidation, whereby the toxic products of the tissue destruction are reduced to less harmless excretory bodies. Whether the leucocytosis observed after bathing has any influence, has not yet been determined.

THE TREATMENT OF INTESTINAL HAEMORRHAGE.

Intestinal haemorrhage is, next to perforation, the most common alarming symptom in typhoid fever. In our eighteen fatal cases it was the cause of death in three instances (1.6 per cent.) We had in all 13 cases of haemorrhage in the 408 cases (3.18 per cent.) It is not infrequent to meet with concealed haemorrhage. This occurred in a good many cases. A sudden fall in temperature should always be looked upon as suspicious of the occurrence of a haemorrhage, even if no blood appears externally, if there is no other likely cause for the sudden lowering of the temperature, the condition should be treated as one of haemorrhage. Haemorrhage in typhoid fever is frequent enough to constitute it a symptom, rather than a complication. No doubt one frequently sees cases where a slight haemorrhage appears to be beneficial, convalescence setting in apparently soon after its appearance, still it is always wise to take a serious view of even a trifling haemorrhage and to place the patient at once under such measures as are suitable.

In a few cases, haemorrhage from the bowels appears to be a simple oozing from the blood vessels. In cases of profound toxic poisoning, the blood breaks down and finds its way out of the vessels without any special lesion of continuity of the vessel walls. Even severe losses of blood may not be attended by fall of temperature, as much as 80 ounces in three days having been lost without affecting the temperature. In dealing with haemorrhage it is important to lessen the amount of nourishment given by the stomach, or wholly stop feeding except by the rectum. The foot of the bed should be elevated and a Leiter's metallic coil applied to the abdomen. There is no remedy to be compared with opium. It should be given in doses sufficient to cause either slight drowsiness or contraction of the pupils. It is often a difficult point to decide how far it is advisable to push opium in these cases. The reaction following the effect of large doses, given for some days,

may be very considerable. In one case it looked as if such a deleterious after effect of opium were manifest. A man, aged 31, was admitted in October, 1897, on the ninth day of the disease, in a very apathetic state. Between the 27th and 28th of October, he had repeated haemorrhages, the loss it was computed, being upwards of 83 ounces, but after the 28th there was no further bleeding. On the 28th the abdomen was distended, and the distension continued to slowly but gradually increase, day by day, up to November 4th, when he succumbed, death apparently being due to the very great distension. After death, numerous ulcers were discovered in the lower ileum, caecum, and ascending colon, but in no instance had perforation occurred. The source of the previous bleeding could not be traced.

The practice of giving astringent drugs, like iron, tannic acid, turpentine, etc., is, fortunately for the patient, becoming less and less frequent. Whether ergotine, hypodermically, has any influence in checking intestinal bleeding, I am unable to say.

THE TREATMENT OF PERFORATION.

When perforation occurs, the sooner the case is transferred to the surgeon the better. It is no doubt possible for spontaneous recovery to take place, but it is too rare an event as compared with the result following early operation, to be for a moment considered. The result of operation, considering the gravity of the condition for which it is performed, must be looked upon as most gratifying. Keen has collected 83 cases with 18 recoveries, a result which justifies interference in every case where the condition is recognized. Here, however, we meet with great practical difficulties. The so-called typical symptoms of perforation, were, in most of our cases, conspicuous by their absence. Perforation may occur in persons extremely ill, without any pain, tenderness, distension, rigidity, or vomiting, and it may be found at the post mortem without having been suspected during life. Again, the symptoms may be developed very slowly, where a patient is stuporose from the intoxication of the disease, deep-seated tenderness and a gradually increasing abdominal distension may be the only signs. In several cases I have noticed symptoms of the same character without any perforation, recovery having taken place afterwards.

Peritonitis may be set up in typhoid from other causes than from perforation, and I believe this to be a more common event than is generally believed. I believe I have met with several instances of a more or less generalized peritonitis where recovery took place.

THE DIET.

There is an almost universal agreement as to the best way of feeding typhoid patients, but now and then one reads in medical journals about

pleas for a more liberal feeding than is usually the custom, some going so far as to advocate the administration of solid food, not alone in early convalescence, but even during the active course of the disease. Barr, of Liverpool, and Fred Shattuck, of Boston, have recently urged very cogently for a more liberal feeding of typhoid patients. Dr. Shattuck, for upwards of five years, has been allowing his typhoid patients a more liberal diet, and with, as he says, satisfactory results. The tendency to relapses, to perforation, and to haemorrhage, he finds not increased. He does not advocate an indiscriminate diet, but feeds his patient with reference to his digestive power, rather than solely or mainly with reference to his fever. In addition to the ordinary diet he often allows either soft-boiled or raw eggs, finely minced or lean meat, scraped beef, the soft part of raw oysters, soft crackers with milk or broth, soft puddings without raisins, soft toast without crust, wine jelly, apple sauce, etc. Cases are not infrequent where fever persists for some days after convalescence has been established, the temperature keeping up from weakness and impoverished blood, rather than from the persistence of local lesions. In such cases, appropriately called "starvation fever," a more liberal diet is soon followed by the establishment of health.