severe of its kind, though greatly increased by exertion, but he found an increasing difficulty in such actions as taking off his coat or lifting his arm to brush his hair. It was associated with marked tenderness over the acromion and some tingling down the arm extending along the course of the ulnar nerve to the fingers; the pain gradually became intolerable, and ultimately so exquisite that he could not bear the pressure of his clothes or any pressure such as that induced by movement in bed, and finally so great that he was unable to lie down, and for a fortnight had to get what sleep he could in an arm chair. For three weeks he was unable to lift up his arm or to put on a shirt; any attempt to lift a brush—even a toothbrush—was rendered impossible by the severe pain the movement occasioned. Despite the absence of fever, his health suffered greatly from the continued pain, and he became really ill. The muscles of the arm supplied by the affected nerves wasted rapidly. The pain was specially referred to the bicipital groove and to the acromial process, though a good deal was felt along the ulnar nerve. No treatment seemed to produce any effect, and relief was only obtained in a moderate degree by the use of antifebrin in 10-gr. doses, and by the local application of menthol and chloral dissolved in rectified spirits of wine. In about a month the pain gradually subsided, leaving the patient with a much-wasted arm, and in a state of general debility. During the period of acute pain, leeches and blisters and hypodermic injections of morphine had been used, but except for very transitory relief from the opium withdrawal effect.

This case is typical, though the worst of the kind I have seen. From the chronicity of the pain, from its obstinacy and the absence of intermittency, and from the great local tenderness, it would seem that we had to deal not with a neuralgic condition but with perineuritis and pressure on the nerve, either from the perineuritis or from some inflammatory condition of the sheath of the muscles adjacent to the nerve trunks. The recovery when the pain subsided was quick, and within a month the muscles had regained their volume and power.

CASE II.

A woman, aged about 45, fell upon her back from a tramcar which started as she was stepping from it. She was partially stunned, but quickly recovered, and beyond slight pain in the back was unconscious of having sustained any injury. In about a week she began to suffer from pain in both arms, along the distribution of the brachial plexus, and some tenderness on pressure about both shoulders. This was followed by increasing pain and tenderness, especially on movement of the arms, and great loss of power in both hands and arms, and some wasting of muscles. It was thought that she had sustained some injury to the spinal cord, and as she made a claim for compensation against the tramway company I was asked to see her and report. As I was satisfied that there had been simply bruising of the muscles in the fall, and the nervous symptoms were due to secondary perineuritis and pressure upon the branches of the brachial plexus on both sides, I gave a good prognosis, which was justified by her rapid improvement under no other treatment than that of rest.

CASE III.

About the same time I saw a lady who complained of similar unilateral symptoms due to a strain on the muscles of the arms and neck from lifting heavy weights. This case seems to me to be of precisely similar nature to the others I have recorded; and after a prolonged period of rest, during which no other treatment than that for the relief of pain was attempted, she completely recovered.

These cases cannot, I think, be said to justify the diagnosis of brachial neuralgia, but were clearly traumatic in their origin, and associated with definite pressure upon the branches of the brachial plexus. The other cases I have seen were similar in their origin and their symptomatology, and clearly not due to neuralgia dependent upon constitutional condition, but without exception due to pressure upon the nerves from muscular or nerve bruising.

It must be admitted from the report of these cases that the exclusion of neuralgia as a cause is only an assumption, and has not been demonstrated by positive observation; but in support of this theory may be adduced a variety of cases of sciatica.

Some years ago Sir J. Fayrer recorded a case of sciatica which had obstinately resisted all treatment until he punctured a swelling over the nerve and between it and its sheath; fluid was evacuated with immediate and complete removal of pain. I published in the *Birmingham Medical Review*, about ten years ago, a case of sciatica that had not been relieved by even heroic doses of morphine, but was speedily and effectually cured by free leeching over the most tender spot. I have treated many cases since in the same way, where I have thought the pain was due to pressure within the nerve sheath, and always with great benefit. One of these had been sent to me with the idea that it was a case of aneurysm of the brachial artery. The patient suffered from diabetes, and the tumour proved to be a collection of fluid in the sheath of the ulnar nerve. Its removal was followed by complete recovery from pain.

These cases are so analogous in their clinical feature to

those so-called cases of brachial neuralgia that it has seemed a fair assumption to regard these latter as instances, not of neuralgia, but of pain produced by inflammatory changes either in the nerve sheaths or in the muscular tissue adjacent to them.

HISTORY OF A CASE OF CEREBRAL TUMOUR EIGHT AND A-HALF YEARS AFTER REMOVAL.

By THOMAS OLIVER, M.D., LL.D., F.R.C.P.,
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It is so very seldom there is afforded the opportunity of reporting on the health of a patient eight and a-half years after the removal of a cerebral tumour by surgical operation that, in justice to the memory of my deceased colleague, the late Mr. Williamson, who performed the operation, and, conjointly with myself, recorded the case in the *BRITISH MEDICAL JOURNAL* for November 20th, 1898, as well as in the interests of medicine and cerebral surgery, I gladly place before the profession a short statement of phenomena presented by the patient to-day. Mr. Williamson removed by the surgical methods usual in these cases an angioma from the motor areas of the left side of the brain on November 14th, 1894.

The patient, a female, aged 23, who was a domestic servant and unmarried was admitted into the Royal Infirmary under my care on account of complete paralysis of the right hand and arm, paresis of the lower half of right face, incomplete paralysis of the right leg, headache and sickness. These had developed after an epileptiform seizure which, along with such other symptoms as headache, etc., led me to diagnose a cerebral tumour of the left motor areas of the brain. For a few days after the operation just mentioned patient seemed drowsy and she took no interest in her surroundings. When she came to herself it was noticed that she had lost her power of speech. She could say "yes" and "no"; often, however, letting one of these two words slip out incorrectly, a mistake of which she was at once aware and did her best to rectify. Nine days after the operation she could move the right leg and lift the right arm to her face. By degrees the power of the right arm improved, but her stock of words was limited to "yes" and "no." Later on she could pick out with her left hand the letters of the alphabet properly and reproduce them when asked to do so, showing that there was neither word blindness nor word deafness. She understood everything that was said to her, but she could not repeat words. Eight weeks after the operation when under the influence of emotion and when singing was going on in the ward she joined in the hymn and continued to sing it along with the other patients. For three months after the operation several attempts were made to educate her into the use of a larger number of words but without any immediate result. It was in February, 1895, that she began to use the left hand regularly in the act of printing and writing letters. As she had quite recovered from the dangers incidental to the operation the patient now left the infirmary.

In the month of May, 1895, I casually saw her, and while I found that she had considerably improved in walking, she could still only utter the words "yes" and "no," and I was informed that she had had an epileptiform seizure on the occasion of a recent menstrual period.

When Mr. Williamson and I published the account of her case in the *BRITISH MEDICAL JOURNAL* four and a-half years ago, we made the remark that, apart from coexisting sarcoma, an angioma of the brain pure and simple was a rare form of cerebral growth, but the lapse of time—more than eight years—since the operation has quite justified that remark, and confirmed the microscopical diagnosis then made. Stress was also laid at that time upon the loss of speech or aphemia being entirely motor, and as being in all probability the consequence of the operation. Mr. Williamson was obliged on account of the ramifications of the tumour and the absence of a limiting membrane to remove a larger amount of healthy brain tissue than he otherwise would. It was thus that either the greater portion of the cortical centre for speech was in a sense accidentally removed, or that the communicating paths between it and the motor articulation centres in the bulb were divided. It may be that the motor speech centre was not entirely destroyed, as was shown by the readiness with which the patient could use the word "yes" and "no" shortly after the operation, although usually in a jerky manner, and often wrongly; or the use of these words may have been a consequence of overflow into the uneducated centre in the right side of the brain, and were the result of impulses escaping from them. I lost sight of this patient, as she had removed to the neighbourhood of Berwick-on-Tweed, until September 28th, 1901, when she came to see me at the Infirmary.*

* I saw the patient's sister in November, 1902, and was informed that the subject of these notes was in excellent health.

I found her in a remarkably good state of health generally; she was much stouter and very cheerful. When she left the infirmary in February, 1894, she could only use affirmatives and negatives. It was several months after this before she could utter the words "father" and "mother." When I saw her in September, 1901, she was then able to make use of a very large number of words. She could name any object that was presented to her, and she had no difficulty in the employment of proper names. She had an excellent memory and could repeat nearly all that was said to her. She read a good deal, read loudly correctly, and she wrote pretty well. Her difficulty with words was mostly observable when she attempted to carry on a conversation or tried to make up a sentence. She was like a child who was learning to speak; she could supply all the nouns and many adjectives, but could not put in the verbs. The sentences therefore had to be filled up by those with whom she was conversing. In talking of the work which she did in the house she would, in answer to my inquiries, use such words as "floor," "beds," "clothes," etc., meaning by these that she scrubbed the floors, made the beds, and washed the clothes, etc. She travelled by herself on the railway, as she could ask for a ticket for the particular station she was going to, which she named readily. In testing her with numerals she counted quickly up to twenty, and could have gone on further. Occasionally there was quite a noticeable delay in reply to questions. Counting backwards was impossible to her. When asked what numeral came after 6 she had to begin enumerating from 1 before she could answer. She wrote her name for me on paper with pen and ink. This she did with her left hand. The writing, I may say, compared most favourably with that executed by the right hand of other healthy women of her own age and in her own rank of life.

It is fully six years ago since she began to write with her left hand. There was just the slightest paresis of the lower half of the right face. She walked well, but dragged and swung the right foot. The fingers of the right hand were usually kept firmly flexed upon the palm. She could at will loosen them, but in sleep they relaxed of themselves. She could raise the arm to any ordinary height, and had no difficulty in undertaking common household duties. She could lift and carry by the right hand such things as a moderately full kettle, but she did not attempt to do work with this hand of such a risky nature as lifting a kettle off or on to the fire. For these she used the left hand. There was a well-marked knee-jerk, but ankle clonus was hardly obtainable. The limbs on the right side, in consequence of being less employed than formerly, and of having their spinal centres no longer so fully influenced by the higher or cortical centres, showed a very slight loss of flesh. The right arm measured 10½ in. in circumference, compared with the left 10½ in., and the right calf 14½ in., compared with the left 15 in. Her eyesight is good. On ophthalmoscopic examination the discs were seen to be very pale, and the borders well defined and even. When asked if she ever had headache she replied in the negative, but on tapping with the point of the finger tips the posterior part of the upper border of the wound in the cranium that was made at the time of the operation slight pain was experienced. She was never sick. Appetite was good. Menses had been regular for the last four years. It appeared that, with few exceptions, she did not menstruate for three years after the operation. Since her menstruation has become re-established, she had had no convulsive seizures. It was noticed, particularly when patient was sitting, that her head was kept gently drawn to the right, so that her eyes looked outwards over the right shoulder. The right half of the face was slightly flaccid; there was a little puckering of the left angle of the mouth, and the tongue was very distinctly protruded to the right. The urine was free from albumen and sugar, and her bowels were regular.

There is still a considerable loss of power in the right hand and forearm, especially of the smaller muscles concerned in finer movements. The fingers are firmly flexed upon the palm of the hand, but this, along with the well marked wrist and knee-jerk, was present before the operation, and is explained by the descending degeneration caused partly by the tumour itself, and subsequently by the operation having destroyed the cortical centres of the muscles.

Although the power of speech has not been quite regained, yet the extent to which it has been recovered is very considerable. This recovery may be due to improved nutrition of the remnants of the speech centre in the left side of the brain that escaped the stroke of the scalpel at the time of the operation, or it may be that the right cerebral hemisphere has undertaken the function of speech through education, an assumption to which patient by having cultivated the use of the left hand in writing may have contributed.

THE VALUE OF LUMBAR PUNCTURE IN GENERAL PRACTICE.

By HERBERT RHODES, M.B.LOND.,

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The following cases are placed on record to emphasize the diagnostic and therapeutic value of lumbar puncture in cases of cerebro-spinal disease.

The diagnostic value has already a well-recognized position and these cases only confirm a more or less general opinion,

but the therapeutic value of this operation has not yet gained a certain place for itself in the practice of the general practitioner. It will be shown that a simple operative procedure can yield valuable results in many forms of disease associated with an increase of intracranial pressure. Not only can an obscure case and the line of treatment to be adopted be made clear, but also the most alarming and distressing symptoms be relieved.

I will detail under a few simple headings what lumbar puncture may do (1) for the patient, (2) for the practitioner.

1. What can be done for the patient?

A. Relief of pain, headache, etc.

CASE I.—A girl, aged 21, with gliosarcoma of the optic thalamus had frequent vomiting and very severe pain in her head, which no drug more than partially relieved. After 2 oz. of spinal fluid had been removed, she slept easily, and awoke with the pain and discomfort much more tolerable.

B. Coma is diminished, and consciousness may return after coma has been established through the increase of intracerebral pressure.

CASE II.—A child suffering from post-basal meningitis, unconscious, and with head retracted, lips blue, breathing shallow, and of the Cheyne-Stokes type, was apparently dying. After half-an-ounce of spinal fluid had been withdrawn, the patient slept and breathed easily and regularly, presenting a much less repulsive appearance. This alone was most grateful to his friends.

CASE III.—A child dying of tuberculous meningitis suddenly stopped breathing. Her face was pallid and bluish. She remained quite two minutes without taking a breath, yet after a few minims of fluid were removed she breathed again easily. The child's life after this treatment was sufficiently prolonged for it to be seen by its parents before death, which occurred some hours later.

C. Lumbar puncture may indicate the necessity or otherwise for operation.

CASE IV.—A woman, 34 years of age, was admitted to the London Temperance Hospital with a history of aural discharge (no evidence of perforation or bulging of the tympanic membranes), severe headache, rigor, a high temperature, relatively slow pulse, vomiting, and congestion of the optic discs. The presence of a cerebral abscess was discussed, and a surgeon called in. He thought there was probably a collection of pus in the brain, and was prepared to operate. Lumbar puncture was performed and purulent fluid containing staphylococci drawn off. No further operation was considered necessary. The diagnosis of purulent meningitis then made was confirmed at the necropsy two days later.

D. It has been a definite aid towards recovery. In several cases of post-basal meningitis, a child, apparently dying, has tided over the frequently-recurring crises of dyspnoea, cyanosis, associated perhaps with convulsions, and ultimately recovered when lumbar puncture has been systematically employed to reduced the excessive intracranial pressure.

CASE V.—In one case a child, admitted to the Temperance Hospital last summer, whose tuberculous cervical glands had been scraped, developed signs of meningitis, retraction of the head, vomiting, and later intense optic neuritis, Kernig's sign, etc. It was put out in the sun all day, fed very carefully, and although on several occasions its condition appeared hopeless because the breathing and pulse-frequency became so irregular and vomiting incessant; yet, after the withdrawal of some spinal fluid the child rallied, was much better for a few days, and ultimately, after between two and three months, recovered, apparently entirely.

Some four months later the baby, now 17 months old, returned to the hospital with similar symptoms of meningitis (these were quite absent during the interval) and died after six weeks. The necropsy revealed old encapsulated and quiescent tubercles, as well as the more recent infection. I believe if this child's tissues had been a little more resistant to the tubercle bacillus he would have completely recovered.

2. What can lumbar puncture do for the general practitioner?

A. It may correct or confirm a diagnosis.

CASE VI.—A child, aged 4 years, was admitted to St. Bartholomew's Hospital suffering from symptoms of meningitis, vomiting, slow pulse, temperature about 102°, delirium, head retraction, etc.,. Widal reaction negative. A diagnosis of tuberculous meningitis was made. Lumbar puncture failed to tap spinal fluid, showing no excess. After three weeks of fever the temperature fell to subnormal, and Widal's reaction was reported positive though feeble. The child recovered completely. Evidently a case of infantile typhoid.

Case IV also shows the value of examining the spinal fluid in a doubtful case of intracranial disease.

CASE VII.—In one patient, in whose case ulcerative endocarditis was diagnosed, cerebral symptoms developed. Bacillus coli was cultivated from the spinal fluid, the patient ultimately dying from coli-septicaemia. The site of inoculation was probably an intestinal ulcer.

Often post-basal meningitis can be early diagnosed from other forms of meningitis by the presence of Still's intracellular diplococci in the spinal fluid.

B. By rendering less intense a coma from excessive intracranial pressure, it obviates the necessity of nasal feeding and other such tedious, and often dangerous, nursing pro-