Remarks on the results of surgical measures in a series of cerebral cases / by G.A. Gibson.

REMARKS

ON THE

RESULTS OF SURGICAL MEASURES IN A SERIES OF CEREBRAL CASES.

BY

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During the last four years many examples of organic disease of the brain have been under my care, and of these cases a certain number have presented symptoms demanding operative measures. The opportunities thus afforded me of observing the symptoms, and considering the treatment, have led me to form certain conclusions, which it is my aim to state as briefly as possible in this paper, after casting a rapid glance at the series of cases treated by surgical means.

I. Cerebral Tumour with Jacksonian Symptoms.

(Reported by Dr Gerald Fitzgerald.)

A. A., a slater and chimney-sweep, aged 43, married, presented himself before me in the medical waiting-room, January 19, 1891, complaining of persistent headache, with loss of power in the left arm and leg.

The patient had no hereditary tendencies to disease, and seemed to have no specific taint. He had been married for many years, and was the father of thirteen children; five of them died in early childhood, but the remaining eight had always been in good health. He had been temperate in the use of alcohol, but had smoked heavily. His surroundings had been comfortable, but his work had been hard; and he had been greatly exposed to the influences of the weather.

During the last five-and-twenty years he had met with several accidents. About twenty-four years ago he fell from the third floor of a house, and alighted on a stone stair upon the crown of his head. He was unconscious for about an hour, but was able to walk home afterwards, and observed no bad effects a few days later. At different periods subsequent to the date of this fall the patient had met with other accidents, some of which involved the head, but none of them seemed to merit special attention.

Nine months before coming to the Infirmary he observed a tendency to headache. At first it was slight and transitory, making

its appearance towards evening, especially if the work of the day had been more arduous than usual; the pain, however, became more severe and persistent as time went on, and just before presenting himself the headache had been constant. Soon after the onset of the headache, the patient noticed some weakness of the left arm and hand, with difficulty in using the hand for complicated movements. Weakness of the left leg began to show itself at a later period, and walking became difficult in consequence. He subsequently observed occasional twitching of the left side of the face, accompanied by some interference with his utterance, which led some of his friends, at times, to express doubts as to his sobriety.

The patient was, on examination, seen to be a strong, muscular man, 5 feet 7 inches in height, and 10 stone 6 lbs. in weight, with a normal temperature. He complained of a feeling of coldness and numbness over the left forearm and hand. His perception of ordinary, painful, and thermal sensory stimuli was everywhere acute, quick, and accurate. The headache was referred somewhat indefinitely to the vertex, and on percussing that region a vaguely-defined area of tenderness could be determined. The pupils were equal, and reacted normally. The acuity of vision was unimpaired, and the field of vision unaltered. On examining the fundus of the eye with the ophthalmoscope, double optic neuritis was found to be present, the change being more advanced in the left eye. The patient could not hear so well with the left as with the right ear. The senses of taste and smell seemed unaffected.

Turning to the motor functions, it was found that the movements of all the muscles of the left side were much weakened. The left side of the face was deficient in expression, and the unilateral movements were distinctly diminished; he could, for example, only wink with the left eye in an imperfect manner, and his smile was mostly confined to the right side of the face. No involuntary twitching was observed at any time. The speech was somewhat indistinct. There was no deviation of the uvula or deflection of the tongue on protrusion. The muscles of the left arm, and more especially of the left forearm, were a little smaller than those of the right, and they were deficient in tone. The power of the muscles on the affected side was considerably reduced, the patient being able only with difficulty to raise the arm to the level of his head, and, tested by the dynamometer, the grasp of the left hand was only 10, as against 55 on the right side. The loss of power was most marked, therefore, in the hand and forearm. The muscles of the left thigh were very slightly smaller than those of the right; the legs were equal in size; there was no loss of tone in the lower extremity. When walking, the patient slightly dragged the left foot. The left arm and leg, on being tested by electricity, showed a slight impairment

of irritability to galvanic as well as faradic stimuli. The superficial reflexes were everywhere equal on both sides of the body. A well-marked wrist-jerk could be elicited on the left side, the left knee-jerk was exaggerated, and a slight ankle clonus was found on the same side. Muscular co-ordination was unaffected, and the muscular sense unaltered. The vaso-motor and trophic functions were in no way impaired. The mental functions were in every respect good, except for a slight degree of irritability of temper, which was a new development in his disposition.

A careful examination of the head revealed a slight but distinct swelling situated $3\frac{3}{4}$ inches behind the glabella, and nearly occupying the middle line, but lying more to the right side. The diameter of this swelling was about $1\frac{1}{2}$ inches. It was hard and resistant, and was evidently of a bony nature. This area was the starting-point of the pain, and here the tenderness on percussion was best marked.

In this case no difficulty could arise with regard to the diagnosis. The general symptoms—headache, interference with speech, and optic neuritis—suggested the probability of a cerebral tumour, and the focal symptoms—shown by the distinctly localized motor disturbance—clearly pointed to the presence of a mass in the middle of the right motor area, occupying the centres for the left arm, and causing pressure upward upon the centres for the left leg, as well as downward upon those for the left side of the face.

As regards the nature of the tumour, it was not so easy to arrive at a definite opinion. As is well known, if syphilis be excluded, as it was in this case, about 80 per cent. of cerebral tumours are either tubercular or sarcomatous. Not a shred of evidence in favour of any tubercular tendency being present, we were inclined to the pathological diagnosis of a sarcomatous tumour.

The patient was placed under the care of my colleague, Sir Thomas Grainger Stewart, and entered Ward 22 on the day he was seen in the out-patient department. The nature of his case was fully explained to him, and, after consulting with Prof. Annandale, the advisability of seeking relief by means of an operation was placed before him. As he would not entertain the proposal, he was treated by means of iodide of potassium and nerve sedatives.

The patient left the Ward on January 31, somewhat improved in regard to the headache, and feeling rather more power in his affected muscles. Although no longer resident in the Hospital, he attended daily as an out-patient, and was treated by means, of strychnine hypodermically, with faradism to the paralyzed muscles.

The slight improvement which was manifested during the period of his stay in the Royal Infirmary was of brief duration, and the symptoms changed rapidly for the worse. The headache became so severe that sleep was greatly interfered with. The unilateral movements of the face and the movements of the forearm and

hand on the affected side were completely paralyzed. The muscles of the shoulder and arm still retained some power of movement. The weakness of the lower limb had become so marked that the patient could not lift his foot clear of the ground. His memory was impaired, and his inhibitory power very markedly diminished. He was in consequence readmitted to the Ward, at that time under my care, on March 20, 1891.

The necessity of an operation was strongly urged upon the patient, and he gladly assented to the proposal. He was therefore transferred to the care of Prof. Annandale on March 24.

The following day Mr Annandale operated. The bone was removed from the region corresponding to the middle third of the motor area on the right side. Both bone and dura mater seemed quite healthy, but on cutting through the latter a soft reddish mass was exposed, which was easily separated by the finger from the surrounding brain tissue. As the mass was too large to be removed in one piece without greatly enlarging the opening in the skull, Mr Annandale divided it, and extracted it in several portions. The tumour was examined by Dr Barrett, who found it to be a glio-sarcoma.

After the operation the patient made an uninterrupted recovery, and has remained in good health ever since. He has recovered the use of almost all his muscles, he can walk a dozen miles, and has nearly equal power in both arms. With the dynamometer the grasp shows 80 with the right and 70 with the left hand. The more specialised movements, however, of the left hand have not been restored, and there is still an exaggerated jerk at the left elbow and wrist, and an increase in the left knee-jerk, along with ankle clonus; there must, therefore, be permanent degeneration of the motor tracts descending from the right side of the brain. It is a most interesting fact that Dr Argyll Robertson and Dr Mackay could trace no vestige of optic neuritis in either eye when he was seen by them in July 1895.

The great lesson which has been borne in upon me by this case, which has already been fully recorded by me,[1] is the vital importance of early operation. Had the patient yielded to our advice, and allowed us at once to give him the opportunity of surgical relief, it is very probable that he would have regained more of the power of finer adjustment in the hand of the left side.

II. Cerebral Tumour Producing Coma.

(Reported by Dr J. G. Cattanach.)

R. G., 50, formerly soldier, afterwards a house-painter, and latterly a park-ranger, was admitted to Ward 22 under my care on 13th April 1893, on the recommendation of Dr White. The patient had been for twenty-one years in the army and had

[1] *International Clinics*, vol. ii. (second series), p. 131, 1892.

suffered from syphilis. His second wife had borne two still-born children. Five weeks before admission his lips began to be drawn to the right side. A week later he complained of headache, at first frontal, later vertical, but towards the right side, and over the right side there was tenderness. He also began to suffer from spasms of the great toe of the left foot. He was treated with iodide of potassium, which relieved the headache, but four weeks before coming in he began to drag the left leg, which felt numb, and he could not hold objects in his left hand, but let them fall.

On examination the patient was found to be torpid, with great tendency to stupor; there was restlessness and confusion of ideas. There was some cyanosis of the lips. The tongue was furred and tremulous. The temperature was subnormal, pulse about 80, breathing 14. From the mental condition of the patient it was impossible to determine the state of the sensory functions. The pupil reflex to light was very sluggish. Intense double optic neuritis was present. Swallowing was imperfectly performed. Micturition was interfered with, retention and incontinence being occasionally noted.

On getting the patient out of bed it was seen that the left leg could not be raised at all, and an attempt, when supported, to walk, showed that the affected leg was simply dragged along. The left arm was almost quite paralyzed as well as the left side of the face. The left knee-jerk was much exaggerated, and there was left-sided ankle clonus. The patient understood what was said to him, but was scarcely able to reply, and any words employed were pronounced in a slow and slurring fashion. He was treated energetically with iodide of potassium.

During the next four days the tendency to stupor became more marked, so that by the 17th April the patient was quite comatose. The left leg and arm became absolutely powerless, but the face showed distinct twitchings on the left side.

After consultation with Mr Alexis Thomson it was decided that an operation was not only justifiable but necessary, and the patient was transferred to Ward 7 on the 18th April. As the symptoms pointed to an implication of the entire motor area on the right side of the brain, the site selected for operation was the middle zone of the Rolandic region. On removing the bone the dura mater was seen to bulge very markedly, and on reflecting the membrane the exposed brain swelled out and showed no pulsation. The surface of the brain seemed normal in colour and consistence. On incising the brain substance and introducing the finger nothing abnormal could be felt. The lower zone of the Rolandic area was then exposed, also with negative results.

On the following day the patient was somewhat improved. He expressed himself freely and sensibly in answer to questions, and said he felt much better. He put out his tongue readily, and took food with relish. He had, however, no return of power in the

muscles of the left side. Two days later he became delirious, and muttered quietly. He had some ptosis of the left eye, and internal squint of the right. Involuntary micturition was present. On the 22nd April he again became sensible, recognised and conversed with his wife, but in the afternoon he collapsed suddenly, lay for a time in a state of coma, with the eyes turned to the right, and died quietly.

The post-mortem examination, performed by Dr Leith, showed that there was no sepsis, and that the wound had almost entirely healed. No meningitis was present. On slicing the brain, a tumour, of a greyish-red colour, was found in the right hemisphere. It was about 1 inch in transverse and $\frac{3}{4}$ inch in antero-posterior measurement, and occupied the corpus striatum. The mass was outside of the caudate nucleus, and occupied the knee and the anterior portion of the posterior limb of the internal capsule, encroaching on the lenticular nucleus, and pressing upon the corpus callosum. In the posterior part of the brain there was some encephalitis. The microscopic investigation of the tumour showed it to be gliomatous in structure.

From this case, which had, unknown to me, been seen previously by Dr Bramwell, and to which he referred in a recent communication,[1] some useful deductions can be drawn. In the first place it is evident that even Jacksonian spasms may have little localising value. Judging by the symptoms, a lesion might reasonably have been expected in the cortex, beginning in the centre for the lower limb and invading the centres for the arm and face. The case further shows that on the removal of the increased intracranial pressure consciousness was for a time restored.

It may be asked whether, in a case like this, if the diagnosis had been correctly made of a tumour in the region of the great basal ganglia, operation would have been justifiable. To my mind it would be not only justifiable, but even necessary. Sir Thomas Watson in his classical lectures recommends, in the case of patients dying of cholera, the transfusion of warm water into the veins with the object of allowing the opportunity of making a will.[2] How much more urgently is surgical interference demanded in such a case as this, with the possibility of finding a lesion, supposed to be inaccessible, situated in such a position as to allow of its removal!

III. Cerebellar Tumour.

(Reported by Dr Purves Stewart.)

I. K., a married woman, æt. 25, was admitted on 8th April 1895 to Ward 25 of the Royal Infirmary, then under my charge, on

[1] *Transactions of the Medico-Chirurgical Society of Edinburgh*, vol. xiii., new series, p. 132, 1894.

[2] *Lectures on the Principles and Practice of Physic*, fourth edition, vol. ii., p. 528, 1857.

the recommendation of Dr Laing of Dundee. She complained of headache, giddiness, and difficulty in walking. These symptoms had commenced ten months before admission, and had steadily grown worse in spite of treatment.

Her family history was satisfactory, there being no evidence either of tubercular or of inherited specific disease. She had been married for three and a half years, and had borne one child, who died from convulsions at the age of eight months, four weeks before patient's admission to Hospital. When three months old the child had on its face and body a rash, the exact nature of which the mother could not describe. The patient never had any miscarriages. There was no history of syphilis, either primary or secondary. The health of her husband, who is a sailor, could not be ascertained.

The patient was examined on the day after admission, and the following conditions were found in the nervous system:—As regards the sensory functions, there were no subjective sensations of any sort, with the exception of a deep-seated headache, which patient described as feeling "like a sharp dagger," strictly localised to the frontal region, exactly over the left eye. This pain was not increased by firm pressure, nor by tapping over the painful area. There was no cutaneous anæsthesia anywhere, and the muscular sense was normal. On examination of the eyes there was found constant marked nystagmus, both in the horizontal and in the vertical meridians. The left pupil was larger than the right; both pupils reacted to light and to accommodation. On ophthalmoscopic examination distinct optic neuritis was found in both eyes. Although the external and middle ears were normal, yet patient was completely deaf in the right ear, both to external sounds, such as the ticking of a watch, and to a tuning-fork placed on the vertex. Taste and smell were normal.

As regards the motor functions, there was no motor paralysis or paresis, with the exception of the soft palate, the functions of which seemed to be slightly impaired, as evidenced by the regurgitation of fluids through the nose during swallowing. Her voice was somewhat "bleating" in character, and she herself noticed that it had altered from its normal state. The larynx was not examined. The organic reflexes were normal, with the exception of deglutition, which was occasionally a little difficult, especially on attempting to drink large draughts of fluid. The skin reflexes were normal. Both knee-jerks were equally exaggerated, and occasional ankle clonus could be elicited on both sides. The patient's gait was very pitching and staggering in character, she reeled along, walking on a broad base, planting her feet widely apart, but neither stamping her heels nor scraping her toes. She complained of distressing vertigo, but only when she moved in bed, or tried to sit up or walk. So long as she lay still there was no feeling of giddiness. Her gait was so unsteady that she inclined to fall

unless supported, and there seemed to be a tendency to fall on the right side. On making patient stand, with her eyes shut and feet together, the swaying was very marked, and here also she tended to fall to the right side.

There were no vaso-motor or trophic changes. The patient's intelligence, attention, and memory were excellent. She slept badly, owing to the persistent headache, which was always worst at night. There was no abnormality to be discovered on examination of the cranium and spine. As regards the other systems, the alimentary system was normal, save for a slight tendency to constipation; the lungs and heart were quite sound. As to the integumentary system, there was a small patch of ichthyosis over each ligamentum patellæ. With respect to the reproductive system, patient had amenorrhœa of four months' standing. The urine contained no abnormal constituents. Prior to admission, the patient had not suffered from vomiting, but this symptom supervened a few days after she came into Hospital. This vomiting recurred at intervals, at first of several days, but later more frequently, and it was quite unassociated with the ingestion of food.

Such being the clinical facts, the question of diagnosis next arose. The presence of headache, vomiting, and double optic neuritis indicated some intra-cranial lesion. The absence of distinct motor paralysis, either of limbs, trunk, or face, combined with the presence of a staggering gait and distressing vertigo, pointed clearly to the cerebellum as the seat of the lesion.

On attempting to attain to a more definite localisation, there were several points to guide us. The tendency to fall towards the right side is usually regarded as significant of right-sided cerebellar lesions, and had some weight in considering the case. The right-sided labyrinthine deafness showed that there was some lesion of the auditory path on that side. According to Meynert, after leaving the nucleus the auditory tract passes through the cerebellum, and whether this be allowed or not, there can be no doubt that the right-sided deafness points to the probability of pressure upon some part of the auditory path or its nucleus. It seemed clear that the affection was right-sided, and on account of the trouble connected with deglutition as well as with hearing it seemed probable that it was situated at a low level.

But in addition to these facts there was another point which was of much interest. It is one which has not, so far as is known to me, been previously described as of diagnostic import, and although we cannot as yet assign any definite position to it, it appears to me to have the promise of the highest value. Dr Purves Stewart, resident physician at the time, called my attention to the persistent headache in the left frontal region, and suggested that it might be produced by irritation of the fronto-cerebellar fibres crossing from the left frontal region to the superior cerebellar

peduncle. It affords me much pleasure to have this opportunity of stating that, in my opinion, he has added a valuable symptom to the diagnostic means at our disposal in studying cerebellar disease. Whether it may ultimately prove of as much use as we hope cannot at present be foreseen, but some corroborative facts have already been brought under my notice which induce me to cherish the expectation that this new symptom is one holding out the promise of real utility.

From a consideration of these facts, the diagnosis was made that there was a tumour in the lower part of the right lateral lobe of the cerebellum. Whether the tumour was of the nature of a gumma, a tubercular mass, or a new formation, could not be determined. With the view of eliminating as far as possible the chance of the lesion being a syphilitic one, the patient was at once placed under treatment, by gradually increasing doses of iodide of potassium, until on 20th April she was taking 60 grs. three times a day. In addition to these massive doses of iodide, inunction with blue ointment was applied every day to two parts of the head,—over the right half of the cerebellum, and over the seat of pain in the frontal region. This treatment was continued until 30th April. So far from improving, the patient grew worse; all her symptoms became more aggravated, and more especially the vomiting became more frequent. On 30th April, therefore, after consultation with Professor Annandale, she was transferred to his Ward, with a view to surgical interference. After her admission the vomiting increased still more in frequency, and the patient was evidently going from bad to worse.

On 3rd May Professor Annandale cut down over the right lobe of the cerebellum, trephined the skull, and discovered a tumour about half an inch below the surface. The tumour was about the size of a pigeon's egg, and lay low down in the lateral lobe of the cerebellum, rather closer to the foramen magnum than to the outer wall of the skull. On opening into the mass, about a drachm of clear serous fluid escaped and was lost. Within the cyst was found a solid tumour, apparently encapsulated. This was completely removed piecemeal, and subsequent microscopic investigation showed it to be of the nature of a fibro-sarcoma.

The progress of the case after the operation was eminently satisfactory. When the patient recovered from the chloroform anæsthesia the frontal headache had entirely disappeared, and has never returned again. The sickness also entirely ceased, the nystagmus became much slower and less marked. Instead of being constant, as it was before the operation, it occurred only when the patient fixed her eyes on some object not directly in front of her. When the globes of the eyes were in a position of rest—that is, looking straight forward—there was almost no nystagmus. The feeling of giddiness on changing her position also entirely disappeared. Her swallowing became quite perfect,

even with fluids. Her gait much improved. The optic neuritis almost disappeared.

Since leaving the Royal Infirmary the progress of the case has been most satisfactory, as may be seen from the letter now subjoined:—

"9 Tay Square, Dundee, Nov. 18, 1895.

"My Dear Dr Gibson,—I have just received your kind note about Mrs K. I delivered her of a healthy girl about three weeks ago, after a perfectly easy and normal labour. She made an excellent recovery, and is now very well. Had it not been for this she would have been across to report herself, and no doubt she will do so when she can. She walks quite well now, speaks as she used to, and has no headache or giddiness. There is still a little nystagmus, and over the site of the operation a painless fluctuating swelling still remains. In all respects it has been a most satisfactory result.—With kind regards, believe me, very sincerely yours,

"James H. W. Laing."

But little commentary is necessary on this case, the full details of which have been placed on record by Dr Purves Stewart,[1] but it now seems to me quite clear that it would have been better for the patient if we had operated earlier, as we might then have got rid even of the slight nystagmus still present.

IV. Infantile Hemiplegia.

(*Reported by Dr A. M. Easterbrook.*)

W. M., schoolboy, aged 13, was brought on several occasions to see me in the waiting-room, complaining of paralysis of the left side of the body, especially of the left leg, and fits. The patient's father is alive, but subject to bronchitis; his mother enjoys good health. There seems to be, however, a bad history of parturition on the part of the mother. The patient had four brothers, all dead; two only survived a few hours after birth, and one about a day and a half after birth; the remaining brother died of consumption. The patient says one cousin has paralysis of the right side, but he thinks it was the result of an accident. The patient says he has a pleasant and comfortable home, and that the locality, as far as he knows, is healthy; the drains seemed to be out of order, however, when he was attacked by diphtheria. He has not had the usual child's complaints (as measles, scarlatina, whooping-cough); he has had bronchitis several times. About two years ago he was in a private hospital with diphtheria for seven weeks; he does not seem to have suffered from post-diphtheritic paralysis, nor was his left-sided paresis aggravated by the diphtheria; he has had no other serious illness except the present condition. The patient says he has had the paralysis ever since birth, and he says his mother ascribes his condition to an injury he received at birth on the right side of the head; the labour was evidently a difficult one, and forceps were used. His mother told him that the doctor used

[1] *Edinburgh Hospital Reports*, vol. iii. p. 447, 1895.

to come and manipulate his head for some days after the birth, and expressed hopes that the child would recover from the injury, but the whole of the left side of the patient's body has ever since birth been paretic and weaker than the right side, and has had a tendency to be ill-developed; he has evidently had talipes equinus of his left foot since his childhood, as he says he always walked as he does now. He has been treated for his condition, but has not made any marked improvement, although he says that now he has more power in and can use his left arm better than before. With regard to the fits, he states that he commenced to have them about twelve months ago, and at first he used to have two, three, and four in a week, but of late (for the last month or two) they have diminished in frequency, he only having now about one a week. He says he can usually tell when he is going to have a fit, although he cannot describe any very definite aura immediately preceding the fits, but he usually has a headache for about a day before, and sometimes feels sick for some hours before a fit; and when actually going into the fit he says he usually becomes giddy, and everything seems to whirl round about him. He says he does not always lose consciousness during a fit, but often does so.

On admission the patient was seen to be fairly well nourished, but the left side of body was not so well developed as right. The patient's left upper extremity seems to be slightly less developed than the right, and there seems to be some degree of permanent contracture of the left biceps, causing the left elbow to assume the flexed position. The left lower extremity seems slightly less developed than the right, and there is marked talipes equinus of the left foot, and also some degree of inversion of the left foot. The patient looks anæmic, and his head is inclined to droop forwards on the chest. He has rather prominent eyeballs, and at times a somewhat vacant stare. His face generally is somewhat expressionless; his temperament seems to be rather of a nervous character, and he has not a very intelligent expression. When spoken to, however, he seems to have a fairly good memory and intelligence, but is apt at times to be slightly dazed and vacant. This is not, however, by any means a marked feature. His muscles, generally speaking, seem to be subject to small jerky, spasmodic movements, which seem to be involuntary. There are no marked fibrillary twitchings. The patient is subject to pain in the head, especially on the right side and in the frontal region. When it is present, he says it is a dull aching pain, and that it makes him feel dizzy and unable to do anything, and he has to go to bed whenever it comes on; the patient says he always has this headache before and more severely after a fit. His headache, however, is sometimes present without a fit necessarily occurring. He also experiences sometimes a stiffness and pain round the neck, especially at the back of the neck,—it prevents him from moving his neck freely. The patient also sometimes

experiences sensation of pins and needles down the whole left side of body, especially in the left foot, not much in the left arm. The sensation of pins and needles is present sometimes apart from fits. He also says that his whole left side feels asleep when he is going into a fit, and for an hour or so after he has come out of a fit. He also experiences tingling sometimes in the left upper and lower extremities. No history of lancinating or girdle pains, with the exception, perhaps, of that occasional stiffness he experiences in the neck. The tactile sensibility seems to be unimpaired; he can always tell you where you are touching him when his eyes are closed. Perhaps at times he is rather slow in localising the spot, but on the whole his sensation of touch is fairly normal. Sensibility to heat and pain are all unimpaired. After examining him for some time he has made mistakes with regard to heat sensation on his left leg, but he is nearly always right in distinguishing between hot and cold test-tubes. The muscular sense seems to be unimpaired. He can balance himself quite well with his eyes shut, but has some difficulty in so doing, even with his eyes open, when he puts both feet closely together, due to talipes, perhaps. The special senses are unimpaired. The organic reflexes are normal, except that the breathing tends to be jerky sometimes, and he says he is breathless when coming out of a fit; also the heart's action is irregular. The superficial reflexes are little affected. Ankle clonus is markedly present on the left side; it can occasionally be produced on the right side. The knee-jerk is distinctly more marked on the left side; and knee clonus can also be produced on the left side by repeated tapping over the quadriceps extensor tendon. The wrist-jerk is well marked on the left side; not so on the right side. The patient's voluntary motor power is somewhat impaired on the left side. This is most marked in comparing the two upper extremities, the left arm being distinctly weaker than the right arm. No special groups of muscles seem to be involved. The power of co-ordination is not very great in either upper or lower extremities, but better on the right side than on the left. He cannot describe a circle well with either foot, but a better attempt is made with the right foot. He cannot walk along a straight line very well; this is perhaps due to a certain extent to his deformity on the left side,—talipes equinus. He can pick up objects well enough, but is apt to be slow in his movements. On being asked to touch various parts of his body with his eyes shut, he goes wider of the mark with his left hand than with his right. As a rule, he puts his finger within two or three inches of the spot he is asked to touch. The skin is dry and fairly well nourished on both sides. The soft tissues of the left extremities are somewhat wasted,—*i.e.*, not so well developed as on the right side. The left lower and upper extremities tend to be colder than those on right side. There does not seem to be any tendency to glossiness of the skin on the left side or elsewhere.

There are no eruptions except a papule on the nose, and the mark of a dog-bite on the back of the right popliteal space. The intelligence is fairly good. He is apt to be distracted and dazed at times (especially after much examination). His memory is not particularly good. His speech seems to be normal, but patient cannot read or write well—only very simple words, as dog and cat. He can only write simple words and his own name, and only in badly-formed capitals (probably due to neglect of education). The patient sleeps well, as a rule, except when his headaches come on, and these then prevent him from sleeping. He does not seem to be troubled with dreams. There is a general fulness to be made out over the right temporo-parietal region. No special prominence or thickening of bone is to be made out at any one point. No scar is observed on head. There is no specially painful spot to be made out by percussing all over the head. On inspection, a slight left lateral curve is seen to be present in the dorsal region. The first three lumbar spines are perhaps unduly prominent. Percussion down spine and hot sponge test elicit nothing of importance. The result of careful measurement of the bones and muscles shows no striking differences between the two sides.

The patient was brought to see me at the waiting-room on several occasions, and was treated by means of tonic remedies along with the bromides. As he made no progress in any way he was taken into Ward 22, then under my care, on 18th April 1894. It seemed to me that there were two possibilities,—he might be afflicted with hemiplegia dependent on porencephaly, or caused by some localised lesion on or near the motor area. On consultation with Mr Alexis Thomson, we agreed that in view of the cranial accident at birth there was at least a possibility of the latter alternative, and resolved to operate, a course that was eagerly sanctioned by the parents. The patient was therefore transferred to the surgical side.

Mr Thomson removed a large piece of the skull in the situation of the right motor area, but failed to see any alteration in the membranes or cortex. He therefore sewed the membranes, replaced the bone, and closed the wound. The boy made a perfect recovery from the operation, but except for some increase of intelligence has not in any way improved. We were not, in this instance, sanguine as to the possibilities open to us; but after reviewing all the facts and circumstances presented by the case, it seems to me that we should with similar conditions follow the same course as on this occasion.

V. General Paralysis with Epileptiform Attacks.

(*Reported by Dr J. G. Cattanach.*)

J. R., aged 47, domestic servant, was admitted to Ward 6 on 4th December 1894, on the recommendation of Dr Crawford Dunlop.

About twelve years before admission she was struck on the head by a burglar. She was for some time unconscious, and was never able to give any clear account of the assault. Four years before admission she began to take fits, and had since then suffered from convulsive attacks at irregular intervals. These were said to have commenced invariably by spasms of the right arm, spreading over the entire body. Latterly after the attacks she was in a more lethargic condition than used to be the case. In September the patient was placed in the Elgin Asylum on account of her mental condition. While there she had two convulsive attacks, and more than one maniacal outbreak. The convulsions were said to have begun in the right arm, and to have been almost confined to that limb.

On examination the patient presented no change in sensibility, common or special. There was no optic neuritis. The organic and superficial reflexes were unaltered, and there was no change in the myotatic irritability. The intelligence was weak. Questions received irrelevant replies, and the patient was moved to tears and laughter by slight causes. No convulsive attack took place while the patient was under my care, although she was watched day and night. The relatives of the patient were very anxious that some attempt should be made to ascertain the cause of the convulsive attacks, and to remove it if possible. Mr Cotterill accordingly saw her, along with Dr Dunlop and myself. It seemed to us that the patient suffered from dementia, and that it was possible there might be some focus of irritation on the right side of the cortex. It was therefore determined to have recourse to operation.

On 20th December Mr Cotterill, with the wheel-saw, turned back a flap of bone about the size of the palm of the hand and exposed the motor area on the left side. There was no thickening of the bone or dura mater, and on reflecting the latter no increase of fluid could be seen. The surface of the brain, however, was somewhat flattened, and showed an opalescence rather suggestive of some old-standing hyperæmia. On stimulating the motor area with a weak faradic current there was a sluggish reaction of the leg and arm, but the side of the face was thrown into typical epileptiform spasms. By means of a fine trocar and cannula a small quantity of fluid was drawn from the lateral ventricle, the dura mater was stitched, the bone replaced, and the scalp sutured.

The patient spent a very restless, noisy night. The temperature rose to 100° and the pulse to 120, but the respirations remained normal, about 17 or 18. On the following day she was still very restless; the pulse, temperature, and respiration rose. During the next two days the symptoms became more serious, and early in the morning of the 24th December, after the temperature had risen to 102°·6, the pulse to 162, and the breathing to 52, she passed quietly away.

The brain was forwarded to Dr W. F. Robertson, pathologist to

the Royal Asylum, who kindly furnished me with the following report :—

"Royal Asylum, Morningside, 25th December 1894.

"Dear Dr Gibson,—Many thanks for the interesting brain you sent me yesterday. I have cut and examined sections, and now send you one. Histologically the case is one of general paralysis of the insane, and I have little hesitation in saying that the case was really one of that kind. Dr Cattanach has sent me a note of the history, which is quite consistent with this view, though somewhat exceptional. You will notice marked spindle-cell hypertrophy, not only in the first layer, but in the depth of the cortex and in the white matter ; thickening of the capillaries, aggregation of round cells upon the larger vessels, and advanced degeneration of the nerve cells. The last is chiefly pigmentary, but there is also a marked degree of nuclear vacuolation. This, as you no doubt remember, Dr Bevan Lewis specially associates with epilepsy—an observation which we have not been able to corroborate at Morningside. I had quite recently a case of general paralysis which showed as marked nuclear vacuolation as is seen in this case.—Yours very sincerely, "W. F. Robertson."

Now, in this case there was an error in diagnosis; the case seemed one of dementia, with a possible focus of irritation. If it had been regarded by me as one of general paralysis, looking to the published results of operative measures in that disease, it would have appeared undesirable to have adopted any surgical procedure. But, considering the condition as one of dementia, and with the history of Jacksonian spasms, there seemed to be a very clear duty in the case. Dr Clouston, in a private communication, informs me that alienists make about two per cent. of errors in the diagnosis of general paralysis, and he is kind enough to indicate that he would allow the ordinary physician a wider margin !

VI. Old Fracture of Vertex of Skull with Severe Pain.

(*Reported by Dr Purves Stewart.*)

C. M., 55, rivetter, presented himself before me as an out-patient, and was admitted on 16th April 1895 to Ward 22 under my care. Thirty-three months before, he had been injured by a plank which fell 30 feet, and struck him on the head, fracturing at the same time his left clavicle and left radius. For two days he was unconscious, and was under treatment in Sunderland Infirmary for two months. During the interval which had elapsed since then he had for the most part been in bed suffering from occipital headache, giddiness, inability to walk, and deafness of the left ear, attended by blowing noises. He had never been subject to any spasmodic symptoms throughout. The patient was well nourished; his expression was vacant, his apprehension dull, and his speech sluggish. On the left side of the scalp there was a curved scar $2\frac{3}{4}$ in. long near sagittal suture, with convexity towards it; the posterior end of the scar was $6\frac{3}{4}$ in. from the glabella, and $1\frac{1}{4}$ in. from the middle line, and its direction was towards the

temple. The bone beneath showed a depression. There was no tenderness; none of the muscles were in a state of paresis; the patient could not turn quickly or walk long; the left knee-jerk was about normal, the right diminished; there was no clonus; both eyes had slight hyperæmia of nasal part of the disc.

On consultation with Mr Alexis Thomson it was resolved that, as the symptoms were undoubtedly due to the injury, exploration of the site of the lesion would probably afford relief, although it might fail to disclose anything more than thickened bone, and the patient was therefore transferred to Ward 7, under Mr Thomson's care, on 22nd April.

On the 23rd April Mr Thomson reflected a large scalp flap, and with the wheel-saw removed an elongated segment of bone, including the area of depression. The inner table appeared smooth; there was considerable bleeding from the diploë, the dura mater was much thickened, and on opening it more than the usual amount of cerebro-spinal fluid escaped. The brain surface appeared healthy. After stitching the dura mater, the bone was replaced and the flap sutured.

The patient recovered rapidly from the effects of the operation, and left the Infirmary quite free of pain,—showing, however, to the time of his departure the slight change in the optic discs. Commentary on this case is needless.

VII. Fracture of Skull, with Compression of Brain from Hæmorrhage.

(Reported by Dr J. G. Cattanach.)

J. R., 50, labourer, was admitted to Ward 6, under my care, 6th January 1895. For some weeks he had been drinking heavily. On the morning of the 5th January he had a fit in his lodging, and afterwards went out. He was picked up in an unconscious state in the street by the police, and detained overnight as being drunk and incapable; but as he was still unconscious on the following morning, he was brought to the Infirmary.

He was, when examined on 7th January, found in a comatose condition, with a temperature of 103°, a pulse of 136, and breathing of 42. The breathing was stertorous, the pupils unequal, the right being contracted, the left dilated. There was a cut over the left parietal eminence. Twitchings were seen on the right side of the face.

On the 8th January the patient had a localised convulsion, commencing with a spasm of the muscles of the right side of the face, and spreading to the arm and leg of the same side. This hemispasm was repeated about every ten minutes. In the intervals between the attacks the muscles of the affected side were limp and flaccid.

On consultation with Mr Alexis Thomson, it was resolved that, as the patient was apparently dying from compression primarily of the left cerebral cortex in the motor area, it was a duty to give him the possibility of operative relief, and he was accordingly transferred to his care.

Mr Thomson raised a flap over the left arm and leg areas, and with a wheel-saw removed a piece of bone. The dura mater was yellowish in patches, bulged considerably, and did not pulsate; when incised an extensive thick blood-clot was found. This was as far as possible washed away, the dura mater was sewn, the bone was not replaced, and the flap was sutured.

The patient was decidedly more sensitive to stimuli after the operation, and remained free of spasms for about two hours, but after that interval he began to have twitchings of the right side of the face, which recurred about three times an hour, but finally ceased nine hours after the operation. He had involuntary micturition, but looked about him. At 10 o'clock on the morning of 9th January he died quietly.

At the post-mortem examination by Dr Muir, on 10th January, a fissured fracture was found, extending from the left parietal eminence to the middle fossa of the base. A considerable amount of blood had escaped, and there was laceration of the right temporal lobe of the brain by *contre-coup*. All the arteries were atheromatous, but it was impossible to detect the source of the hæmorrhage. Any remarks upon this case would be superfluous.

The principal conclusions to which the consideration of these cases has led me have been stated in connexion with the narration of each. It only remains to sum them up—an easy task, as they are almost entirely comprised in the advice to operate early, which can only be rendered possible by the loyal co-operation of the physician and the surgeon. We sometimes hear the statement that the diagnosis of such cases belongs solely to the physician, and that when he has made up his mind he has simply to issue instructions to the surgeon. In fact, we are often told that the surgeon is simply the hand, the physician the head. This, however, is a point of view that should be warmly repudiated. Not only does it throw discredit upon a great branch of our profession, but it also renders the mutual helpfulness of medicine and surgery impracticable, and prevents the full benefits which accrue from the harmonious co-operation of real fellow-workers.

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