REMARKS ON A CASE OF CEREBRAL ABSCESS, WITH OTITIS, SUCCESSFULLY TREATED BY OPERATION.

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THERE are, so far as I am aware, only three cases on record of cerebral abscess due to otitis which have been successfully treated by trephining. One of these was that of Dr. Gowers and Mr. Barker, published in the *BRITISH MEDICAL JOURNAL* of December 11th, 1886. Of the other two, by Schondorff and Trückenbrod respectively, I have not seen the record, but am indebted to my colleague, Dr. McBride, for the references.

The following case presents many points of interest, and, as will be seen, it has the advantage or disadvantage of having been treated in ignorance of any previous case of the kind, and is therefore an independent contribution to the solution of a very important question. As a case of cerebral abscess, the course and symptoms were in several respects unusual.

William M., aged 26, an india-rubber worker, was brought to my wards in the Royal Infirmary at 10.30 p.m. on December 31st, 1886, in a semi-comatose condition. His friends stated to Dr. F. T. King, resident physician, that he had been in good health till ten weeks before, when he began to suffer from cold in the head and cough, and at this time for a few days he complained of deafness in the left ear. (The patient has since absolutely denied that he had ever suffered from deafness.) In about three weeks he recovered from the cold, but did not return at once to work. Then for a month he was fairly well, and went back to work; but about a fortnight ago, he began to suffer from headache, and became heavy and dull. He soon began to vomit his food. The bowels were constipated throughout. During the week before admission, the headache and vomiting had become much worse, and up to that date he had vomited almost everything. The vomiting, however, had ceased on the day that he first came under notice. The headache, which at first prevented him from sleeping much, had recently diminished in intensity, and he had become more torpid, and had slept a great deal. There was no delirium, and he could always be roused to answer questions rationally. He was well-nourished before the illness, but had lost much flesh during the past three weeks. There was no history of chilliness or shivering, nor of photophobia or noises in the ear. His family history was good, and the patient himself (a widower, with one child living) was a strong, healthy man, and had always been temperate. He had never had syphilis, but had had scarlet fever when a child.

State on Admission.—The patient's face was thin and very pale, and he lay in a torpid condition, with eyelids almost closed and mouth open. When spoken to, he answered slowly, with slurred speech, but quite intelligently. He would not trouble himself to recall events, and did not want to be bothered. He complained of pain in his head, but said it had been much more severe. He said his sight had become dim. There was no photophobia; the pupils were equal, and somewhat contracted; they reacted normally to light. There was some rolling of the eyeballs, but no strabismus. There was no twitching of the facial or other muscles, and no loss of motor power of the limbs. There were sordes on the lips and teeth; the tongue was dry and cracked transversely; the abdomen was markedly retracted; there was no pain on pressure; the skin was moist; temperature 97°; pulse 68, of fair volume but slightly irregular; the respirations were 20, easy, shallow; the heart and lungs were normal.

January 1st, 10 A.M. The patient slept steadily during the night, and was not delirious. He was rather less torpid this morning. The pupils were natural, but the left one was distinctly larger than the right. The condition otherwise was the same as on the previous night. 11.30 P.M. There had been one natural motion during the day, but no urine had been passed. Sixteen ounces of urine were drawn off; it was acid, clear, with a specific gravity of 1029, and no albumen. The urine dribbled from the catheter without any force of stream. Patient was more torpid than on the previous evening, and markedly

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more so than he had been in the morning. He complained of pain in his head, and lay on his face, with the forehead resting on the pillow. There was no rolling of the eyeballs, nor strabismus, but there seemed to be very slight ptosis of the left eyelid; the pupils were equal and natural; there was no twitching of muscles, and the motor power of the limbs was normal. The tongue was brown, dry, cracked, and coated with sordes. The patient slept with his mouth wide open. The pulse was 68, slightly more irregular than before, of good volume, but low tension. The respirations were 20, regular and natural.

January 2nd. (These and the subsequent notes, if not by myself, are by Mr. Walter S. Colman, M.R.C.S., who was temporarily in charge of the ward in the absence of Dr. King.) 8.30 P.M. The patient was quite quiet, but very torpid; he often turned on his face, and resisted being moved. It was difficult to get any replies. His mouth was wide open, his cheeks hollow, and he had a stupid expression. There was no paralysis of the limbs; no ptosis or squint. The pupils were dilated with homatropine. O. S. Right eye, disc pale, edge fairly clear; left, disc of dirty white colour, with radial striation. No dipping of vessels was made out. The pulse was 64, regular, and fairly compressible. The temperature, which had been taken every four hours since his admission, had not varied from 97°. The tongue was still covered with sordes, and the breath was very foul; the breath sounds were feeble all over the back of the chest.

January 3rd. I saw the patient for the first time. (Owing to indisposition, I had not been able to visit the Infirmary, and the case had been considered throughout to be one of tubercular meningitis at an advanced period.) The condition was still as described. The patient appeared much emaciated, lay continually on the right side or on his face, with knees and thighs flexed; only now and then giving a short answer when repeatedly addressed, and then either turned on to his face and buried his forehead in the pillows or remained quite unconscious. There was no paralysis of the face, limbs or eyes, unless slight weakening of the left sixth nerve. There was no deviation of the tongue, so far as could be judged, but it was almost impossible to get him to protrude it. The lips and tongue were covered with sordes and aphthæ. On ophthalmoscopic examination, the left papilla was found to be greatly swollen, cloudy and grey, the edges being completely blurred. There was no hæmorrhage or exudation. The right eye could only be examined with the greatest difficulty, owing to the constant efforts of the patient, when roused, to turn his eyes and head towards the pillow. It appeared slightly ill-defined at the (apparent) lower margin, but elsewhere was clear.

From the condition of the patient, it appeared to me that if the history of the onset of the illness were accurate (and in the absence of any history of injury to the head), it was improbable that the case was one of tubercular meningitis, and that the most probable condition was one of either tumour or abscess, with a very strong preponderance in favour of abscess. I need not at the moment discuss the grounds of this view. There was no definite history of ear trouble, and no discharge from the ear. I therefore requested Mr. Colman to make special inquiries from the friends upon this point, and to ask Dr. McBride to examine the ears.

9 P.M. The patient was much more torpid, and still tended to turn on to his face. There was now distinct ptosis of the left eyelid; he had passed urine involuntarily.

January 4th, 9 A.M. He had been restless during the night, but in the morning was more torpid, passing urine involuntarily; otherwise, there was no change; the temperature was still subnormal. 12 P.M. He was more restless, and did not answer questions; pulse 112, temperature 98.2°.

January 5th. At 10 A.M., Mr. Colman made the following note. "In much the same condition mentally; is able to swallow very little nutriment; nutrient enemata ordered." I saw the patient at 12 noon, and found no marked change in his condition. The torpor continued, and he could only occasionally be roused. The ptosis of the left eye was more marked, and the left pupil was distinctly dilated; the tongue deviated somewhat to the right; there was no other paralysis; there was intense optic neuritis in the left eye, but none in the right.

January 6th. The patient was in much the same condition, but the paralysis of the left third nerve was more pronounced. The ptosis was complete; the eyeball appeared to move but little in any direction, so far as could be judged; there was marked dilatation of the pupil. The condition indeed suggested paralysis of the fourth and sixth nerves also; the conjunctiva of the left eye appeared somewhat reddened and insensitive. On testing the sensibility of the face, over one or two patches on the left side, especially one over the malar bone, the patient gave no sign of being pricked, whilst evidently feeling

elsewhere, but it was extremely difficult to draw any definite conclusion as to the condition of the fifth nerve. The optic neuritis was very intense in the left eye, but the right appeared quite natural. On examining the left ear, I now found for the first time an extremely small quantity of dirty brownish red fluid oozing from it, so small that it had not previously been observed. The temperature was still subnormal.

There now appeared to me to be every probability in favour of the diagnosis of abscess; and, for reasons which I shall afterwards discuss, it appeared to me that the evidence was in favour of the abscess being situated in the left temporo-sphenoidal lobe, and that if so, it had extended forwards and inwards, so as to occupy a position near the front, and towards the inner aspect of the lobe. In the condition of the patient I had no hesitation in deciding to attempt the exploration and, if possible, the evacuation of the suspected abscess, and without delay. Unexpected obstacles, however, arose. I was anxious to get Dr. McBride's opinion upon the condition of the ear, and, owing to some misunderstanding, he had not received my communication. The general condition of the patient had, if anything, improved; he took nourishment better, and there was no obvious immediate risk, beyond the fact of the frequent sudden onset of acute softening in such cases.

January 7th. The patient got out of bed several times yesterday afternoon and evening, and once got out and micturated on the floor, and then got in again. He was much more torpid this morning. There was paralysis as yesterday.

Dr. McBride examined the ears, and found a small perforation of the left membrana tympani. The right ear was normal. On examination of the eyes, I found the optic neuritis still very intense in the left eye, the right being entirely free. The patient could be got to put out his tongue better; it deviated slightly to the right. The pulse was 84, regular, moderately full. At the base of both lungs, especially the left, there was now some dulness, and the breathing was very feeble; there was no crepitation.

The condition of the patient did not appear to me to warrant any further delay in operation, if it were to be done with any prospect of success; but owing to a series of coincidences, I was unfortunately unable to obtain the assistance of any of my surgical colleagues, either on that day or the following morning.

January 8th. I saw the patient at noon. He could be roused to answer questions occasionally. The condition of the eye was much the same, except that the left pupil was now completely dilated and inactive to light; the movements of the eyeball almost none. My colleague, Mr. Francis M. Caird, who happened to be in the Infirmary, was good enough to respond to my urgent summons, and saw the patient with me at 1 p.m. It was decided to trephine as nearly as possible over the supposed seat of the abscess, which, as I have said, I believed to involve the anterior part of the left temporo-sphenoidal lobe, and to explore deeply in that position. Of the operation, which was performed at 2 p.m., Mr. Caird has been good enough to write the following account:

"In perforating for abscess in the anterior part of the temporo-sphenoidal lobe, the temporal region was selected, and a vertical incision about two inches in length was made, the fibres of the temporalis divided, the periosteum turned aside, and the pin of the trephine applied about one inch and a quarter behind the external angular process, and nearly one inch above the zygoma. The disc removed consisted entirely of temporal on its outer and lower aspect, of temporal, parietal and a small spur of sphenoid on its inner aspect. The upper half, internally, was deeply grooved by what seemed a branch of the middle meningeal artery. The exposed dura mater bulged forward and felt tense; it did not pulsate. The inner two-thirds had a yellowish appearance, as if lymph lay beneath. On incision and reflection of the dura mater, some lymph-like adherent matter was scraped away, and a Graefe's knife was passed for at least half an inch directly inwards, when fetid pus welled up. A pair of sinus forceps was inserted and expanded, and a drainage-tube put in; this had pulsation given to it, and was accordingly withdrawn for a short distance. About two ounces of pus escaped. An antiseptic dressing of carbolic gauze and sublimate wool was applied."

5 p.m. When roused the patient was partly conscious, but very drowsy. He attempted to answer questions, but his replies were inarticulate. The left eye was intolerant of light; he closed it firmly when a candle was brought near. Both pupils were somewhat dilated and contracted to light. He attempted to removed the dressings with the left hand, and muttered inarticulately at times, and then relapsed into unconsciousness again. The pulse was 98, regular, and tolerably full. The breathing was 17, regular, not deep, and occasionally sighing; temperature 97° F.

10 p.m. He was extremely restless, and still tended to lie on his right side, and to bury his face in the pillow. The pulse was 120, quite regular, and full; temperature 98.4° F.

January 9th. He had had a restless night, with intervals of sleep, talking incoherently, and trying to remove the bandages, in which he succeeded once. He was very much more intelligent, and answered questions correctly. He complained of pain in the region of the operation. He knew the time of day, saying he had had no breakfast. He thought he had just come into the hospital, and that it was a week before the New Year. The ptosis was almost gone. There was no obvious strabismus. The left pupil was dilated and insensitive to light. There was no twitching or convulsion. He now lay on the left side, and did not bury his head in the pillow. The wound was dressed by Mr. Caird, at 12 noon. About two drachms of pus escaped when the wound was opened. Boracic lotion injected into the ear caused an increased flow of pus from the opening in the dura mater. There was no pain in the region of the wound. All restlessness had gone.

During the rest of the day the patient continued quite comfortable, and slept a good deal. In the evening the pulse was 86, regular and full; the temperature, which previously had been subnormal, was now 98.4°. He talked quite intelligently and distinctly.

Next day, January 10th, the improvement continued. He had slept quietly and soundly. The ptosis had disappeared; the left pupil was now more contracted than the right, and reacted to light, but rather sluggishly. There was no strabismus, and the deviation of the tongue was much less. The articulation was quite distinct. When the wound was dressed, there was very little discharge. The drainage tube was removed, and a new one, two inches in length, was inserted. No pain was felt. On ophthalmoscopic examination, Mr. Colman found the left disc grey, with its edge blurred, and most of the vessels distinctly traceable at the edge; the swelling had largely subsided, and the disc was little larger than the right. There was no hæmorrhage or exudation. Vision with the left eye seemed to have been quite acute since the patient recovered consciousness.

On January 11th, the improvement continued; there was very little discharge from the wound, and it had lost its offensive odour; there was no pain. I found that the optic neuritis had almost entirely subsided. The left pupil was irregular in outline.

It is unnecessary to detail the subsequent progress of the case. On January 13th it was found that fluid injected into the ear no longer issued from the wound. The eye improved very rapidly, and on the 20th there was very little trace of the previous optic neuritis. The tube was removed on the 23rd, and the wound had closed completely by the 25th. The patient was kept in bed till the 30th, although allowed to sit up in bed from the third day after the operation. The temperature continued normal, or subnormal, as it had been throughout. The patient had no mental symptoms at any time after the operation; indeed, he proved to be very intelligent. He gave a full account of the onset of his illness, of which he remembered every particular up to three or four days before the New Year, after which he could recollect nothing. The only important difference in his account from that given by his friends was, that he stated that he had not had any illness until three weeks before the New Year, and that he absolutely denied ever having suffered from deafness, pain in the ears, or discharge from the ear. He had no shivering at the onset of his illness, or during its course, but he sometimes felt rather hot. The feeling of heaviness in the eyes and forehead, and a tendency to sleep, were the chief subjective symptoms. Even when at work he would lay his head on the table and sleep. In view of the difficulties which attend the diagnosis of cerebral abscess, especially where there is no definite history of ear-disease, I have thought it preferable to detail the course of the case, rather than to discuss all the points raised by it. But a few remarks upon the case, especially as to diagnosis and treatment, may be desirable. As regards the diagnosis of cerebral abscess, it was in the first instance largely grounded upon the general facts of the case, the condition of the patient, which closely resembled that which I had observed in other cases, and the probable exclusion of other diseases. This view was confirmed when distinct sanious, purulent discharge from the ear was observed, although it was only seen once, and in very small quantity. I need not, therefore, discuss these points more fully, although several questions of much interest are raised.

But as regards the localisation of the probable abscess, something must be said. It is, of course, well known that the commonest position for abscess secondary to otitis, is in the middle lobe of the cerebrum, and that it frequently lies in close proximity to the roof of the tympanum. But there are frequent departures from this rule, and, moreover, the size and direction of the abscess are very variable. I

was at the time impressed, perhaps unduly, by the two most recent cases of cerebral abscess which had been under my care, in one of which the abscess was in the frontal lobe, and I had much regretted that no operation was performed in that case.

The most definite signs of involvement of nerves, which were, indeed, very unusual, suggested the probable extension of inflammation to the inner aspect of the front of the temporo-sphenoidal lobe. Simple pressure in that position might have involved the third nerve, but would, in all probability, have caused obstruction in the cavernous sinus, and possibly thrombosis, of neither of which was there any evidence. Inflammation of the dura mater, and consequent pressure upon the third nerve, and inflammatory oedema of the sheath of the left optic nerve, would suffice to produce the nerve-symptoms.

I am well aware that there are sources of fallacy as regards both of these conditions. Unilateral optic neuritis, or optic neuritis occurring much sooner or more intensely in one eye than the other, may occur, though very rarely, from intracranial disease in various positions. Here, again, I was much influenced by the close resemblance to two cases which I had observed, in which neuritis, which was at first, and for some time, unilateral, had developed as a result of direct involvement of the sheath of the nerve in an adjacent inflammation. The rapid subsidence after the operation appears to confirm this view of its causation.

Again, as regards the third nerve, the mode of development of the paralysis strongly suggested direct irritation, followed by compression of the nerve-trunk. If it had been due to general pressure upon the nerve-trunk from distension of the brain, the sixth would have almost certainly been involved first. Whether the fourth and fifth were also involved at a later period, it is almost impossible to say. But there was no sufficient direct evidence of either.

As regards the position in which the operation was performed, I may state that, having indicated the probable site of the abscess, I left to Mr. Caird the decision as to how to reach it. I was not aware of any previous case of operation for an abscess in that position, nor, indeed, of any successful case—having, by some mischance, overlooked the case recorded by Dr. Gowers and Mr. Barker, nor did I hear of it until a week later. From the size of the abscess, and from its communication with the tympanum, there is little doubt that it might have been reached much further back. I cannot concur in Mr. Barker's suggestion as to the proper position for exploration; but the present does not appear to be a suitable occasion for the discussion of that point.

P.S.—February 7th. Patient continues in good health; still slight purulent discharge from left ear. Dr. Argyll Robertson was good enough to examine the eyes on February 2nd, and reports: "Right eye, fundus normal; left, disc a little pale and flat, and not quite sharply defined at margins, especially to nasal side. Retinal vessels about normal in size and not tortuous. Fundus otherwise normal."

AN ADDRESS

ON

INTERNAL DERANGEMENTS OF THE KNEE-JOINT AND THEIR TREATMENT BY OPERATION.

Read before the Edinburgh Medico-Chirurgical Society.

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THE general title of this paper is simply employed for the sake of convenience, and because it has been usual to class under this term, first suggested by Hey, certain symptoms in connection with the knee-joint, the causes of which were not always explainable. Our increasing pathological and clinical knowledge of these and other conditions is, however, leading to a better distinction and treatment of this series of symptoms; and it is with the hope of assisting in this advance that I wish to record the results of my experience.

Three years ago, I read to this Society a short paper (afterwards published in this JOURNAL for April 18th, 1885), giving an account of a new operation for the relief of a displaced semilunar cartilage. The good result obtained in this case encouraged me to operate in other cases of knee-joint derangement which had failed to be cured by the usual methods; and having now opened the knee-joint in seven cases, an opportunity has been afforded me for practically studying the actual

conditions causing the symptoms complained of. An eighth case under my care, but operated upon by Dr. Cotterill, is an addition to this practical experience. I would here remark that these eight cases do not include the several instances in which I have opened the knee-joint for the removal of one or more "loose cartilages."

The eight cases may be divided into three groups:

1. Displacements of the semilunar cartilage.
2. Growths in the interior of the joint.
3. Growths from the bone protruding into the joint.

I. *Displacement of Semilunar Cartilages.*—In this group there were four cases, three affecting the internal cartilage and one the external.

CASE I (already published).—A miner, aged 30, was admitted on November 1st, 1883, with well-marked symptoms of displacement of the internal semilunar cartilage of the right knee-joint, which had resisted various forms of treatment. My operation for fixing the cartilage by opening the joint, replacing the displaced structure, and stitching it in its proper position by means of catgut sutures, was performed on November 16th. In seven weeks the bandage and splints were removed, and movements of the joint practised. The patient was examined in April, 1884, when he was found to be completely cured of his symptoms, and all the movements of the joint were perfect.

CASE II.—U. B., aged 32, a gardener, was admitted on November 23rd, 1885. He had suffered from symptoms of displaced internal semilunar cartilage of the right knee for one year, and he attributed his symptoms partly to constant kneeling at his work and partly to a twist of the joint. As ordinary treatment failed to relieve, and as he was unable to follow his employment, the usual operation was performed. When the knee-joint was opened, it was seen that the affected cartilage had been almost entirely torn away from its anterior attachments, and was folded backwards upon itself, lying towards the inter-condyloid notch. It was drawn into position, and stitched there by catgut sutures. The splint was retained for six weeks, when it was removed, and movements of the joint practised. This case also was completely successful, and the patient was seen six months afterwards, when he was actively engaged at his work.

CASE III.—J. G., aged 35, a miner, was admitted on July 19th, 1886, suffering from symptoms similar to those in the last two cases, which had existed for about nine months. The knee affected was the right one, and there was no distinct history of an injury. The usual operation was performed on July 21st, and the patient was dismissed, with the splints still applied, on August 24th. He returned at the end of a month, when the splints were removed, and movement of the joint ordered. Six weeks after, he again returned, when it was found that his symptoms were greatly relieved, and the movements of the joint were natural, except that he could not flex the knee to quite the full extent; otherwise the limb and joint were perfectly right. In this case the internal semilunar cartilage was found to be only partially separated from its anterior attachments.

CASE IV.—U. U., aged 28, a soldier, admitted November 4th, 1886. Six months before admission, he was running quickly down some stairs, when he fell, his left knee receiving a severe twist. He was carefully treated in the military hospital for several weeks, and at the end of this time he could walk a little, but only with the injured limb in the straight position. When he tried to bend the knee, he felt something "give" in the joint, and it became locked, but by a little manipulation and movement of the joint, he could relieve the symptom. There was tenderness over the position of the external semilunar cartilage, and in certain movements of the joint the cartilage could be seen and felt to be displaced. The operation for replacing and fixing the cartilage was performed upon November 11th, and he was dismissed with the splints retained upon December 13th. He returned at the beginning of January of this year, when the splints were removed, and movement of the joint ordered. On February 2nd the patient was walking with a strong and useful leg. The movements were not yet perfect, but the old symptoms had entirely disappeared.

The conditions found in these four cases confirm the following facts, which have been already more or less recognised by surgical authorities.

1. That one or other of the semilunar cartilages—most frequently the internal one—is liable to be displaced, and to cause more or less interference with the movements of the knee-joint.
2. That this displacement may be slight—as is most common—or severe, and that the amount of displacement depends upon the extent of separation of the attachments of the cartilage.
3. That it is the anterior attachments of the cartilage which are most frequently separated.