A CASE OF TYPHOID COMPLICATED WITH STAPHYLOCOCCAL SEPTICAEMIA.

BY
N. E. ROBERTS, and E. E. GLYNN,
M.B., C.M., D.P.H., M.A., M.B. CANTAB., M.R.C.P.,
VISITING PHYSICIAN, GRAFTON STREET HOSPITAL; LECTURER IN INFECTIOUS DISEASES, UNIVERSITY OF LIVERPOOL. LECTURER IN CLINICAL PATHOLOGY, UNIVERSITY OF LIVERPOOL; BACTERIOLOGIST TO THE LIVERPOOL ROYAL INFIRMARY.

THE clinical and bacteriological history of this case prove that it was one of typhoid fever, complicated at the end of the second week by a secondary generalized infection with *Staphylococcus albus* and *aureus*.

A nurse at the Liverpool City Hospital, Grafton Street, aged 29, after three months' typhoid work, was transferred to night duty in the scarlet fever wards. On October 31st, 1908—eleven days later—she complained of not feeling well, and was therefore taken off duty. Indefinite symptoms characterized the onset of the illness up to November 5th, when the probability of enteric fever arose, and this was the provisional diagnosis till November 13th. It is sufficient to state that, though the classic signs were not prominent, the weight of evidence was in favour of enteric. Pyrexia was fairly typical, there were two doubtful spots, the spleen was palpable, and Ehrlich's diazo-reaction was positive.

At 8 p.m. on November 13th—probably the fourteenth day of the disease—the patient had the first of a series of severe rigors, which recurred at intervals during the next nine days, giving an unusual clinical picture in typhoid. The rigors lasted from twenty minutes to half an hour, and were followed, as a rule, by a profuse perspiration (see Chart).

As the symptoms were associated with the development of a marked apical systolic bruit, and accentuation of the pulmonary second sound, and as on November 9th the Grünbaum-Widal reaction was negative, it was thought that the case might be one of infective endocarditis simulating typhoid at its onset.

On November 18th, therefore, a bacteriological examination of the blood was undertaken. The skin of the arm was sterilized; 10 c.cm. of blood were withdrawn from the median cephalic vein, and distributed among three flasks containing 100 c.cm. of broth and half a dozen slant agar tubes. After forty-eight hours the flasks contained staphylococci, and a Gram-negative motile bacillus with many flagella. This bacillus, after it had been subcultured for several weeks, was agglutinated markedly in half an hour with the serum of a convalescent typhoid patient in dilutions of 1 in 15, 1 in 30, and 1 in 60, but not with normal serum. The bacillus also behaved in a manner characteristic of typhoid in glucose, lactose, cane sugar and mannite broths, litmus milk, gelatine, and broth.

All the slant agar tubes, each of which contained only a few drops of blood, were covered with colonies of *Staphylococcus aureus* and *albus*, in about equal proportion, but the colonies were too numerous to count satisfactorily. No typhoid-like colonies were visible. Streptococci were absent in all the cultures.

The bacteriological diagnosis of typhoid was further confirmed by the fact that, although on November 9th the Grünbaum-

January 8th. The cardiac bruit had in the meanwhile completely disappeared.

The occurrence of intermittent pyrexia is common enough in the third and fourth week of typhoid, but one of us, who has seen over 3,000 hospital cases of this disease, cannot recall having met with such extreme and unaccountable variations in temperature, combined with repeated rigors, moreover, in the second week of the disease.

The source of the secondary infection with staphylococci could not be discovered though assiduously looked for, but it is worthy of note that the patient immediately before her illness had been nursing scarlet fever, a disease intimately associated with infective processes.

Another point of interest is the fact that the patient prior to the bacteriological diagnosis was treated with antistreptococcus serum, with apparently beneficial results, so it was deemed prudent to continue its administration, notwithstanding the absence of streptococci in the blood.

HOW MUCH FLUID DOES THE BODY REQUIRE?

By ALEXANDER HAIG, M.A. AND M.D. OXON., F.R.C.P.,

SENIOR PHYSICIAN TO THE METROPOLITAN HOSPITAL, AND TO THE ROYAL HOSPITAL FOR CHILDREN AND WOMEN.

If a man living an ordinary sedentary life, not entailing visible perspiration, takes from 50 to 60 oz. of fluid per diem, then a weight of 150 lb. apparently requires about 50 oz. of fluid, this amount being passed each day through the kidneys. The question is, By how much may this quantity be reduced before physiological difficulties are encountered?

The teaching of the late Sir Andrew Clark on the importance of reducing fluid in cases of morbus cordis first arrested my attention, and I have followed his teaching in such cases with much benefit. In none have I seen urinary gravel induced by reduction of fluid in those who had not previously had gravel. Working at the circulation in high blood-pressure cases (for example, headache, epilepsy, and depression), I found that by lessening fluids I could lower blood pressure 20 or 30 mm. of mercury, this often sufficing to turn the balance.

The above quantities of fluid are more a habit than a necessity, and most people can accustom themselves to do with less than 50 oz. a day. I generally aim at 30 oz. The gain to a diseased or dilated heart is obvious; the total fluids in the body are gradually reduced by several pints, and weight falls a corresponding number of pounds.

A dilated heart resembles a distended bladder, and the latter, we know, may lose all power of expulsion. A heart thus enabled to get a more complete grasp of its contents not only saves a great expenditure of force in twenty-four hours, but valves incompetent in the dilated condition may, even though diseased, become almost completely competent. It is no uncommon thing for the transverse area of the heart to diminish 2 in. in three weeks, even if no drugs are given and no other change made.

I wrote in 1903¹ on the washing out plan, mentioning that I had seen a number of cases in which an attempt to wash out an excess of uric acid had been quite unsuccessful, because uric acid controls the passage of water out of the body, while the water does not to any important extent control the excretion of uric acid. I there mentioned some cases in which excess of fluid had dilated the heart, leading to atrophy of its muscular tissues, and leaving little but a prospect of chronic invalidism.

On a dry diet I have seen astonishing recoveries from morbus cordis. In one case almost no fluid was taken except that in fruit, and the patient passed from hopeless invalidism to the power of bicycling fifty to sixty miles in a day with ease.

The relief from reduced blood-pressure alone is no small

A, Serum reaction—(1-15); B, rigor; C, blood cultured; D, serum reaction + (1-60); E, slight rigor.

Widal reaction, tested at the Municipal Bacteriological Department, was negative, on November 18th, unknown to us, it was reported positive in dilutions up to 1 in 60.

The patient, who was treated for the septicaemia with injections of antistreptococcus serum twice daily, had the last rigor on November 21st, and was discharged cured on