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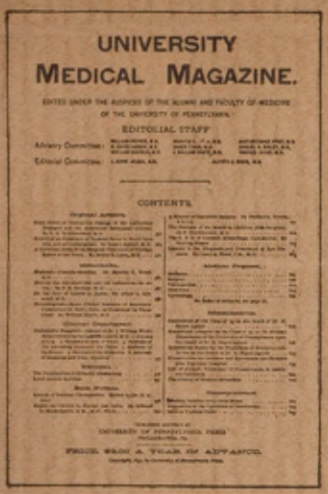
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EDITORIAL STAFF

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THE

NON-OPERATIVE TREATMENT OF BRAIN TUMORS.

BY THEODORE DILLER, M.D.,

Physician to the Neurological Department of the Pittsburg Free Dispensary; Visiting Physician to the Insane Department of St. Francis's Hospital, Pittsburg.

THE NON-OPERATIVE TREATMENT OF BRAIN TUMORS.

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Tumors situated in areas of the brain inaccessible to the surgeon are, of course, inoperable. Symptoms may indicate an intracranial growth with reasonable certainty, but point to no particular locality as its seat. Such cases are likewise as unsuitable for operation, yet it is true that an exploratory operation may, in view of progressive symptoms, be justifiable. In either case an operation (even as a temporary expedient) for the relief of intracranial pressure may, through stress of circumstances, be justifiable. I have myself reported a case where the lateral ventricles were tapped by Dr. Stewart to relieve pressure caused by a neoplasm in the pons.[2] Even operations for the supposed curative effects of the operation *per se* have been undertaken, but are of doubtful propriety.

But the problem which I wish to discuss here more particularly is whether all tumors which can with reasonable certainty be localized in regions accessible to the surgeon should be operated upon. For my part, I am prepared to take the position that, as a rule, cases of brain tumor in which the growth can be definitely or approximately localized, should be treated surgically only after medical treatment has failed to cause the arrest of or an improvement of the symptoms. There are cases, however, where, with an arrest of symptoms, the life of the patient may remain so intolerable that an operation is clearly demanded. On the other hand, an operation should not be delayed for medical treatment longer than from one to three months where the symptoms are progressively growing worse.

I am led to these conclusions by the relatively unfavorable outcome of surgical operations. While yielding to no one in admiration of the great work which has been done (both experimentally and clinically) in the way of cerebral localization, I must confess to a sense of personal disappointment concerning the practical outcome of these operations for brain tumors.

McBurney and Starr, in a valuable monograph published last year,[3] have collected all operations which have been undertaken for the removal of brain tumors up to the end of 1892. The total number was

[1] Paper read before the American Neurological Association at meeting held at Washington on May 29, 1894, and days following.

[2] American Journal of the Medical Sciences, November, 1892.

[3] American Journal of the Medical Sciences, April, 1893.

87. Of these, 21, or nearly one-fourth, died as the result of the operation. In 40 cases, or only 46 per cent. of the total number, was the operation a success in that the tumor was removed and the patient recovered. But certainly an operation is a success in only a limited sense which is merely a surgical success. Unfortunately nearly all the reports of the 40 successful cases[1] were made in less than a year after the operation,—a number of them within a few weeks. Not a few of the reporters, in speaking of the success of these operations, mean only the "surgical success." Indeed, we are singularly lacking in accurate data as to the ultimate outcome of these 40 so-called successful cases. But it seems highly probable that in a considerable number of these 40 cases the success was little more than a surgical one. Doubtless in some of them cysts refilled, or malignant growths recurred, while paralysis or convulsions persisted or returned. In those cases in which some measure of relief of symptoms followed the operation, it may be doubted whether, had the patients known the degree of relief they were to obtain, they would have submitted to an operation from which they ran one chance out of four of dying. If only those cases were accounted successful in which the growth did not recur and in which the symptoms for which the operation was done were markedly relieved and did not return, say, within two years, I very much fear that the percentage would be reduced by one-half or three-fourths.

In this connection I desire to relate the subsequent history of a case of brain cyst which was evacuated by Dr. Buchanan in August, 1892, and which was reported by us.[2] The cyst was beneath cortex in the lower part of the ascending frontal convolution, on the left side. The symptoms from which the patient suffered were right hemiparesis, motor aphasia, right-sided convulsions, besides vertigo, headaches, and vomiting. Complete relief of these last three symptoms followed the operation, while the aphasia, paralysis, and convulsions, although somewhat improved, persisted. This improved condition lasted a few months, when the convulsions recurred with great frequency and severity, the man losing his life some fifteen months after the operation by falling into a stream of water during one of them, and being drowned.

The following cases of supposed intracranial growths in which, after consideration, an operation was decided against, illustrate some of the problems to which I have alluded.

CASE I.[3]—Ed. H., aged 15; family history good. For two years

[1] There have been a few more cases reported in the past year since the publication of the paper of McBurney and Starr, but as these do not materially affect McBurney and Starr's percentages, I will not consider them.

[2] American Journal of the Medical Sciences, July, 1893.

[3] Referred to me by Dr. J. P. Shaw, January 23, 1893.

past has had severe headaches about once a month, which have been especially severe of late, and accompanied with vomiting. A little over a year ago had large, painless swelling below the angle of the jaw, and along-side of the neck,—possibly tubercular. About September 15 it was noticed his face was drawn to left side slightly. In November the right leg began to lose power, and a month later the right arm. This paresis increased very slowly. About a month ago he noticed that his right eye was defective, as he thought,—*i.e.*, he could not see objects well to the right of himself. His last paroxysm of headache was the most severe he had ever had, lasting twenty-four hours.

Examination.—January 23, 1893. Face drawn to left distinctly. In walking drags right foot, and does not swing right arm as much as left. Right hand is reddish in color, and slightly puffy. Sensation preserved in paretic parts. Grasp of right hand about one-half that of the left. Dr. Edsall examined the eyes and found distinct papillitis and right homonymous hemianopsia with normal vision. Wernicke's hemiopic pupillary inaction sign could not be elicited.

Percussion of head elicits a distinct area of tenderness on the left side, two inches anterior to the inion, and bordering on the median line. This result was verified at a number of subsequent examinations.

These symptoms pointed to the position of the left cerebral hemisphere, posterior to the optic thalamus as the seat of a tumor. If it were cortical it must have been large to have produced, through pressure, the paresis which was present. A smaller subcortical growth, involving the optic radiations, and pressing on the internal capsule or the crus would also account for the symptoms. I explained to the parents that there certainly was a tumor in the boy's brain, and that an operation might be demanded at any time, but advised a course of medical treatment first. I gave him $\frac{1}{32}$ grain of strychnia, and ten grains potassium iodide t. d., and applied faradism to the paralyzed parts, and a feeble galvanic current to head three times a week. Under this treatment the lad made some little improvement for about a month, and then remained stationary for another month. He then passed from under my observation. I learned recently that he died last February,—just about a year from the time I first saw him, his symptoms having grown progressively worse until the end.

While the boy was under my observation I felt that there was a strong probability that the tumor was subcortical and, perhaps, quite deeply seated. Yet, if the symptoms had grown worse, I should certainly have advised trephining over the left occipital region corresponding to the area of tenderness on percussion. But in view of grave sur-

gical difficulties which the case seemed to promise if operated upon, and the fact that the symptoms, to say the least, grew no worse, and the lad's life was quite tolerable to him, I pursued the course described. Of course, it may be said, that an operation might have saved or prolonged life. On the other hand, it can be said that there is one chance in four that it would have shortened life just one year.

CASE II.[1]—J. D., aged 33 years; single; butter-dealer; denies specific history; has always been temperate. He is of cheerful disposition, active temperament, and comes from a healthy family.

In 1882 he fell down two or three flights of stairs, striking his head severely. Ever since this accident he has been subject to headaches. These have often been very severe. He frequently places his hand over his occiput during a paroxysm, indicating in this way the seat of maximum pain. He tried very many remedies, but obtained little or no relief. In June, 1893, his eyesight began to fail him, and progressively grew worse up to the time I first saw him. In the mean time the headaches grew more severe than ever. He occasionally vomited during a paroxysm. He suffered, too, a good deal from vertigo. About two months ago he began to stagger in walking, and this, like other symptoms, had increased up to the time I first saw him. Friends and neighbors say this staggering was always to the right. He was often suspected of being under the influence of liquor because of his unsteady gait. Since July, 1893, he had been taking iodide of potassium in increasing doses. During the past two months has taken 150 grains t.d. During the past two or three weeks he has had occasional flighty spells. On February 9 and 10 he had two violent maniacal outbreaks, exhibiting many delusions and requiring the united energies of two or three persons to restrain him.

I saw him on the 10th, and advised his removal to St. Francis's Hospital. All his symptoms had increased up to this date. Dr. Dean reported that optic atrophy had reached an advanced stage. In a few days after admission to the hospital his maniacal symptoms declined, and he became profoundly melancholy. While in this condition he made a determined attempt to commit suicide by jumping head foremost out of the window. A few days after this incident he began to brighten up considerably. All medication was withheld from February 10 to 18, when he was placed upon a tonic of iron, quinine, and strychnia. About February 25, Drs. McKennan, Dickson, Dean, and myself held a consultation to consider the advisability of an operation. My own diagnosis was a tumor in the cerebellum, probably on the left side. The other gentlemen did not feel so sure of the location of the trouble,

[1] Referred to me by Dr. D. A. Dean, February 10, 1894.

and the point was raised especially by Dr. Dickson that, as some improvement had taken place since the patient was admitted to the hospital, it would be best to postpone operation and continue the tonic treatment the patient was then taking. On the whole, although only ten days before the patient's condition had seemed critical in the extreme, improvement since that time had been clear and unmistakable, and I concurred with the other gentlemen in thinking it would be wisest to persist in medical treatment for a time at least, or while the patient continued to improve, rather than subject him to an operation on the cerebellum, from the direct effects of which he would run 77 chances out of 100 of dying.[1]

So the simple tonic treatment mentioned was continued, the patient improving rapidly all the while. By March 1 his headaches, mental symptoms, and ataxia, in fact all his symptoms except his failure of vision, had disappeared. About March 1 I started him on a course of electrical treatment, consisting of general faradization besides galvanism to the head three times a week. This treatment is being pursued at the time I write (May 1, 1894). The only symptoms now present are great impairment of vision due to the optic atrophy (and this is apparently not increasing), and slight numbness in both legs.

The man's system was thoroughly saturated with iodide of potassium when I first saw him, and I felt all the good which was possible had been accomplished by giving him that drug. Indeed, it is not impossible, as suggested by Dr. Dickson, it may have in some way aggravated his symptoms. Certain it is that rapid improvement soon followed its withdrawal.

Notwithstanding all this improvement, I still believe there is a tumor in the cerebellum. In view of the fact that the mortality attending operations on the cerebellum is four times that attending operations on the cerebrum, it seems to me there is little question that the withholding an operation under circumstances such as I have detailed in this case is the proper course to pursue.

While we cannot hope to remove intracranial tumors by means of medication or even electricity (not even, I believe, gummata), yet clinical studies and post-mortem records seem to show that these neoplasms sometimes attain their maximum growth and then remain as foreign bodies, more or less innocuous, for years. Indeed, there is reason to believe that there may be shrivelling or contraction of the tumor-mass after it has attained its maximum growth, particularly in the case of syphilitic growths.

Two cases of Jacksonian epilepsy, in which intracranial growths

[1] McBurney and Starr, loc. cit.

or irritants were localized, and the question of operation presented itself, I will refer to briefly as they have already been published.[1]

CASE III.—Young lady, aged 21 years; had spells at irregular intervals since the age of 6. For past four years they have recurred with frequency in the following manner: The muscles about the left eye become first involved; then the shoulder, arm, forearm, and hand of the same side in the order named. The forearm is pronated and partially flexed, and in this position drawn behind the back. The thigh, leg, and foot become involved last. The leg and foot are partly flexed, and in this position strongly abducted. The whole attack lasts about a minute. Consciousness is preserved throughout the attack.

A peculiar indescribable feeling warns the patient of an approaching attack. The spasms cause her much inconvenience, but do not threaten her life or prevent her from attending to household duties. The symptoms in this case had been stationary for several years, and I believe it is one in which the question of operation might be decided by the patient herself after fairly stating to her the dangers and the chances of cure or improvement. This was done, and in view of the fact that she grows no worse, she is loath to decide for the operation. Tonic and antispasmodic treatment are given her from time to time.

CASE IV.—Widow aged about 45. Ten years ago she was taken with convulsive movements, confined to the toes of the right foot, the initial movement starting in the great toe. These movements recurred about once a month for a year or two. At the end of this time the seizures began to involve the leg and thigh. Then for a couple of years she was free from convulsive movements of any sort. Again the seizures came back, and she continued to have them at longer or shorter intervals up to last winter (1891–92,) when she experienced the last attack. This began in the right great toe and progressively involved foot, leg, and thigh.

Full consciousness was preserved during all these attacks. She has had for years various head pains, at times, quite severe. There is an area of tenderness just to the left of the sagittal suture about one and a half inches behind the coronal. When last seen (two years ago) her general health was quite good and she had not suffered from headaches or spasms for some months past.

Here the symptoms clearly pointed to the centre for the right great toe as the seat of a focal lesion of some sort. But in view of the frequency of the attacks, the length of time the trouble had existed without seriously interfering with her occupation and the exceptionally good health she was enjoying at the time that she was observed, I did not feel an operation was indicated.

[1] Pittsburg Medical Review, November, 1892.

In bringing these remarks to a close, I must reiterate my profound admiration for the vast amount of work which has been done in the matter of cerebral localization. Yet it is surely our duty to look squarely in the face the failures and practical difficulties which beset these operations, and not be led away by the brilliancy of localization. We must mean by a success something more than recovery from the effects of an operation. We must recognize, I believe, that not all intracranial growths which can be definitely or approximately localized are proper cases for a surgical operation. We must realize, as pointed out by the late Professor Agnew[1] in the last paper from his pen which was published, that these operations will have a strictly limited field in spite of our rich and growing knowledge of the functions of the brain.

As a very important matter, too much neglected in the past, results of operations should be given in detail at a considerable period after the operation, with a careful and impartial estimate of the conditions before and after the operation.

It would be a matter of the greatest interest if the subsequent histories, up to the present date, could be given of all the cases which have been operated upon. I had myself hoped to engage in such an investigation, but found, after the idea occurred to me, that I would not have time to complete it before this meeting of the Association.

[1] University Medical Magazine.