swelling which appeared in his thigh. It involved all this part of the limb; and arose from some cause evidently below the fascia; in fact, it so much resembled at first sight, and upon manipulation, a limb affected with acute necrosis of the bone, with separation of the periosteum and effusion underneath it, that I quite thought that this had taken place.

A few days, however, disclosed the following very unusual state. The thigh was full of pus, suddenly produced by the bursting of the great reservoir of matter in the knee-joint. The swelling of the knee subsided a little; but the pain was as bad as ever. As the hole in the capsule of the knee-joint gave vent to the pus under cover of the muscles, there was but little chance of the pointing of the abscess; and in a short time I let out three pints of thick well-formed pus, by an incision a little above the knee through the vastus externus muscle.

An abscess afterwards formed below the knee; and at this time, with these two discharging openings, both communicating with the knee-joint, and with a bed-sore over the base of his sacrum and excessive prostration and emaciation, the patient was quite a pitiable object. He became so ill, that death was apparently imminent; and he was too weak to leave any chance even by amputation.

A little rallying took place; and I amputated the leg above the knee on September 11th, about three months after his admission.

I operated in my usual way by double flap, making the anterior by cutting from the surface in a semi-circular line, and transfixing for the posterior. I made long flaps, paying no regard to the suppurating openings and the sinuses which extended up his thigh. The periosteum was much thickened, and separated so easily from the bone, that, after the limb was removed, at least an inch of the femur was stripped, and I removed it by another section with the saw.

After tying the vessels, and applying the solution of the chloride of zinc, which we usually do now to wounds of almost every kind, I dressed the stump as usual.

The boy was better from the time of the operation. He slept well the night afterwards, and from that time began to mend. It must be allowed that his amendment was slow, and the circumstances of his case were adverse. He had besides these sinuses through the thigh discharging from a hole on the outer side, a bed-sore as large as my hand, from which a small piece of the sacrum separated; great swelling of the opposite limb, with a slough on the heel from pressure; and, in addition to all this, for weeks together, he passed all the evacuations in the bed under him.

I have not often seen a patient rub through greater difficulties than these. I have omitted all the minutiae of the daily treatment. It is sufficient to say that he was kept well supplied with food and stimulus, as well as with opiates and tonics when he could take them.

The stump healed without any difficulty, the aperture in the thigh helping to carry away the discharge. Now the thigh is sound, he has an excellent stump, the large wound in the back is healing, and he has returned home convalescent.

The joint, when examined, showed a state of acute ulceration of the cartilages of all the bony surfaces. There was great vascularity of the membranes, particularly around the ulcers, where the articular ends of the bones were bared.

I can offer, in conclusion, no practical deduction from this case, with a view to prevent the occurrence of a similar accident in other cases. The symptoms all pointed, as I have said, to absorption of purulent

or poisonous matter, and its effects on the joint which happened to be selected.

I will add one word on a minor question connected with the surgical treatment of the stump; namely, the application of the chloride of zinc solution. It was introduced by Mr. De Morgan, of the Middlesex Hospital; and, as we have had much experience of it for many months, I may safely say that we have great reliance upon it. When the vessels are tied after an operation, the wound is mopped over with a thirty-grain solution of chloride of zinc, and then the parts are brought together. We get under its use less of the redness around the wound which so often follows surgical operations, very little sup-puration, and excellent union. It is said to lessen the chance of pyæmia, and I believe it does so.

In the case which I have described, it certainly did good service; for nobody could otherwise have had a better chance of pyæmia than this lad, whose thigh was amputated while he was in a state of great general weakness, through a quantity of thickened tissues all more or less infiltrated with pus. He had, on the contrary, no unfavourable sign about the thigh from the time of the operation.

ON CERTAIN COMPLICATIONS OF THE NERVOUS SYSTEM,

AS SEQUELÆ OF FEVERS.*

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THE case of Peculiar Delirium after Fever, recently communicated by Dr. Handfield Jones to the *BRITISH MEDICAL JOURNAL* (Jan. 12th), and alluded to by Dr. L. Robertson (Feb. 9th), is so analogous to certain cases of much interest which have lately come under my notice, that I am induced to send particulars regarding them. Dr. H. Jones's case was adduced as an illustration of prostration and excitement of the brain, consequent upon ill nourishment and blood-poisoning; the cases which I will relate, although differing much in character from the above, presented phenomena which at the time I could only regard as dependent upon similar prostration. I will at once proceed to relate them.

Case 1 was that of a lady, of about 35 years of age. She had been married about three years, but had never had any children, and the catamenia had been irregular. She possessed a highly wrought nervous temperament; being remarkably skilful as a painter, and altogether a clever and accomplished person. She was attacked with measles very shortly after having been subject to much mental shock owing to witnessing a crowd of people collecting round the body of a person who had just fallen out of a window and died instantly. Her mind was evidently deeply impressed in consequence; and, when recovering from the immediate effects of the attack of measles, the rash having nearly subsided, it was noticed one evening that she was, though quite free from anything like febrile excitement, odd in manner and rather too excitable, wishing to sit up at the foot of the bed instead of lying down, and fancying that her food was not good. On the following day, it was very clear that she was still more excited; and by the evening she was quite out of her mind, walking

* Being portion of a Lecture delivered at the Hospital.

about the room, talking loudly, imperiously commanding attendants, and refusing to lie in bed and to take food; also, angry to a degree with her husband. If not thwarted, she was otherwise all the while in most good humour, smiling, and talking rapidly and wittily about every conceivable person and thing with which she was conversant. She had, apparently, no pain, and never even experienced any unpleasant sensations. There was no fever, but sleep went entirely from her. After a time, she refused food to a great extent; and, in spite of such sedative and stimulant remedies and food as could be given, she passed five or six days and nights without sleep of any kind. The pulse and heart's action became more and more feeble; and, at last, the vessels of the conjunctivæ became vascular. During most of this time, she continued in a maniacal and delirious state; and she sank and died, having only at last had a few hours of disturbed sleep. At no time was any form of convulsion or paralysis either of face or limb noticed; nor was there ever any arterial excitement, nor was albumen found in the urine. A *post mortem* examination could not be procured.

It turned out, upon inquiry, that, when a girl, she had had an attack of general excitement after some febrile attack, which necessitated her leaving home for some time. This patient was also attended closely by Mr. E. Berry, and seen both by Sir T. Watson and Dr. Gull.

Case II was that of a patient whom I had the opportunity of seeing whilst at Folkestone in October last, by the kindness of Drs. Bowles and Lewis, whose patient she was. She was the subject of scarlet fever, the rash having appeared on the 30th of September.

On the morning of October 3rd, high delirium set in, resembling acute mania. There was a rapid flow of ideas, and a great variety of delusions leading her to attempt eccentric acts and utter immodest speech, according to Dr. Bowles's statements. "Even when calmed by moral influence, the delusions were still persistent, and they lasted for several days. During the whole of this time, the eruption of the fever was fading out; and it was followed by the usual amount of desquamation. The delirium differed from that of ordinary febrile excitement; and, during its persistence, there was no heat of blood, no ferrety look of eye, the pulse was quiet, and the skin was cool."

On the evening of October 3rd, we noticed a slightly urinous smell about the bed; and, with great difficulty, owing to the violent struggles and resistance of the patient, a large amount of urine was drawn off from the bladder by catheter. It contained no albumen, and for the first fortnight none existed; but after that Dr. Bowles found a trace occasionally. On the morning after the urine was drawn off, the patient became quieter, and food was taken.

The mother of the patient stated that, after an attack of measles some years previously, she had been in a similar state of delirium, but to a less degree. There was no insanity in the family. The patient gradually returned to her usual health.

Case III differs from the two previous ones, inasmuch as the nerve-disturbance was manifested, not by maniacal delirium, and scarcely by delirium at all, but took the form of epileptic seizures of a peculiarly interesting nature. It was that of a gentleman of middle age, who had been the subject, during last summer, of psoriasis, under the care of Mr. Braine, of Hertford Street. Through the influence of iodide of potassium and arsenical solution, he considerably recovered, and the eruption had nearly disappeared; when, not feeling well, and thinking change of air would benefit him, he went to a friend's house about fifteen miles north of London. Arriving there about

four p.m. on October 27th, he felt very chilly, and kept his room. The following day he had a rigor, and one again on the 29th. The next day he returned to town. He complained of having slight headache; he had no inclination for food; his face was suffused and anxious. Pulse 84; bowels open.

It was manifest that he was suffering from fever; and he continued in the same state until November 6th, when I saw him along with Mr. Braine, and from time to time saw him subsequently. Well-marked rose eruption existed on several parts of the abdomen. Without giving the case too much *in extenso*, it may be stated* that on the 15th he passed a good night, sleeping for two hours at a time, and only sweating slightly. He took his nourishment well.

The bowels acted on the 16th, but not on the 17th.

About 7.30 a.m. on the 18th, while asking for something to drink, his speech became indistinct, and he is reported to have fainted; there seems to have been a tremulous motion of his hands and legs, and some twitching of the muscles of his face. About 9 a.m., he had a very severe epileptiform seizure, being totally unconscious, and struggling violently for a minute or two.

On the night of the 21st, he was unable to sleep, perfectly conscious and rational, but excited, talking rapidly, and laughing much, on the smallest occasion. Although frequently asked to desist, he persisted in telling hunting and steeple-chasing anecdotes, subjects which always excite him. He talked for about an hour and a half, and passed the rest of the night dozing.

On the morning of the 22nd, he had a very sharp fit. During the preceding three days, he had frequent attacks during the day. They generally began by his uttering indistinct sounds; then his hands began to jerk, his face to twitch, and he became generally convulsed. If the attack were slight, he appeared able to understand all that was said, but he was unable to speak, and his efforts to articulate his wishes were most distressing to witness. He was dull and heavy on recovering from those attacks, and said they made him very nervous; sleep frequently followed, and he always awoke more comfortable.

On the 23rd, the fits were frequent and sharp, and his strength appeared to be failing. Vomiting came on in the evening of this day.

On this night, a sharp fit was followed by a curious attack. When he recovered, he was able to answer questions easily and rationally; but he was under the impression that he was dead, and he stated he could not move either arms or legs, and gave directions about his funeral. After a stimulant, he came round a little, and stated that he had had great pain in his arms and legs, but that now he could move them, and that he was "resuscitated." The vomiting was distressing whenever he swallowed food.

On the morning of the 24th, a little burnt brandy remained in the stomach, and no after vomiting took place. Stimulants, chiefly alcohol, in the form of plain brandy, cherry and orange brandy, and champagne, were given every hour, or oftener, with very nourishing food, and from this time he seemed to rally.

On the 25th, the fits were much less frequent.

On the 26th, only one arm and leg were affected, consciousness not being lost at all.

On the 27th, one leg jumped, and while this leg was twitching he was not able to speak distinctly enough to be understood; and a condition followed in which, whilst having all his mental faculties, and knowing what he wished to say, he was nevertheless quite unable to speak. He would stutter and stammer,

* My memory of the case was helped by Mr. Braine's notes thereof.

but uttered nothing intelligibly. He himself contrived the plan of having a slate on his bed; and, whenever these attacks came on, he would during their occurrence write down his wants, etc., on the slate. He had slight startings of the leg (or legs) on the 29th; but none after this date, though for a day or two his speech was uncertain, and, feeling this himself, he preferred using his slate to speaking. From this time he became convalescent.

COMMENTS. In all the above cases, the histories show, I think, that the delirium, mania, and convulsive attacks, which occurred, were phenomena apart from those of the pyrexia or febrile stages proper. In the second case, it is perhaps difficult to say whether we might rightly attribute the maniacal delirium solely to ill-nourishment of brain and nerve, as it possibly might have been in some degree contingent upon absorption of urine from the bladder, and partly dependent upon distress or pain resulting from distension of this viscus, though no proof of over-distension could be ascertained by percussion over the pubis. At any rate, coincidently with the taking of food after the relief of the bladder, the mind gradually recovered its equilibrium.

In the first case, we all felt that, if sleep could have been induced as in cases of delirium tremens from alcoholic poisoning; and food taken properly, the mind would have regained its power; and in the third case, it would appear certain that the unstinted use of stimulants proved to be the means by which tone and power became restored to the nervous system (cells or fibres of nerve-tissue, or nutrient capillaries); the defective or perverted nutrition of which gave rise to confusion of thought and epileptic spasm of muscles; a proneness to which may be, I think, inferred from the naturally mobile and excitable character of the patient, and from the fact that a brother had been at one time the subject of epilepsy in some form. Were this the opportunity, it would be interesting to dwell more minutely on the absence of articulating power which existed, a symptom which, in conjunction with others, formed a marked feature in the case.

Bearing in mind the family history and the condition of the patient's lungs, I was at one time fearful that the epileptic seizures indicated the presence of some scrofulous or low inflammatory deposit in the cranial cavity.

Being in search of further illustrations of epileptic symptoms coming on after fever attacks, exanthematous or otherwise, I have been informed by Dr. Hermann Weber of three such cases which have occurred in his experience, and of which he has kindly lent me the notes.

One was that of a boy, aged 18, who, on the seventeenth day of typhoid fever, the diarrhoea having ceased, and the fever much diminished, and the temperature having subsided from $40^{\circ}2$ cent. to $37^{\circ}4$, was affected by an epileptic attack immediately after waking. Immediately after the fit, he was very pale and exhausted, with cold extremities and a very weak pulse, and having an axillary temperature of only $36^{\circ}9$ cent. During the same day he had two slighter attacks, and was much excited and sleepless. Stimulants were given, and, after having taken half a grain of morphia, he had a quiet night, and no return of fits occurred. The urine was free from albumen.

Another case was that of a boy aged 8, suffering from scarlet-fever, and who, in the night of the seventh day from the beginning of the fever (being the third day from the outbreak of the eruption), the temperature having descended from $40^{\circ}2$ cent. to 38° , and the pulse from 150 to 128, had an epileptic attack, preceded by coldness of the hands and feet, great pallor, and feeling of anxiety. After the fit, he

was pale and cold; the pulse being 136, weak and irregular; and the temperature 37.6° . Stimulants were continued; and oxide zinc, gr. i, given every hour. On the following (the eighth) day, two more fits occurred. After this he recovered, no albumen being found at any time in the urine.

The third case was that of a girl aged 6, who, on the sixth day of the eruption of measles, had an attack of convulsions with loss of consciousness, having been restless and complaining of cold extremities, and the temperature having descended from 39.2° to 38.4° . Great exhaustion followed the attack, and the temperature sank to 37° . No albumen existed in the urine, and complete recovery followed.

I suppose that all the above mentioned cases should be considered as strictly illustrations of transitory anæmia (or perverted nourishment) of nerve-tissue, in opposition either to nerve- or brain-lesion or uræmic poisoning; and are not to be confounded with cases of convulsions, often fatal, which arise during the course of continued fever, possibly depending upon a charging of the blood with urea and other results of tissue-changes, by reason of kidney-complication.

Such cases, chiefly attended by albuminuria, are alluded to by Dr. Murchison in his work on *Fevers*, 1862, pages 160 and 174, when speaking of typhus (see Cases VII to XII); and page 492, when speaking of enteric fevers. I find also that Dr. Murchison has made some remarks upon convulsions in connexion with typhus in the fifteenth volume of the *Transactions* of our Pathological Society (see page 136), in which he says that they are almost always followed by death, and have an uræmic origin, being "usually associated with albuminous urine," and the kidneys being diseased. Again, at page 171 of the seventeenth volume, he repeats the observation, referring to certain specimens of diseased kidneys from a patient who died of convulsions during an attack of typhus fever. Quite recently, also, he has brought before the same Society an instance of the presence of urea in the fluid from the lateral ventricles of a patient who had typhus, which for thirty-six hours before death was complicated with albuminuria and convulsions.

Dr. Murchison, in his work on *Fevers*, also notices the occurrence of cases most probably similar in character to the one which I have been describing; for at page 505 he speaks of mania and mental imbecility as occasional complications and sequelæ of severe cases of enteric fever; and observes that, in convalescence, the patient may be suddenly seized with "violent delirium, independently of any cerebral inflammation."

I will finally pass on to quote an additional instance mentioned to me by Dr. Bowles as illustrating the subject. It was the case of a patient suffering from what appeared to be an attack of mild enteric fever. "Delirium, or rather mania, set in; and, as the patient attempted self-destruction, it was decided, after consultation, to place her under proper restraint in an asylum. On her way through London, she was taken so ill that she could not be moved to the asylum. An alienist physician pronounced it to be a case of acute mania; but the bowel-symptoms became so serious, that a general physician was sent for, and he declared it to be enteric fever. The case proved to be a very severe one, but the patient recovered." The same gentleman has also mentioned to me a case of small-pox attended by mania, frightful convulsions, and cataleptic symptoms, terminating, when convalescent, in melancholia, which suddenly passed off after change of place.