THREE CASES OF OTITIS MEDIA WITH BRAIN ABSCESS.*

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I HAVE in another place recorded former experiences of cerebral abscess; but by one of those curious coincidences which occur in surgical practice three cases of brain abscess from middle ear disease came under my care in the course of a few weeks at the beginning of 1896. The interest such cases always have justifies me, I hope, in placing them before you. In the first instance, I propose to relate the cases, and subsequently to offer some brief comments upon them.

CASE I.—OTITIS MEDIA; EXTRADURAL SUPPURATION; CEREBELLAR ABSCESS; HERNIA CEREBELLI; RECOVERY.

J. F., aged 14, was admitted to the General Hospital under my care, complaining of extreme pain in the left side of his head. This commenced as an earache several days previously, at which time he vomited thrice. When I first saw him on November 16th, 1895, he complained of extreme pain in the left ear and side of the head; he was rather restless and very irritable, the pupils were dilated but equal, there was early optic neuritis on the right side, there was no evident paralysis, the head was retracted on the neck. From an incision behind the left ear pus was discharging; there was also pus in the ear, there were several enlarged glands down the left side of the neck, and the parts were swollen and infiltrated. It was probable that the otitis was of old standing; no history of rigors could be obtained. The temperature was about 100°, the pulse 76 and irregular. On this day I opened the mastoid antrum and let out some pus, and, finding no perforation in either of its walls, proceeded to chisel away the bone over the sigmoid sinus and adjacent parts. A considerable quantity of pus escaped from between the dura mater and the bone in the posterior fossa, but the sinus was not thrombosed. On pressing the boggy part of the neck, pus passed up by the side of the internal jugular, through the jugular foramen into the skull, and out at the opening I had made. An incision was therefore made in the neck behind the internal jugular vein, drainage provided for, and some glands removed. As the presence of pus bathing the dura mater made it very undesirable to open this membrane, and as, further, it was hoped that evacuation of the pus found would suffice to relieve the patient, nothing further was done at this time. During the next two days there was some improvement, and retraction of the neck almost disappeared; but on the third day the patient became very restless again and the temperature rose to 103°, though the pulse was only 70.

On the fourth day after the operation, that is on November 20th, the temperature was 101.2°, the pulse 120. There was slow horizontal nystagmus of both eyes, and internal strabismus of the left eye; the patient

was very restless and noisy. From the failure in the left sixth nerve it was most probable that an abscess of the cerebellum was compressing it. The skull was therefore trephined over the left cerebellar lobe, as far as could be managed from the former suppurating wound. After opening the dura, an abscess at a depth of an inch containing about 3 drachms of pus under great tension, was evacuated by a trocar and cannula. A drainage tube was then secured *in situ*. There was immediate relief to the strabismus, and the patient was quieter and his mind much clearer. In a day or two, however, the restlessness and headache returned, and on November 27th it was noted that a cerebellar hernia was commencing.

From this time onwards there was restlessness, occasional severe headache and vomiting, with irregular elevation of temperature and quick pulse, and the hernia steadily increased. On December 28th ptosis of the right eyelid was noticed, and imperfect movement downwards and outwards of the right eye. The hernia had by this time attained to the size of a moderately large orange, although it was kept compressed as firmly as could be ventured. By the middle of January it was noticed that the hernia was commencing to shrink, and that cicatrization was beginning at the skin margin. With this improvement in the hernia, the general symptoms also began to improve, and by the end of February the patient was allowed to get up. At first he staggered very much, as though from

inco-ordination, but by the middle of March he could walk fairly well, and by this time the hernia was cicatrised over. When seen in May, the boy was quite well, the hernia had shrunk practically to the level of the skull; but since that time I have been unable to trace the patient, who was a typical street arab, and I cannot therefore give any account of his present condition, but he has recently been seen disporting himself at one of the railway stations.

CASE I. — OTITIS MEDIA; CEREBELLAR ABSCESS; TREPHINING; DEATH; A SECOND ABSCESS FOUND AT THE NECROPSY.

Mrs. R., aged 44, was admitted under my care on March 5th, 1896, in a semi-unconscious state. Her history showed that since childhood there had been from time to time a purulent discharge from the right ear. A month before admission she had severe pain in this ear and on the same side of the head; a week later she had a rigor, and a fortnight after this she vomited at intervals for three days. When admitted the patient lay in a semi-

unconscious stupid state. There was a little pus in the right ear, and some tenderness over the right mastoid process. There was no evident paralysis of limbs, face, tongue, or eyes; but examination was difficult owing to the stupid condition. There was slight horizontal nystagmus. The breathing was of the Cheyne-Stokes type and at times stertorous; the temperature was 98.2°, and pulse 84. No reliable examination of the optic discs could be made.

On the day of admission the mastoid antrum was opened and a little pus let out, but there was no perforation of its walls into the cranial cavity. The skull was then trephined over the right temporo-sphenoidal lobe, and several punctures made in the brain, but without finding pus, though a quantity of fluid was evacuated from the lateral ventricle, where it was evidently under considerable pressure. This wound was then closed, and the trephine applied over the right lobe of the cerebellum $\frac{1}{2}$ inch behind the mastoid process. On removing the crown of bone a little pus oozed out, and the dura was found inflamed and breaking down. On opening this membrane small scattered points of suppuration were found in the superficial part of the right cerebellar lobe. With a trocar and cannula an abscess containing a drachm and a-half of foetid pus was evacuated at a depth of nearly an inch from the same part of the cerebellum. The cannula was left as a drain in the abscess cavity, and the scalp flap sutured.

A, incision to let out pus around internal jugular; B, hernia shrinking and skin cicatrising. This shows the condition thirteen weeks after operation.

* Read at a meeting of the Birmingham and Midland Counties Branch of the British Medical Association.

The notes of the few days following the operation show very little alteration in her condition, the most noticeable point being that her pulse quickened, varying between 105 and 130, and that she was restless, and called out at times. On March 10th—that is, five days after the operation, twitching of the left arm and leg was noticed, and the temperature rose to 102°; but there was no paralysis, the half unconscious condition remained, sometimes a little better at other times worse. The next note of importance was made on March 13th, when the patient had a slight rigor, and as the abscess had ceased discharging another exploration of the cerebellum was made, but no pus was found. On March 17th there were two distinct rigors, but no tenderness could be elicited over the internal jugular vein, nor was there any thickening to be detected in its course. Infective thrombosis, whilst suspected, was so uncertain, and the patient so feeble, that exploration of the sigmoid sinus and internal jugular vein was not resorted to. Other conditions, which included Cheyne-Stokes respiration, remained much as before; the pulse was always 120 or more, and the temperature fluctuated between 99° and 101°.

On March 23rd there was distinct paralysis of the right arm; motions were passed involuntarily, the unconsciousness became deeper, the curious breathing continued. The wound was now nearly healed, and exploration of the cerebellum failed again to find any further collection of pus. Death occurred on March 26th, without further developments of any kind.

The necropsy made by Dr. Stanley showed that an abscess existed at the surface of the cerebellum close to the tentorium, to which the right cerebellar lobe was adherent. This was well above the position of the abscess which had been opened. The right lateral sinus was thrombosed, but the thrombus was not breaking down at all, it was merely an adherent organising clot. The thrombus did not extend into the internal jugular vein. There was no secondary infection of the lungs or other viscera.

CASE III.—OTITIS MEDIA; CEREBRAL ABSCESS; RECOVERY.

Miss C., aged about 30, had for some years been subject to a purulent discharge from the right ear. On December 1st, 1895, she complained of headache, was sick once, and her temperature ran up to 103.6°. For the next week headache, often very severe, continued, with irregular elevation of temperature, ranging between 100° and 103.6°, the pulse being quickened up to something below 100°. On December 8th the patient again vomited once; the temperature was 101°, pulse 96. From this day until December 16th the temperature gradually dropped to 98°, at which point it remained for two days; the pulse-rate also fell to between 50 and 60, headache continued, and the patient became dull and apathetic.

I first saw Miss C. in consultation with Dr. Churchill, of Chesham, on December 16th. She lay in bed supine and indifferent; roused with difficulty, she relapsed directly into insensibility. The left arm was doubled under the patient as she lay in bed, as though it were paralysed, but there was no other paralysis evident either in limb, face, eyes, or tongue. The condition of the optic discs could not be determined owing to the patient's insensibility. The temperature was 98°, pulse 52. A little fetid pus lay in the right ear, but there was no swelling, redness, or oedema over the mastoid, nor thickening over the internal jugular vein.

The symptoms pointed in my opinion clearly to cerebral abscess, depending upon the old ear trouble. I determined first to explore the right mastoid antrum, and failing to find perforation of its roof into the cranial cavity, to examine the temporo-sphenoidal lobe, and if necessary the cerebellum on the same side. The antrum was exposed at a depth of three-quarters of an inch from the surface; it was a small dense walled cavity containing only about a couple of drops of pus; its roof was not perforated. A small circle of bone was next removed an inch and a-half above and three-quarters of an inch behind the middle of the right external auditory meatus. The dura mater was not pulsating, and it bulged into the wound; on incising it the brain matter squeezed out. A trocar and cannula thrust straight in let out about an ounce of fetid pus with sloughs of brain tissue. An india-rubber drainage tube $\frac{3}{4}$ inches long was placed in the cavity, and its outer end brought through the middle of the scalp flap. The flap was then secured all round with sutures, the mastoid cavity was packed, and the patient put back to bed. The next day she had recovered consciousness; she could use her left hand, and there was no bad indication. During recovery she was under the care of Dr. Churchill. He removed the drainage tube on the fourteenth day after operation, and reported an uninterrupted convalescence. The patient remains well, and engages in mental and physical work just as formerly.

In commenting upon these cases I will first refer to the marked retraction of the neck in Case I. I attribute this symptom to the extradural suppuration rather than to the cerebellar abscess, as it subsided to a great extent when the pus outside the dura was evacuated. I have only once before seen such extreme retraction, and that was in a case¹ of suppuration in the lateral ventricles extending into the fourth ventricle. In Case I I did not feel justified, after opening the extradural abscess, in at once proceeding further, for at this time there were no focal symptoms, and there was the danger of carrying infection inside the dura if it did not already exist there. When, however, horizontal nystagmus developed with paralysis of the sixth nerve on the left side the case was different, as it seemed to me that pressure on the sixth nerve, and no other, could best be explained by pressure forwards from the cerebellum catching this nerve where it has its surface origin between the medulla and the pons. One of the most remarkable features of this first case was the retrogression of the very large hernia of the brain.

Turning now to Case II we find the indications not at all clear. It was uncertain whether the case was one of circumscribed meningitis or of abscess in the brain tissue, and, if the latter, whether it was in the temporo-sphenoidal lobe or

the cerebellum. The slight nystagmus, a condition which existed in Case I to a much more marked degree, implicated to some extent the cerebellum. The Cheyne-Stokes type of respiration, suggestive of compression of the medulla or the nerves derived from it, also pointed somewhat in the same direction, but the evidence was not at all emphatic, especially in the absence of paralysis of the sixth nerve and of retraction of the neck. The second abscess, revealed at the necropsy, I have no doubt existed at the time of the operation, for the relief given by the evacuation of the one abscess was only slight. For this reason, on two subsequent occasions, exploration of the cerebellum was made in the belief that a further collection existed. I do not regret the non-interference with the sinus, the thrombus in which had, I think, little to do with the fatality. It was firm and apparently organising, and there was no evidence of secondary infection from it.

I may refer briefly to Case III as a typical example of abscess of the brain, in which, not only was the presence of an abscess clear, but its locality also; and it is in such cases as these that very good results may be expected.

Turning now to the procedure by which intracranial suppuration from middle-ear disease is to be attacked, I may say at once that I accept the rule laid down first I believe by Macewen that the mastoid antrum should first be opened in all cases, and its walls explored for perforations, through which suppuration may have extended to the inside of the cranium. Pus not being found here, there will often be some localising indication which will call for trephining over the temporo-sphenoidal lobe or the cerebellum, as the case may be. If, however, after opening the mastoid antrum and not finding pus outside it, there are no focal symptoms to guide as to the next step, it becomes a matter of considerable importance to reduce the exploratory process to a minimum. If after exposure of the antrum a scalp flap is raised and the trephine applied over the temporo-sphenoidal lobe, and pus is not found, and the same process has to be repeated over the cerebellum, it is evident that a considerable traumatism and a lengthy operation will be inflicted on the patient. To avoid this I shall in the future adopt the suggestion of Mr. Percy Dean. From the mastoid incision behind the ear the upper end is curved into a scalp flap covering a portion of the temporo-sphenoidal lobe, the lateral sinus, and the cerebellum. The trephine is applied $1\frac{1}{2}$ inch behind the external auditory meatus and $\frac{1}{2}$ inch above the centre of that canal. By enlarging this opening slightly upwards the parts above the tentorium can be explored; by enlarging it downwards the cerebellum is accessible, and at the same time the lateral sinus is exposed and its condition can be determined.

REFERENCE.

¹ *Birmingham Medical Review*, vol. xxxiv, p. 302.

AN OPERATION FOR EXTROVERSION OF THE BLADDER.

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EXTROVERSION of the bladder is a rare malformation, though it probably occurs more frequently than is generally supposed. The older surgeons were of opinion that no operation could benefit the unfortunate victims of this deformity, and it is well known that persons suffering from it have lived to advanced years; so that any operative interference is proposed with the view of relieving suffering rather than with the object of adding to the duration of life. That very material benefit can be obtained by means of a plastic operation there can be no doubt. The method of operating most generally known, and probably still most frequently practised, is that of the late Mr. John Wood.

The principle of this and of all similar operations is to so arrange the flaps that skin shall be next to the bladder surface. The objections to this operation are:

1. That it is prolonged and necessarily severe.
2. That partial failure is the rule, thus necessitating several subsequent operations.
3. That, although affording a covering for the bladder, the