

the belief in the necessity of such a diet in all cases is nearly universal.

Ill-defined fears of the possible influence of a more liberal diet in causing hemorrhage and perforation haunt the mind of the physician and impress his practice. The knowledge that one quarter to one third of the deaths from all causes in typhoid fever are due to perforation may be accepted as the *explanation*, though not as a *justification* of such fears. A justification needs the demonstration that intestinal accidents are more frequent under a liberal than under a more restricted diet.

With the view of obtaining evidence on this point, I have collected and analyzed a large number of typhoid statistics, drawn chiefly from hospital services. It has seemed proper that the records for such a study should extend over a series of successive years, as averages must be accepted in a disease as variable as typhoid fever, in its severity in different years and in different localities. For this reason the published cases of Manges,¹⁴ Claytor,¹⁵ and some others, have not been included in my analysis, although they have been exceptionally favorable in support of a liberal diet. The statistics have been arranged in a tabular form and are of interest in many respects.

The total statistics for the liberal diet are taken only from the Massachusetts General Hospital, the Presbyterian Hospital of New York, the Monsall Fever Hospital and the Kief Military Hospital records and represent 733 cases.

The total statistics for the fluid diet are taken from the reports of the Johns Hopkins Hospital, the Presbyterian Hospital of New York, the Massachusetts General Hospital, the New York Hospital, and the Presbyterian Hospital of Chicago, and represent 4,654 cases. The records of Ann Arbor Hospital have not been included in the final computation for the reason that Dr. Dock writes to me that his tables should not be compared, as the fluid diet series is so much smaller and contains also more essentially unfavorable cases. They show, however, that a liberal diet has been used in 45 cases with excellent results.¹⁶

In my own service at the Presbyterian Hospital, only the cases which were under my personal care throughout their illness have been given; they number 74. All received the mixed soft diet except when all feeding was discontinued temporarily on account of hemorrhage of unusual tympanites; in the latter case sometimes the quantity alone, but not the quality, of the food was changed. The cases were assigned to my service in rotation with those assigned to the other services. While the full number of 733 cases has been the basis for computation of the percentages of hemorrhage and perforation under the liberal feeding, only 325 have been available for the estimation of relapses, and 633 for the

mortality. The full number of 4,654 cases has been available for all percentages under the fluid diet. The summary is as follows:

LIBERAL DIET.							
Cases.	Relapses	%	Hemor- rhage	%	Perfora- tion	%	Mortality
733	48	11.38 Basis of 325 cases	35	4.77 Basis of 733 cases	10	1.36 Basis of 733 cases	60
FLUID DIET.							
4,654	507	10.89	411	8.83	111	2.40	491
							10.55

It would thus seem that so far as the statistics which I have analyzed may furnish evidence; intestinal accidents, hemorrhage, and perforation are rather less frequent under a mixed, soft and solid diet, than under the restricted fluid diet, consisting mainly of milk. The statistics available for an estimation of the relative frequency of relapses, intercurrent and ordinary, under restricted and more liberal diets, are not so large as those analyzed to determine the incidence of intestinal accidents under the different dietary managements. So far as they go, they harmonize with the view generally entertained at the present day, that diet probably has little influence in their causation. The influence of diet in causing simple *recrudescences* of fever I believe to be a real one, but due rather to *abrupt* changes in diet than to its quality.

As the result of the study which has been described, a plea for a different dietetic management of typhoid fever than that which almost universally prevails seems justified. By a different management is by no means meant indiscriminate feeding. Rather, a management adapted to the individual case and based upon the recognition, (1) that while the digestive function in many cases of the disease is unquestionably seriously impaired, *frequently* the impairment is not a material one; (2) that a clean tongue, a true appetite, hunger, should be accepted as guides for the cautious employment of a more generous diet; (3) that the individual, rather than the disease, is to be considered and treated.

By such a management I am convinced that much suffering may be avoided, prolonged disability materially modified, the danger of secondary infections more efficiently met, and a more rapid convalescence effected. Further clinical experience must be accumulated to express an opinion upon its effect upon the mortality of the disease.

THE HEART IN THE PUERPERIUM.*

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It is the experience of the general practitioner that all acute diseases intervening in the puerperium tend to assume a serious character. We dread pneumonia or any similar disease in this condition. It is known that the heart is somewhat enlarged in pregnancy, and the susceptibility of the heart to any acute infection suggests

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¹⁴ Manges: The Diet in Typhoid Fever, New York Medical Record, Jan. 6, 1900, pp. 1-6.

¹⁵ Claytor: New York Medical Record, March 17, 1906.

¹⁶ The statistics of the Lakeside Hospital, Cleveland, are excluded for a similar reason, although they also show that a liberal diet was employed with excellent results in 115 cases.

that the enlargement is due rather to dilatation than hypertrophy.

I suppose that an irregular and intermittent heart action just after delivery cannot be rare, as in my very limited experience I have seen such a case, a lady who never had any sign of heart trouble either before or since. The labor was not severe, but was preceded by a hemorrhage due to a partial separation of the placenta before labor pains came on. I have recently seen an acute infection in the puerperium that I wish to quote, as it bears especially upon the point in discussion:

A woman had a normal labor, very easy, followed by a normal convalescence. When the baby was three weeks old severe headache with fever came on. I saw her in consultation on the sixth day. Temperature, 103.6; pulse, 140; severe headache; no symptoms of abdominal trouble, and the doctor reported a normal vaginal condition. The severity of the headache suggested meningitis, but the rapid pulse and the absence of paresis and Kernig's phenomenon made this diagnosis unlikely. As the pulse of typhoid is relatively slow and no other symptoms suggested this diagnosis, this disease was considered unlikely. The pulmonary examination was negative. The rapid action of the heart and the feeble sounds suggested to me as possible an acute infection of the heart, either valvular or muscular.

She gradually improved, and a blood examination later showed a positive Widal reaction. I see in the hospital a large number of cases of typhoid, and I think this is in my experience a unique case from the extreme rapidity and poor action of the heart in the early stages of typhoid fever.

In July, 1902, I saw in consultation with Dr. J. B. Swift a remarkable case of acute dilatation of the heart in the puerperium, which ended fatally. By the courtesy of Dr. Swift I read his notes of the case and add thereto my own observations.

On Jan. 24, 1902, Mrs. M. called on me to engage my services during her confinement. She was referred to me by the late Dr. E. N. Whittier. At the time of this visit she was about three months pregnant, for the first time. She was twenty-five years old, had been married six months, and said she had always been well.

On March 23 she came to see me about something not connected with her pregnancy, but during the conversation happened to mention that at times she was conscious of her heart beating strongly. On inquiring into this more carefully, she told me that as a girl she had been accustomed to rather violent exercise, that she had ridden the bicycle a great deal, and was in the habit of taking long rides. At times, after dancing, the heart would beat so hard that on going to bed she would be conscious of the bed shaking from the beats.

Her heart had been examined several times by different doctors, and they had all told her that she had no organic disease. She did not know what they meant by that, but supposed they meant her heart was all right. I examined her, but could find nothing wrong. I asked Dr. Whittier about her, and he told me he had only known her since her marriage, that he had never examined her heart, but would suppose from the history that the heart had been hypertrophied.

On April 18, 1902, she had an attack of laryngitis with a hard cough. This lasted a few days, but did not seem to bother her very much. She had had no trouble with her heart during her pregnancy, and since talking with me had thought no more about it.

On May 26, 1902, I was called to see her at 6.30 A.M. and found her complaining of the rapidity of her heart. She told me that two days before she had gone out of town to visit a friend, that she had to hurry to catch the train, and that, after the train had started, her heart began to beat violently. Beyond the annoyance felt from the strong beats she did not feel badly, and had remained with her friend until the afternoon before, when she returned home. During the night the annoyance was so great that she could not sleep, and now she would like to have it stopped.

I found the heart going so rapidly, tumultuously and irregularly that I could not count it. The respiration was quick, but there was no dyspnea, and except for the disturbance of the heart she felt well. She expressed surprise when I told her that she must remain as quiet as possible in bed. I gave her a hypodermic of strychnia 1-30 and digitalin 1-50, and ordered absolute rest in bed. At noon the beats were more regular and could be counted with the stethoscope at 200. Strychnia 1-30 was continued every three hours, and at 8 P.M. Dr. Whittier saw her with me. At this time the rate was 180 and fairly regular. There was no murmur detected; the area of cardiac dullness was not perceptibly increased; the apex beat was in the fifth interspace in the mammary line and struck the finger with considerable force. The diagnosis of hypertrophied heart with tachycardia from overstrain was made. Morphia $\frac{1}{4}$ P.R.N. was ordered.

The next morning she said she felt more comfortable, and the nurse reported that she had slept in naps during the night. The pulse was still 200. This same condition remained through this and the following day, the pulse once dropping to 160, but most of the time being between 180 and 200.

During the second day she vomited everything that was given her and was, therefore, fed by rectum. Beginning in the afternoon of the third day a granule containing 1-20 of a grain of digitalis leaves was given every two hours. During the morning of the fourth day there was no apparent change except the complaint of being awfully tired. About 3 P.M. she suddenly exclaimed that she had a hot flash to the head, shortly after which she went to sleep, and when I saw her at five o'clock the heart was beating quietly and regularly at 86.

In a day or two she seemed as well as ever. She was cautioned about making an extra exertion, and went through the rest of the pregnancy without any trouble. The urinary examinations always showed a normal condition of the kidneys.

Labor began early in the morning of July 6 and continued during the day, the os dilating slowly. The head presented with the occiput posterior on the right. Fearing lest the heart should suffer from a prolonged or hard labor, as soon as the os was sufficiently dilated, with the assistance of Dr. E. E. Everett, she was etherized, high forceps with traction rods were applied, and the child was easily delivered.

She stood the labor well and everything went smoothly for a week. The temperature was normal, the pulse was never above 80, lactation was well established, and both mother and child seemed to be in excellent condition.

On the morning of the eighth day after delivery, July 14, without apparent cause the heart began to beat rapidly again. When seen by me the pulse had dropped to 120, but was tumultuous and irregular. The digitalis granules were given that day and at night; because of nervousness, she was given 20 gr. of bromide of potassium. She had a good night and the next day the pulse was 80, but irregular. On the following day, July 16, the pulse was 120 again, and

could only be counted at the apex. Everything taken by the mouth was vomited, so rectal feeding was resorted to and nursing was stopped. The same condition continued for two days, nothing seeming to have any effect on the heart's action, except when strychnia was given, and then the rapidity was increased.

At this time I was called out of town and was gone two days, leaving her in charge of Dr. C. H. Hare. During the second day of his attendance he noticed that the apex beat was below the fifth interspace and outside of the mammary line.

On my return I found her very much agitated because her friends were urging the calling in consultation a physician who had seen her before her marriage, but whom she disliked. I asked that Dr. H. Jackson be called. He agreed in the diagnosis that dilatation was beginning, and advised raising the head, keeping an ice bag over the cardiac region and giving 10 mm. of fat free digitalis every two hours. The raised position made her so uncomfortable that it was abandoned. She was nauseated after the second dose of digitalis so after that it was given by rectum. Codeia from $\frac{1}{4}$ to $\frac{1}{2}$ gr. was given as needed to insure sleep.

The next day she seemed better, although the heart rate was still 180. She objected so much to the ice bag that that was omitted. During the next five days no change was noted. At the end of that time coarse râles were found at the base of the right lung. That afternoon Dr. Jackson saw her again with me, and found a pleuritic friction at the right base, with an enlarged and pulsating liver. The next morning I was informed by her husband that my services were no longer needed as he had found a doctor who was a heart specialist and who said he could cure the patient in thirty-six hours.

The two nurses who had been in attendance were discharged because they would not be in sympathy with the new régime. I learned afterwards that the specialist's boast failed, that so far as friends could see there was no change in the condition of the heart, that she grew weaker each day, and died ten days after I had been dismissed, or about four weeks after delivery.

Dr. Whittier did not consider the case as one of tachycardia due to exophthalmic goitre, or rather as a functional tachycardia in which exophthalmus had not developed. Physical examination showed a marked pallor; great distress in respiration; cold extremities; heart enlarged to right and to the left; apex outside the nipple line; no edema; rate 180. I thought I heard a diastolic murmur at the base, but this diagnosis was not confirmed by a second sound heard in the femorals. This was July 22.

July 23 to July 24 Dr. Swift reported her as little more comfortable.

July 27 I saw her again. Respiration, 48; pulse, 148. In the right axillary region a pleural friction sound was heard, also fine râles. There was a marked pulsation of the veins in the neck, pulsation of the liver and a systolic murmur heard over the liver. These signs demonstrated a marked tricuspid regurgitation, evidently dependent upon sudden dilatation of the heart, as none of them were present five days previously. The question of a pulmonary embolism was raised in my mind, accounting for the sudden dyspnea. Dr. Swift's notes have shown how futile were the therapeutic suggestions we could make.

This was a case without septic infection, but one of acute and fatal dilatation without demonstrable cause, except the effect of labor upon a heart that previously was not absolutely sound, though no previous examination had suggested valvular disease.

TUBERCULIN IN TREATMENT OF PULMONARY TUBERCULOSIS.*

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TUBERCULIN has been used as a cure for tuberculosis since 1890 when Koch first gave it to the world. Few things have been received with such joy, and fortunately few things in life have created such disappointment. It is certain that the pendulum swung too far at first, — that hope for what this then new remedy would do was too great. And it is probable that it swung too far in the opposite direction when the hopes were so little realized.

Theoretically tuberculin should be of value as an immunizing agent. Experimentally it has immunized animals to a greater or less degree according to the observations of numerous investigators. Clinically its utility can still be called in question, for while some claim excellent results, others state that patients are made no whit better by its use. In general, however, those who have used it for the greatest length of time are most enthusiastic for continuing its use, while the investigator who has had only a few cases is more apt to give it up. There is practically no one who has used it to any extent, moreover, who would state that the injections work any injury when properly given; while even the most conservative are willing to say that probably fewer relapses occur in patients who have had the treatment.

Many varieties of tuberculin have been brought forward, some to be discarded and some to be used for years. The reason for the multiplicity of the products is that no one knows just what the toxin of the tubercle bacillus really is, and hence various methods of extraction have been employed to try to obtain the essential poison. The culture medium on which the bacilli grow certainly does not contain all of the toxin, while it does contain much that is needless or even harmful to the body into which it is injected. Koch's old tuberculin, since it consists of this medium, is not all that it should be and cannot do the good that a more refined product should be able to do. Koch's new tuberculin which contains the bacilli powdered as minutely as possible is not free from danger since it has been proven that virulent bacilli are present in it. These two products have been used most extensively up to the present time, although various individual workers have prepared products to which they have given special names, and for which they claim good results. Thus Klebs has brought out antipthisin and tuberculocidin, Maragliano and von Ruck have prepared a watery extract, Beraneck has recently devised a new product, and within a year von Behring has announced that he has obtained a toxin by treating the bacilli in special ways which will effectively prevent the disease. These products are but samples of the various extractives from tubercle bacilli that have been brought forward

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