A CASE OF INFECTIVE PERITONITIS FOLLOWING PLEUROPNEUMONIA AND WHOOPING-COUGH, AND ATTENDED WITH INTES- TINAL OBSTRUCTION.*

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THE occurrence of infective peritonitis as a complication or sequel of whooping-cough—or, more correctly, as a *complication of a complication* of whooping-cough—is a sufficiently rare event to merit a brief record.

On the 7th of last July, I was summoned into the country to see a boy between eleven and twelve years of age, who was at school there, and was reported to be suffering from some complication of whooping-cough. The history was, that he had been attacked with this complaint, in common with many of his schoolfellows, about three weeks previously; that, on the 3rd, he had complained of pain in his left side, and his temperature had risen in the evening to 102 deg. Fahr.; and that on the 5th and 6th he appeared to be unusually languid and listless.

When I saw him on the 7th, I found him in high fever; a bright flush on the left cheek; pulse 166; respirations 60; temperature 104 deg. Fahr.; tongue slightly coated. He was coughing, but not at that time whooping; and he complained of pain in the lower part of the chest on the left side. There was a marked tendency to diarrhoea, which persisted more or less all through the illness, with the exception of the last few days.

Examination of the chest revealed the existence of extensive pneumonic infiltration of the left lung, together with a moderate amount of fluid in the left pleural cavity.

By the 9th, dulness had extended over the whole of the left lung anteriorly.

The treatment so far had consisted in small doses of aconite in combination with quinine, hot poultices to the chest, and a moderate amount of stimulants.

On the 10th, symptoms of exhaustion became very urgent, with sudden threatening of cardiac failure, which was met and overcome by the free administration of champagne and brandy. There was also evidence of an increase in the amount of fluid in the left pleura, and the heart was, for the first time, noticed to be displaced to the right. Two grains of quinine were given every three hours, and the amount of stimulant increased. The patient was restless and delirious the first part of the following night, but towards morning fell into a sleep, and woke much better in all respects. The temperature had fallen to 101 deg., respirations to 44, pulse 120. The tongue was cleaning.

On the 11th, the temperature again rose to 103 deg. in the afternoon, and the improvement of the preceding day proved to be only temporary; the physical signs remaining unaltered.

On the morning of the 12th, there was again a recurrence of alarming exhaustion and threatenings of cardiac failure, and again the administration of brandy and champagne produced a quick rally. Concentrated food was frequently taken, as well as two grains of quinine every two or three hours. He mended towards evening, and the temperature fell from 103 to 100 deg.

On the 13th, although there was less fever, there was much cerebral disturbance; and, as exhausting diarrhoea continued, small quantities of Dover's powder and tannin, mixed with arrow-root, were injected into the bowel, but were almost immediately rejected. Under these circumstances, two grains of Dover's powder were given by the mouth. Towards night, the delirium, which had been more or less present throughout the day, became uninterrupted, and was associated with other evidence of great exhaustion; there was frequent cough, with expulsion of small plugs of white tenacious mucus. About 3 A.M., an attempt was made to quiet the restlessness and delirium and to procure sleep, which the Dover's powder had failed to do, by giving a small dose of chloral: this was attended with success, and sleep ensued; but, after about two hours' sleep, which was carefully watched, the breathing was observed to become embarrassed, and the patient had to be roused rapidly and stimulants administered; expectoration was freely induced, and, after a little time, he seemed much better, and for some hours complete mental calm was restored. Towards the afternoon, however (the 14th), the delirium returned, attended with great prostration; the evacuations were passed involuntarily; the respirations were very frequent, and could scarcely be counted; the temperature again rose to 103.6 deg.; for the first time in his delirium,

he could not be roused to take food, but clenched his jaws and refused all nourishment. As he lay, however, with his mouth a little open, a mixture of brandy and milk and brandy and beef-tea could be dropped from a sponge between the lower lip and the teeth, whence it trickled into the mouth, from time to time exciting cough, and thus clearing the air-passages of tenacious mucus. In this way, he was fed throughout the night, four wineglassfuls of brandy and milk or brandy and beef-tea being thus administered drop by drop. Food could not be given by the bowel, as it was immediately voided. While this treatment was being pursued, he fell into a profound sleep, which lasted many hours (efforts* at coughing, however, being frequently and unconsciously induced, in order to keep the air-passages free). From this apparently critical sleep he woke much better. His mind was quite clear, he took food readily, his respirations fell to 40, temperature to 99 deg., pulse 120, and the tongue began to clean. Breath-sounds, accompanied with crepitant *râles*, returned over the upper two-thirds of the left lung, and the dulness over the upper part of the lung rapidly diminished. Thus, during the next five or six days, he continued to mend steadily, and encouraged a strong and apparently well-founded hope of complete recovery. Arrangements were made for his removal to London on the 22nd, and thence, after a few days, to the south coast. The temperature, however, did not go steadily down to normal, but continued to oscillate between 99 and 102 deg., and it was evident that the left lung was still the seat of a certain amount of catarrhal pneumonia; and, as the lung cleared somewhat, paroxysms of true whooping-cough returned occasionally. But still his condition on the 20th, as compared with what it had been that day week, was one of convalescence.

On the afternoon of the 21st, some alarm was occasioned by the temperature again rising to 104 deg., with some complaint of tenderness in the right hypochondrium; but, as the diarrhoea had given place to constipation for the last twenty-four hours, a mild aperient was given: some whitish scybala came away, like curd of milk, and the temperature fell rapidly to normal.

The following day (the 22nd), he was removed, with great care, to London, and bore the journey (thirty-two miles by rail) very well.

The 23rd he was cheerful, sat up in bed, and wrote letters; did not cough much. Morning temperature, 102.8 deg.; evening, 101.2 deg.; pulse 128; respirations 52. Loose crepitant *râles* were heard over the upper two-thirds on the left side.

On the 24th, he was somewhat better, but did not appear to be making much progress. Morning temperature, 102 deg.; evening, 101 deg.; pulse 120; respirations 48. The condition of the lung was unchanged (that is to say, the physical signs of a moderate amount of pleuritic effusion and of catarrhal pneumonia continued).

On the 25th, there appeared to be decided improvement; there was less fever, the morning temperature being 100.6 deg., the evening 100 deg., pulse 112, respirations 40. There was more resonance on percussion on the left side, and air appeared to enter the left lung much more freely. He was quite cheerful, appeared stronger, and was himself very desirous to go to the seaside, and we contemplated moving him to Folkestone on the 29th.

He slept tranquilly through the night, woke at 7 A.M. (the 26th), said he felt better, and took an interest in being read to. I saw him at 11 A.M., and was immediately struck with his altered appearance for the worse: the breathing was very rapid (60 in the minute); the countenance pale, dusky, and pinched; lips livid; tongue dry; skin hot and pungent; pulse 140 (small, hard, and wiry); abdomen swollen and tender; bowels very irritable (frequent mucous, frothy evacuations); the urine passed was obviously discoloured from the presence of blood, and became solid on boiling. (Subsequently, microscopic examination showed it to contain numerous blood-corpuscles and broken-down blood-casts.) The temperature was 103.6 deg., and rose steadily within the next two hours to 105 deg. After a few hours, he began to vomit the characteristic green vomit of peritonitis. From this period to the end of the case, I had the advantage of the co-operation of Sir William Jenner; the case was also carefully watched by my friend Dr. J. H. Philpot; and, when we had subsequently to deal with the intestinal obstruction which supervened, Sir James Paget also gave us the benefit of his aid. On the morning, then, of the 26th, just as the chest-symptoms appeared to be yielding, and something like a state of convalescence seemed to be established, we were suddenly confronted with an acute peritonitis and an acute congestion of the kidneys.

* I found that cough could always be induced and expectoration facilitated by using a spray of a weak warm solution of carbonate of soda, to which a little glycerine of carbolic acid was added. I call attention to this as a valuable resource in promoting the expulsion of the plugs of tough mucus which tend to accumulate in the bronchial tubes of children with bronchopneumonia.

* Read before the West Surrey District of the South-Eastern Branch.

It is needless to linger over the details of the next few days, save to say that the diarrhoea ceased somewhat suddenly on the evening of the 27th, the bowels having acted thirteen times in the preceding twelve hours; and on the 28th, when an attempt was made, on account of the constant vomiting, to administer some food by the bowel, an obstruction was found to exist about five or six inches from the anus. No injecting-tube could be got beyond this obstruction, nor could any fluid be forced beyond it. A little perfectly odourless white glairy mucus was occasionally expelled from the rectum; and on the 31st a small piece of solid matter, like inspissated green paint, escaped from the rectum; and the following day the injecting-tube came away covered with semisolid tenacious dark-green substance; but, notwithstanding the most patient perseverance in attempts to overcome the obstruction by injecting emollient and solvent enemata, it remained complete. The vomiting was incessant; and the vomited matters, at first green, thick, and scanty, became more fluid, abundant, and of a decidedly faecal character.

On the morning of August 1st, another phenomenon manifested itself; viz., a rapid and painful enlargement of the left parotid gland. The little patient gradually sank from exhaustion on the evening of August 2nd.

The following day, we were permitted to make a *post mortem* examination. We found a considerable amount of purulent exudation in the left pleural cavity, and quite at the base some readily detachable masses of altered lymph, in the form of a caseo-purulent semisolid material, of which we removed two or three handfuls. The lung itself was the seat of catarrhal (lobular) pneumonia scattered through a considerable part of its substance. The peritoneum presented the usual appearance following intense inflammation. The intestines, distended by gas and containing a certain amount of faecal matter, were matted together throughout nearly their whole extent by inflammatory exudation; and here and there, covering the intestines and between the coils, were purulent masses of altered lymph. There was no invagination of the intestine, or any constriction by fibrous bands of any kind throughout its course; but, at the termination of the sigmoid flexure of the colon, the large intestine was bent at a sharp angle—suddenly stretched, as it were, over the brim of the pelvis. At this point, the bowel appeared slightly constricted. Above this bend, there was a conical plug of dense tenacious material, like inspissated dark green paint. It was at this spot that the injecting-tube was arrested. The kidneys and the other viscera were healthy. There was no trace of tubercle in the lungs, in the intestines, or in the peritoneum; nor was there any noticeable enlargement of the bronchial glands.

REMARKS.—This case presents many features of interest. It is, fortunately, exceedingly rare to find peritonitis excited in this way. Acute peritonitis is an exceedingly rare affection, except as a consequence of injury (traumatic), or in association with tuberculosis. Infective peritonitis is, however, not uncommonly met with in connection with the puerperal state; but, as a possible sequence of purulent pleuritis, I do not think any of the text-books in this country have hitherto called attention to it. When I was engaged in translating the article on Diseases of the Pleura in Ziemssen's *Cyclopaedia of Medicine*, I first became aware of the occasional occurrence of peritonitis as a consequence of the passage of infective material from the pleural cavity along the lymphatics of the diaphragm to the peritoneum. At page 620 of the fourth volume of Ziemssen's *Cyclopaedia*, the following passage occurs: "Pus sometimes makes a passage through the diaphragm. This either happens in a *diffuse* and *acute* manner, and sets up an acute and invariably rapidly fatal peritonitis, altogether analogous to the purulent, usually double-sided pleuritis, which also result from the extension of the purulent inflammation through the lymphatics of the diaphragm in purulent puerperal peritonitis," etc.

Another very interesting point in this case was the simultaneous occurrence of an acute, and I think we are also forced to say an *infective*, congestion of the kidneys; and it is most noteworthy that the kidneys, being *excretory* organs, were enabled to set themselves free from the disturbing influences of the infective material; for, notwithstanding the coexistence of an acute fatal peritonitis, the kidneys in a very short time—viz., three or four days—completely recovered themselves, and the urine became quite free from albumen.

Another point, which I can only now just suggest for consideration, is whether the coexistence of the infective malady—whooping-cough—conferred an *infective* property on the purulent pleuritic exudation. Pus formed in the pleural cavity is by no means of itself a necessarily infective fluid; but pus formed under certain infective constitutional conditions may acquire special infective properties.

The intestinal obstruction, favoured by the inflammatory paralysis of the intestinal walls, was rendered complete by the arrest of the accu-

mulation of the tenacious plug I have described at the termination of the sigmoid flexure of the colon.

Finally, this case affords a sad and instructive example of the extreme gravity of the complications of whooping-cough and the necessity of at all times watching very carefully the course of this malady.

ON THE USE OF ARSENIC AS A BLOOD AND CARDIAC TONIC.*

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In this brief communication, I desire, in the first place, to call the attention of the Branch to the really remarkable results obtained by the administration of arsenic in certain cases of anæmia, and these cases in which iron and good food have failed to produce any benefit. My attention was first directed to the power of arsenic in this respect by a paper published by Dr. Byrom Bramwell of Newcastle, in which he narrated several cases of essential or progressive pernicious anæmia, where remarkable benefit accrued from the administration of this drug. Whether it really has the power of curing this disease—a disease which had hitherto baffled the resources of our art, the good results apparently promised by phosphorus in the hands of Dr. Broadbent not having been obtained, to any extent, at all events, by other observers—remains for the future to determine. Certain it is that, in cases of anæmia approaching in gravity the so-called essential or pernicious anæmia, it is capable of producing great benefit. In support of this statement, I venture to submit the following cases.

Mr. J. W., aged 67, consulted me during last year on account of increasing weakness and languor, occasional vertigo, palpitation on ascending a hill, flatulence, and rushing noise in the left ear. There was marked pallor of the skin. A systolic *bruit* was heard at the cardiac apex. There was no enlargement of the liver or spleen. On microscopic examination of the blood, there was found no increase of white corpuscles, while many of the red were irregular in shape, many of them being ovoid. On subsequent inquiry, it was found that he had internal bleeding hæmorrhoids, and these were ligatured in December by my friend Dr. Maclaren. After this, he improved a little in appearance and strength. The hæmorrhage was stayed. Iron in the dialysed form was administered. But the improvement did not continue.

On February 18th, 1878, there had been no bleeding since the operation; but the patient was now paler than ever, and was unable to move about outside. He complained of weakness, languor, faintness, and breathlessness. The cardiac dulness was increased transversely. There was a systolic *bruit*, whose maximum intensity was in the mitral area and was propagated to the left; and a second, the maximum intensity of which was in the tricuspid area; there was also a well marked systolic *bruit* in the pulmonary area. There was no impairment of resonance over the pulmonary organs; but the respiratory murmur was harsh in the left subclavian region. There was œdema of the lower limbs, and a complaint of numbness and tingling in the tips of the fingers and soles of the feet. This abnormality of sensation was not felt until after the operation. The urine was acid, of specific gravity 1019, and contained no albumen.

February 22nd. The ophthalmoscope showed in the left eye, near the apparent inner and lower margin of the disc, a small extravasation close to a vessel. The fundus of each eye was pale. Under the microscope, the blood was found to be watery, the red corpuscles relatively much diminished in number; there was no increase of colourless corpuscles. The red corpuscles formed themselves into irregular masses, only a few rouleaux being seen in the field. Many of the corpuscles were somewhat oval in form; some were pear-shaped, while numbers presented one or several mammillated processes; as a rule, only one such process. Most of the red corpuscles appeared somewhat larger than normal, and presented a swollen appearance, while others were less by one-half than normal. At this date, he was ordered three minims of liquor arsenicalis three times a day, with no other medicine.

On February 26th, the dose of arsenic was increased to five minims. He thought himself stronger. The anæmia did not seem to have increased. The appetite was good. There were no new symptoms.

After this date, a slow but gradual improvement took place, and, on April 23rd (two months after commencing the arsenic), he had improved very much. The colour of his face was very good. The conjunctivæ were still a little pale. He felt much stronger, and had no dyspnoea on ascending a hill. There was still some œdema of the lower limbs

* Read before the Border Counties Branch.