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REPORT OF TWO SUCCESSFUL CASES OF TREPHINING FOR TRAUMATIC EPILEPSY.*

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The operation of trephining the skull having been performed at the State Asylum for Insane Criminals under my charge, in two cases of traumatic epilepsy during the past year, and in each instance with favorable result, as regards the epileptic seizures, I venture to occupy your attention with a brief recital of the cases, in the hope that they may prove clinically interesting, and also for the purpose of adding them to the list of recorded cases of trephining operations upon the skull for the relief of epilepsy of traumatic origin.

(3)

CASE I.—J. M.; male; age twenty-nine. Convict; peddler by occupation, and of intemperate habits. Admitted to the asylum Nov. 6, 1885, as a case of acute mania. Certified cause of insanity, a blow on the head; which, patient claims, was inflicted during a street fight in New York City, in the year 1880; he at that time having been struck by a policeman's club and knocked senseless. He was picked up and removed to a hospital in an unconscious condition; he regained consciousness soon after admission to the hospital; but was ill for about two weeks, as

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an effect of the blow. Subsequently, and up to the time of his reception in the asylum, he suffered much from attacks of vertigo, was irritable and quarrelsome; and frequently became a participant in fights and brawls. On admission he exhibited delusions of persecution and poisoning; was excited, noisy, and seemed to be suffering from great pain in the head. His pupils were unequal and markedly dilated, the right the more, and it was with difficulty that he was prevented from doing serious injury to himself by striking his head violently against the wall and floor; which he frequently and determinedly endeavored to do.

An examination of patient's head revealed an accentuated depression of the skull, irregularly circular in shape, and about 1¼ inches in diameter. It was situated above and to the left of the right ear, three inches superior to the external occipital protuberance, and two inches to the right of the median line, approximately covering that part of the posterior segment of the superior parietal lobule lying just above the deep interparietal fissure.

Dec. 2, 1885.—After breakfasting the patient fell in a fit, while still in the dining-room; he was convulsed and unconscious for a few minutes, then, partially regaining consciousness, he attacked the attendants who were caring for him, and violently resisted their efforts to remove him to the ward. On the evening of the same day he suffered a similar attack, and remained excitable for some time after emerging therefrom. During the interim he was irritable for a great part of the time and disposed to attack, without provocation, those about him. At this time he was seen by Dr. Stephen Smith, State Commissioner in Lunacy, who concurred in advising trephining as a probable means of relief, if not cure. I might state that the patient, when free from the epileptic paroxysms, was anxious to have the operation performed.

Dec. 15, 1885.—Patient suffered from three distinct and separate attacks on the 12th inst., also a single seizure on the 13th and 14th, respectively. Each attack was described by the patient as having been preceded by a well-marked aura, likened by him to the sensation of having received a blow on the head at side of depression, with sharp, lan-

cinating pains in superior posterior cervical region. These prodromic symptoms were, in each instance, followed by vertigo and loss of consciousness; also pain in the region of temples on recovering.

The seizures were not usually of the complete *grand mal* type, but rather that of minor epilepsy or *petit mal.*

On December 16th the operation of trephining was performed; previous to which, however, the head was shaved, and a photograph thereof, showing site of depression, taken.

Ether having been administered, a crucial incision was made over the depression and flaps reflected back. A conical trephine was then applied just above the point of greatest depression. With little difficulty the disc of bone was removed. At the point trephined the skull was found to be nearly three eighths of an inch in thickness, quite vascular, and much roughened on the under surface by rudimentary osteophytes, to which the dura mater appeared to be slightly adherent. Proceeding to remove the remaining portion of depressed bone by gnawing with the rongeur, that instrument was broken before much had been accomplished. Twenty minutes elapsed before another could be procured; and in the interim a second opening, the site of which was contiguous to and overlapped the first to nearly a third of its extent, was made with the trephine. Then, with the new rongeur, the bone was gnawed away until all of the roughened portion of the inner table was removed, leaving an opening in the skull which measured approximately one and a quarter inches in length by one in breadth. In removing the second button of bone the dura mater was slightly wounded by the trephine. The exposed portion of the dura also presented a congested and thickened appearance. After having carefully trimmed the sharp edges of bone, the scalp wound was closed by horse-hair sutures, dressed with iodoform and lint, and covered with absorbent cotton and a skull-cap bandage applied.

Owing to breaking of the rongeur the operation was somewhat tedious, the patient's pulse flagging toward the latter part thereof, which necessitated the hypodermatic injection of whiskey.

Dec. 17, 1885.—Patient rallied well and quickly from the operation, but suffered from nausea all night and got little sleep in consequence. This morning feels cheerful. Temp., 99.4°; pulse, 100; respiration, 20. At 7 and 10 A.M., respectively, morphiæ sulph., gr. ¼, was administered; also calomel, gr. ½; the latter to relieve nausea. Evening temp., 99°; pulse, 84; resp., 20. Patient is rational and cheerful, and says he feels much better.

Dec. 18, 1885.—Patient was given chloral, gr. xx., last night, and slept well for about four hours. This morning his temp. was 99°; pulse, 88; resp., 20. Evening temp., 99.4°; pulse, 100; resp., 24. Complained of some pain at seat of wound. Was given chloral, gr. xxx., at bedtime.

Dec. 19, 1885.—Temp., 99°; pulse, 88; resp., 20. The dressings were removed to-day; incisions found to have healed by first intention. No unfavorable symptoms have yet developed. He has been taking quiniæ sulph., gr. ii., in half an ounce of whiskey t. i. d. Appetite improving.

Dec. 23, 1885.—The stitches were removed to-day, the wound having thoroughly healed.

Dec. 28, 1885.—Patient sat up for a short time to-day. No pain in the head. Is doing well in every respect.

June 16, 1886.—Patient's improvement has been steady and uninterrupted. He has been under close observation day and night since the operation, and up to date has had no return of the epileptic attacks. The marked irritability and want of control from which he was suffering when admitted to the asylum have subsided, and his bodily and mental conditions are much improved.[1]

CASE 2.—J. C., male; aged twenty-four, convict. Driver by occupation; native of New York. Admitted July 11, 1884, as a case of epilepsy. Of intemperate habits. Physical condition fair. Has a depression ~~on~~ skull, the result of falling down a flight of stairs when about six years old.

July 11, 1884.—Patient is quiet. Pupils dilated. Claims he has no delusions, but that he has been insane several times. Confined in Ward's Island Asylum three times.

[1] J. M. was discharged recovered and returned to the prison, June 24, 1886, where he has remained free from epilepsy to the present time, Aug. 1, 1886. —C. F. M.

First and second times remained two years: third time over three years. Was discharged from that institution in the spring of 1884. Depression in the skull, referred to above, is behind and above the right ear, two and one half inches superior to external occipital protuberance, and one inch to the right of the interparietal commissure, covering the posterior segment of the superior parietal lobule lying just above the deep interparietal fissure. Patient exhibited no motor disturbance or impairment of the general or special sensory functions.

Patient's history previous to admission to asylum is that of a chronic epileptic, and is as follows: Fits began at sixteen years of age, and have continually recurred up to the date of operation. Longest interval of quiescence was while under treatment at the asylum on Ward's Island, when a period of fifteen months passed without recurrence of fits. Subsequently they reappeared at frequent intervals, the last occurring just previous to date of this entry. The seizures usually occur at night, ~~and~~ are marked by convulsions and complete loss of consciousness, and followed by a state of active mental excitement, during which patient, as a rule, becomes noisily maniacal and pugilistic.

July 14, 1885.—Patient has been quiet and well-behaved since last entry; had a fit last night while in bed, but it was not followed by the usual mental disturbance.

From this time until Nov. 20, 1885, he suffered from frequent nocturnal seizures, which left him each time in a disturbed mental condition, though not violent. He gradually became very whimsical, irritable, unreasoning, and discontented. This condition persevered until February 18, 1885, when he began to complain of pain in the right occipital region, most intense over the above-described depression. From this up to the day of the operation the frequency of attacks increased, always nocturnal, but evidenced by a bitten tongue, and by his having been frequently found by the night watchman out of bed on the floor in a dazed, semi-conscious condition, and incapable of telling why he was out of bed. On the 25th of August, 1885, the operation of trephining was performed. It was

similar in character to that in the preceding case, except that in this there was but one button of bone removed. The inner surface of the bone was smooth and non-adherent and the dura mater was not wounded. Nothing occurred during the operation worthy of special comment.

At 5 P.M., patient, who had rallied well, was given ♏viii. of Magendie's solution of morphia, hypodermatically. At 9 P.M., morphia sulphate, gr. ¼, was administered per ~~os~~ rectum. A little milk and lime-water was given during the evening.

(5) August 26, 1885.—Temperature, 98.5°; pulse, 65; respiration, 16. Appears in good condition.

Aug. 27, 1885.—Complained of headache during the night. Temp., 97.5°; pulse, 56; respiration, 16.

Aug. 29th.—Temperature has not been above 98.5°, in axilla, since the operation. Dressings removed. Primary union of wound has taken place; not a drop of pus is to be found. Wound thoroughly cleansed and iodoform dressings reapplied. A little puffiness of scalp in vicinity of wound was observable, but there were no evidences of suppuration.

(5) Aug. 31, 1885.—All stitches removed, and head dressed with carbolated cosmoline and lint. Puffiness, remarked at last dressing, has entirely disappeared. Sat up in bed for a little while.

Sept. 15, 1885.—Has been about the ward the past week. Is out in the yard to-day. Has complained occasionally of slight headache.

Nov. 18, 1885,—Since the operation, has exhibited very little of his former irritability. Complains of headache occasionally, but not nearly so frequently.

Feb. 3, 1886.—Much less irritable, less frequent headaches, no recurrence of fits.

June 16, 1886.—Up to date patient has remained free from epileptic seizures, nocturnal or diurnal, while at the same time there has been a considerable degree of improvement in his mental tone. He now controls himself fairly well, and appears to be free from delusions, but exhibits a certain amount of weakness of mind, the result of long-con-

tinued epilepsy, and from which a complete recovery is not to be expected, even though there should be no return of fits.[1]

Applying the rules of cranio-cerebral topography to these cases, it will be seen that the lesion, in each instance, was located over a region of the brain to which no definite function has as yet been assigned, namely: the parietal lobules. Hence the absence of motor or sensory disturbance such as might have been expected from a similar lesion located in those areas of the brain which are now generally believed to govern motion and general sensation—that is, in the central region surrounding the Rolandic fissure.

While the existence of organic lesion of the cerebral cortex in either of the foregoing cases is extremely doubtful, it is, nevertheless, a well-established fact that those portions of the brain lying outside of the so-called motor zone may suffer extensive destructive lesion without giving rise to paralysis or other special symptoms of organic cerebral disease, though lesions of these unexcitable or non-motor regions, limited to or involving the dura mater, not infrequently give rise to localized headache, vertigo, convulsions, etc. Irritation of the nerves of the dura mater interferes with the blood supply by causing spasm of the dural vessels, and this in turn excites reflex convulsions of a general character, whereas convulsive manifestations arising from irritative lesions of the cerebral cortex are, generally speaking, definitely localized. Epileptic attacks may also result from a lesion of any part of the skull, whether within or without the motor centres. In fact, epilepsy has been known to arise from the reflex irritation following a fracture of the outer table with no direct pressure on the subjacent parts. Mr. James F. West reported to the Royal Medical and Chirurgical Society, in 1879, a case of this kind, of seven years' standing, which he cured by trephining.

Surgical history tells us that formerly it was customary to trephine in cases of epilepsy that resisted medical treatment, but the practice gradually fell into disuse, probably

[1] August 1, 1886.—Patient is still under observation. He has had no fit to date.—C. F. M.

on account of the numerous failures resulting from want of discrimination in the selection of cases upon which to operate, as well as the gravity of such operations before the dawn of antiseptic surgery. In 1852 Prof. Stephen Smith, of New York, in an article on the Surgical Treatment of Epilepsy, collected and analyzed 55 cases of trephining, giving the results of the operation and ably advocating its adoption in cases dependent on depressed fracture of the skull. Prof. John B. Roberts, in his recent valuable essay,[1] refers to 92 American operations collated by Stephen Smith, Billings, and Echeverria, of which 63 were cured, 13 improved, 2 unimproved, and 14 died. This author also cites 130 cases collected by Walsham, of which 75 were cured by the operation, 18 improved, 7 unimproved or worse, and 30 died; also "30 cases of epilepsy from old injuries of the head have been operated upon by Briggs,[2] of these 25 were cured, 3 ameliorated, 1 not changed, and 1 died."

That the cessation of the fits in the two cases here reported was directly due to the operation, will not, I believe, be questioned. In this connection the question naturally arises, would the mental impairment resulting from the long-continued epilepsy have been prevented by an earlier resort to the trephine? The writer is of the opinion that it would.

In view of the high ratio of recoveries in the comparatively large number of cases here cited from reliable sources, together with numerous other successful cases which, for want of time, I have not attempted to bring to your notice, it is not surprising that both surgeons and neurologists of the present day, almost without exception, should not only sanction, but advocate, an operation which promises so much in the way of cure, and which, with proper antiseptic precautions, is attended with so little danger to the patient.

[1] "The Field and Limitation of the Operative Surgery of the Human Brain," 1885.

[2] Transactions of the Am. Surgical Association, 1884.