SURGICAL PAPERS

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A CASE OF BRAIN CYST WITH JACKSONIAN EPILEPSY: OPERATION FOLLOWED BY RELIEF.[1]

THE following case is reported as a contribution to our knowledge of the pathology and operative treatment of epilepsy. The patient was an intelligent and good observer of his symptoms, thus making the clinical history reliable and full.

F. P. K., aged twenty-three, consulted me in the latter part of September, 1893, and entered the Massachusetts General Hospital for further observation and operation. He there had the advantage of careful consideration of his case by Dr. J. J. Putnam, to whom I am indebted for much assistance in my study of it. His history was as follows:

He had no tuberculous inheritance, but on his father's side there was some neurotic tendency. He had the usual diseases of childhood, having had measles the second time as late as 1891. He always lived in the country, and was a good scholar, leading his class at Exeter in 1889, and standing high in the Class of 1893 at Harvard. He never had a serious injury, but was struck on the top of the head twelve years before by a heavy stick which had been thrown up to knock down chestnuts. He was not stunned, but remembered that his head bled somewhat. He felt no after-effects of this blow.

In January, 1891, he first noticed an occasional feeling of numbness in the middle of the right thigh on the anterior surface. This was accompanied by a tickling sensation, and was so annoying that he would jump from his seat and slap and rub his thigh at the same time laughing in an excited manner; and this would be followed by a feeling of nervousness. These seizures appeared about once in three or four weeks.

[1] Read before the Boston Society for Medical Improvement, January 11, 1897.

In June, 1892, after a hard college year he went to Kansas, where the weather was hot and trying. He here had his attacks almost every day, and they soon began to be accompanied by contractions of the anterior muscles of the thigh and twitching in the abdominal region. His leg would become rigid, and would rotate back and forth involuntarily.

In August of that year he, for the first time, had a severe attack followed by general convulsions and loss of consciousness. This fit started as usual in the right thigh. After pinching and pounding the thigh, he ran a few steps to ward off the cramp, and fell to the ground on his right side. The right leg became rigid, while the foot was drawn sharply inwards (extreme talipes varus), and then the whole leg twitched convulsively. Then his head was drawn over sharply. In the last moment of consciousness he thought his neck and ankle would break, so strongly were they distorted. Consciousness was regained in twenty minutes. The attack was followed by vomiting. The next day he felt perfectly well. Soon after this he began to take bromide of potash, but in spite of this had occasional slight attacks.

On October 1st, after his return to college, he had another general convulsion. Through this winter he was able to keep on with his studies, but with occasional attacks, which were, for the most part, controlled by the inhalation of amyl nitrite. The attacks now began to be followed by a feeling of paralysis and numbness in the right leg.

In the middle of March the paresis following the attack affected not only the leg but the arm and face on the right side. He finished his college course, but he continued to have his attacks at intervals through the summer; and in the last one, in which he was prevented from having convulsions only by the prompt use of amyl nitrite, he had paresis of the leg, which came on slowly fifteen minutes after the attack, followed by a similar feeling in the face and then by a quick and complete loss of power in the arm. This condition lasted an hour or so. An hour and a half after the attack he had aphasia come on, lasting ten or fifteen minutes. His general health was good and his intelligence unimpaired.

We had here the history of a disturbance of nerve function beginning two years before, and at first affecting only the leg centre at the upper part of the fissure of Rolando. Gradually the irritation extended

down along the fissure of Rolando to the centres of the abdomen, shoulder, arm and face.

The degree of functional interference with these centres was also gradually increasing until he had a temporary paresis of the muscles following each attack. As the irritation began to reach the shoulder centre, it had attained a sufficient degree of intensity to affect the sensorium and led to a general convulsion.

It was evident that some change was taking place in the motor areas indicated by the above symptoms, but it was not clear what the exact nature of the change was likely to be.

We had to consider the possibility of tumor, including cysts, tubercle and gumma, and also of some degenerative change in some way connected with the old injury, either through the irritation caused by a depressed spicula of bone, by an adhesion of the membranes, or by some change originating in an injury to the brain substance itself.

The absence of the severe pain so characteristic of the invasion of brain tissue by a tumor, and the slow development of the symptoms, led us to regard gliomatous or sarcomatous tumor improbable. The history lent no support to the supposition that we had either a gumma or a tubercular tumor. On the other hand, the history of an injury to the head was so clear as to lead us to attach importance to it in seeking a cause for our symptoms.

The localization was so exact that no doubt was felt as to the wisdom of an exploratory operation: and it was decided that, in the event of finding no gross lesion sufficient to account for the symptoms, we should remove the thigh centre, as being the one in which the disturbance had first showed itself.

I had previously written to Mr. Horsley in regard to this patient, and followed the plan suggested by him, by dividing this operation into two stages.

On October 5th, the fissure of Rolando having been mapped out with a cyrtometer, an aperture was made in the skull, nearly square in shape, measuring two and a half inches in each diameter, over the part of the brain believed to be affected.

On October 10th the patient was again etherized, the flap turned back and the dura opened. The brain bulged considerably through the opening and did not pulsate with normal vigor. It was also noticed

that the cortical portion of the brain had a yellowish color towards the upper part of the opening. Some doubt was felt as to which of two parallel sulci were the fissure of Rolando. Dr. Putnam stimulated the brain with a feeble electrical current, but, even after the patient was allowed to come considerably out of his ether, failed to produce any response over the yellow portion where the disease was presumably located. Finally, applying the electrode towards the anterior part of the opening, considerably in front of the presumably affected area, a twitch of the arm and shoulder and then of the thigh followed the stimulation. Puncture was then made with a trocar through the yellow area and a spurt of brownish serum escaped. A small opening was made into a cyst cavity, with a smooth yellowish brown wall, about the size of a small pullet's egg, extending deeply into the brain towards the centre. No hardening or thickening anywhere could be detected in the walls of this cyst, and there were no papillomatous or other growths into it.

The size of the cyst made a removal of its whole wall a very formidable operation; and in the belief that it was probably a simple cyst, without malignant character, I decided to treat it by drainage in the hope of thus obliterating its cavity. Several large strands of loosely-woven silk were introduced as a drain, being brought out through an opening in the middle of the dural and skin flap.

The patient made a good recovery from this operation. The wick was removed on the third day, and he went home sixteen days later with everything solidly healed.

Until the middle of December (one month and a half) he had no epileptic symptoms. Then the aura was felt in the right thigh. From this time he had this sensation occasionally at varying intervals, sometimes as often as once a week and then again not oftener than once in three or four weeks. He continued to take bromide of potash at the rate of 40 to 60 grains a day.

Early in February (three months after recovery from the operation) he felt well enough to go West and begin work. In June he was working hard, and felt so well that he began to cut off the bromide; and when he got down to 35 grains a day, he began to have the aura more frequently. About the middle of the summer he began to notice that each time after the sensation of the aura he had a partial paralysis

of the right arm and leg, appearing twenty minutes to half an hour after the aura and lasting about an hour. He now also began to have severe headache about the old scar and frontal region, accompanying the attacks.

In October, having been a month without any epileptic feelings, he was promoted and had harder work. On November 4th, for the first time since September 9th, he had a recurrence of the aura, and between that time and the 15th he had six attacks. He now began to have twitching of the right arm, shoulder, neck and face, and he also experienced a constant numbness in the right hand, foot and leg. In one of the attacks of November the paralysis following the aura lasted from four to five hours. The latter part of November he began to have a very confused feeling about the face during the attacks, and could not move his eyes, they being held rigidly. He now had trouble in noticing persons and things on his right, and some loss of hearing in his right ear. His condition finally compelled him to give up work; and early in December, 1894, he came East and again consulted me.

It was evident from the nature of his symptoms and their gradual advance that he again had trouble in the old region, and it seemed probable that this was due to a refilling of the cyst.

He re-entered the hospital January 3, 1895. Examination at this time showed no change in the region of the scar. The pulsations of the brain were distinct. He was clumsy and sluggish in the movements of his right foot, but the grasp of his right hand was strong. His pupils were equal and reacted readily to light. The patellar reflexes were normal.

January 7, 1895. Operation under ether. The flap over the skull defect was reflected, and the dura mater was opened along the old incision. It was not adherent. As soon as the dural flap was lifted the brain began to bulge into the opening, and in a moment it gave way in the middle of a yellowish area which marked the site of the cyst. A spurt of thin, brown serum now burst through, the fluid being thrown out with some force. The outer wall of the cavity was freely cut away, and the cyst wall was seen to have the same character as at the last operation.

The size of the cavity seemed distinctly greater than at the previous operation. An attempt was made to separate and remove the cyst

wall, which was soft, yellowish, very friable, and about a line thick. In the parts about the opening this thin wall could be readily separated from the brain tissue beneath it; but after the sides of the cyst were reached deeper in the brain, this separation was harder to effect, both on account of the friability of the wall and because it was more adherent to the underlying brain. The attempt was, therefore, abandoned, and a large wick of gauze was introduced for drainage through a good-sized hole in the middle of the skin and dural flaps. This wick was introduced merely as a temporary measure until arrangements could be made for more efficient and long-continued drainage. To provide for this I had some glass tubes made of the shape of a shirt stud, the stem of which was as thick as a No. 20 French catheter and was perforatad by an opening of sufficient size for good drainage. One of these, just long enough to reach through the skin and dura into the cyst cavity, was introduced on the third day, when the gauze wick was removed. The escape of fluid was much more free through this tube than it had been along the wick, and it continued to be quite abundant for ten days, after which it began to sensibly diminish, and the cavity as explored by the probe began to grow much smaller.

The patient had no sensation of aura after the operation, and was up on the seventeenth day. He went home on the twenty-sixth day; but the button was not removed until the forty-fourth day, at which time the cavity of the cyst being entirely obliterated, it was taken out and the opening quickly closed.

The subsequent history of the case is perhaps best given by the following abstract from a letter from Mr. K., in December, 1896.

About April 1, 1895, I was appointed to a position as inspector of an extension of the water works in Lincoln—a position which gave me employment for about two months in the open air, and involved no intellectual strain. In June of that year (1895) I was in excellent health, and had felt no suggestion of the old epileptic aura for about two months, and had taken no bromide or other sedative during that time. I then began to do a little studying preliminary to taking a course in physics at the Harvard Summer School. I almost immediately began to feel a slight return of my former sensations—a crawling numbness, if I may so express it, in my right shoulder and arm, and in the right side of my neck and face. The sensation was so very slight that at first I hoped I could finish the short course of study that I had undertaken in spite of it; but as the sensations rapidly became more frequent and more strongly marked, I concluded that I could not safely continue my work, and so gave it up after about three or four weeks.