

CLINICAL CASE.

A CASE OF TREPHINING FOR GENERAL PARESIS.

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It is now commonly agreed that there is no other disease affecting mankind so appalling in its character as general paresis. Its proneness to attack men in early life, its insidious onset and gradual development, its many distressing features and uniformly fatal termination, all unite in making it the most dreaded disease of modern times. Moreover, evidence is not lacking to prove that the number, both actual and relative, of general paretics annually admitted to our hospitals is steadily increasing. Drugs and hygiene, either singly or in combination, have failed to stay its progress, and though treatment has been diversified to the limits of the materia medica, the results have been to the last degree discouraging. The question, therefore, of a possible surgical treatment is one of vital importance, and merits the most careful consideration. Modern antiseptic methods have been brought to such a degree of perfection that the mere operation of trephining is now attended with small risk to life, and recovery from its effects is usually prompt and complete. The operation, therefore, though it may appear to conservative minds a radical measure, is in reality a comparatively simple procedure, adding in no appreciable degree to an already existing grave disorder. In fact, it is a procedure that finds substantial support in certain pathological features that are uniformly present in cases of general paresis: these are diminution in the size of the brain and the presence of an abnormally large quantity of fluid in the sub-arachnoidean space. These conditions exist regularly early in the history of the disease, they continue to its termination, and although their causal relations are not yet clearly established, there is ground for the belief that morbid processes and functional disturbances are increased by pressure of the fluid on the underlying convolutions of the brain.

Going a step farther than this—and the view is concurred in by Ferrier—Dr. T. Claye Shaw* assumes that the removal of a portion

*Surgical Treatment of General Paralysis, by T. Claye Shaw, M. D., F. R. C. P. *British Medical Journal*, Nov. 16, 1889.

of the fluid must be followed by an expansion of the brain, a stretching of its substance, as it were, and an increased blood supply, thus at least making it possible for a changed and perhaps improved nutrition, whereby the progress of an otherwise fatal disease may be in part or wholly arrested.

Acting upon this theory, Mr. Harrison Cripps, at the request of Dr. Shaw, performed in London, the first recorded operation of trephining for general paresis July 28, 1889. Nine months previously the patient had been admitted to the hospital "in an excited grandiose mental state, affection of speech, exaggerated reflexes, gait very unsteady and retention of urine; from time to time he had had convulsive attacks and short periods of loss of sensation chiefly in the left extremities, and his powers of deglutition and talking became more and more impaired, while his mental condition was fast approaching a well-established dementia." "The patient was trephined on the right side of the skull, over the central sulcus and about two inches outside the longitudinal fissure; the operation consisted of making two holes with the trephine, cutting away the intermediate bone so as to make an opening about $1\frac{1}{2}$ inches long by $\frac{3}{4}$ inch wide, cutting away the dura mater and letting out a considerable quantity of sub-arachnoid fluid." Strict antiseptic precautions were observed and the patient recovered promptly from the effects of the operation. Three months later Dr. Shaw, in reporting the case, said: "The present state of the patient is a great improvement on what it was; in fact he is no longer insane, and I propose to discharge him; we did not expect him to show any marked improvement in the bulbar symptoms, although I think that even here his condition is better, and he certainly swallows and speaks more easily and distinctly; but in mental tone the difference is most marked, for he is no longer optimistic in his ideas, nor has he any of the convulsive epileptoid attacks to which before the operation he was very subject; he reads the paper daily, is free from headache, eats and sleeps well, and is able to hold his urine."

The second recorded case of trephining for general paresis was performed by M. Harrison Cripps at St. Bartholomew's Hospital, January 27, 1890.* The patient had been a railway guard. In January, 1888, he received an injury to his head by being thrown from the train. He was admitted to the Banstead Asylum, April 20, 1889, suffering from well marked symptoms of

* *British Medical Journal*, June 14, 1890.

general paresis. He remained under treatment in the asylum nine months, during which time he complained frequently of severe pain in the region of the blow, which was about two and a half inches above the left ear. "He exhibited large delusions, there was motor impairment of speech, some ataxy and patellar reflexes very indistinct. As it seemed probable that the injury was the cause of the disease, and it was possible that some injury to the bone might be found, it was determined to trephine over the seat of the injury with the object of relieving pain, draining off some fluid, and lessening pressure."

After thoroughly cleansing the scalp with antiseptic solutions, a semi-circular incision was made over the left parietal bone, the flap turned back and a trephine cutting a one inch circle was applied just in front of the left parietal eminence. A second disc about one inch behind the first was then removed and the intervening bone cut away with a saw. There was considerable bulging of the dura mater, a portion of which together with the underlying arachnoid and pia mater was removed, and a part of the fluid allowed to drain off.

The scalp was replaced, the wound healed by first intention, and there was no constitutional disturbance whatever. The patient was sent back to the asylum, and on his return "it was noted that his condition had in many particulars improved. The pain in his head had entirely disappeared and his memory was much better. There was no trace of delusion beyond a certain amount of contentment and sense of well-being. The motor symptoms appeared to be stationary. After being out on trial for a month in the care of his wife he was discharged on April 18th, there being no mental disease beyond a little dullness to be observed, apart, that is, from the motor impairment." On the 14th of May, when the patient was last heard from he was in "much the same state as when he left the asylum."

So far as known to the writer, the third case of trephining for general paresis occurred at the Utica State Hospital, and was performed by him March 16, 1890. The patient, J. U. F., was a negro, aged thirty-two, married, and a native of New York. He was admitted to the hospital July 23, 1889, suffered from well defined symptoms of general paresis, was talkative, cheerful and controlled by exalted delusions.

There was marked hesitancy and thickness in his speech, and his gait was very unsteady. In short, the case was typical. For

about two months he was able to render some assistance in one of the shops, but he gradually became more demented until he was unable to perform work of any kind, and began to indulge the gregarious propensity of this stage of the disease. He gradually became more demented, until he talked very little, and frequently soiled his clothing. He was in this condition on the morning of March 14th, when he was suddenly seized with convulsive movements of his left arm and leg. There were also twitchings of the muscles of the face on the same side, and vomiting. The convulsions continued two hours. The arm and leg were now partially paralyzed, and the patient was more stupid than usually. The paralysis gradually increased until the morning of the 16th, when there was complete loss of motion and sensation in both the arm and the leg on the left side, and the patient was semi-unconscious and unable to speak. As the coma was gradually increasing and the symptoms seemed to indicate the right motor area of the cerebrum as the region specially involved, it was believed that some relief might be obtained by trephining the right parietal bone. As the patient was still sensitive to pain on the right side of the body it was deemed advisable to anæsthetize him completely before operating. The scalp was carefully shaved and thoroughly cleansed with soapsuds and bi-chloride solution $\frac{1}{1000}$, a triangular flap was raised and the trephine applied directly over the fissure of Rolando, about midway of its length. A button of bone was removed and the trephine applied a second time, slightly overlapping the first bore. The intervening points of bone were afterwards cut away, thus enlarging the original opening. On removing the bone, the dura, tensely distended, was pressed up into the opening by the fluid beneath, and when it was cut with the knife a large quantity of fluid immediately gushed forth. By turning the head from side to side some additional fluid was drained off, making the total quantity about six ounces. The convolutions of the brain could then be seen at a distance of more than three-quarters of an inch from the inner table of the skull; it was apparent that the convolutions were flattened and the pia mater had a slightly milky appearance, but no evidences of hemorrhage were visible. The cavity between the brain and the dura was then carefully irrigated with bi-chloride solution $\frac{1}{3000}$, and the cut edges of the dura stitched together with sterilized catgut sutures, and the wound in the scalp closed in the same manner, with the exception of a small opening in the most

dependent part in which a braid of catgut was left to facilitate drainage; a simple dressing of absorbent cotton was then applied.

The patient recovered in a short time from the ether and immediately made slight movements with the fingers of the paralyzed hand, followed the movements of persons in the room with his eyes and spoke several words. That night he was very quiet, slept nearly all of the time, and scarcely moved when awake, the following morning his temperature was normal, pulse 100 and respiration 20. He opened his eyes when spoken to, and looked about him, but made no reply to questions, nor would he swallow the food that was placed in his mouth. There was no perceptible movement seen in either the arm or the leg. In the afternoon his temperature rose to $100\frac{1}{10}$, and his pulse to 120; he occasionally made slight movements with his fingers, but there was no other change. He slept the entire night, and on the morning of the second day after the operation he awoke with a temperature of $98\frac{1}{4}$ and a pulse of 90, he ate a hearty breakfast, and talked more intelligently than he had done for several months before; he asked for several articles of food and enquired when he might go home. Motion of fingers was noticeably increased, but he appeared to be still unable to move his leg. His temperature remained normal throughout the day. On the morning of the third day, after having slept well all night, his temperature was 98 and his pulse 92; he was very talkative and slightly incoherent. He moved his hand and arm actively, pulling the bedding from side to side, but the grasp of his fingers was still weak, and there was no sensation in the thigh or leg, but when his toes were pricked with a pin he quickly retracted the leg. This was the first time since the operation that he had exhibited any control over the muscles of the left leg. The dressings were removed from the head, and there was found slight tumefaction of the scalp, and a small amount of sanguineous discharge on the cotton. The wound was in good condition, and after irrigation with bi-chloride solution $\frac{1}{2000}$, the dressings were re-applied. On the fourth and fifth days there was slight rise of temperature in the afternoon; the dressings were removed daily and the parts thoroughly cleansed, and some of the stitches removed. On the seventh day, union of the scalp was firm, there was no longer any discharge, and the remaining stitches were taken away. By this time the patient was able to use his left hand and arm nearly as well as his right, and he had regained power in his left leg to

such an extent that he got out of bed and walked across the ward without assistance. He exhibited also a change mentally, he became exceedingly garrulous; his appetite was enormous, and he gained strength rapidly, until at the end of three weeks he was able to walk and to help himself much better than he had done for several months prior to the seizure. This increased mental and motor activity continued for about three weeks, when the patient again began to lose control of his left hand and leg, and manifested less mental activity; he had difficulty in swallowing, and frequently soiled his clothing and bedding; he failed rapidly, and several times exhibited slight spasmodic contractions of the left hand and forearm. He remained in this condition about a week and then died.

AUTOPSY.—At the post-mortem it was found that the dura had grown together again, and the opening in the skull made by the trephine had been bridged over by a dense, strong, fibrous membrane, and there was no evidence of any recent local inflammatory process. There was general pachymeningitis interna chronica hæmorrhagica with a marked accumulation of pus over the right hemisphere one inch below and somewhat in front of the place of trephining, the right hemisphere was considerably shorter than the left, owing to contraction of the frontal lobe. Over the upper part of the frontal lobe the dura-mater formed a sack-like fold, the size of a pigeon's egg, lined by a hæmorrhagic false membrane and containing a turbid serous fluid. The false membrane over the right hemisphere extended backward over the occipital lobe into the longitudinal fissure, and the right lateral sinus contained a solid thrombus. Over the left hemisphere, the hæmorrhagic false membrane was most marked over the parietal lobe, but became finer and more transparent and yellowish as it extended forward over the frontal lobe, the whole brain was contracted, and weighed but little over forty-four ounces; it was of a leathery consistence, with the exception of the right anterior central and the upper frontal convolutions, which showed signs of superficial softening.

Although the patient died and the autopsy revealed a condition of the brain which under any circumstances must necessarily have terminated fatally, the case has been an exceedingly instructive one. It will be remembered that the disease was far advanced at the time of the operation, and the patient was rapidly settling into a state of profound coma. The most that could be hoped for,

therefore, was a temporary improvement. That this was accomplished and that the patient's life was prolonged nearly two months, no one who saw him immediately before the operation and watched his progress afterward could doubt. The man's prompt recovery from the effects of the operation, the rapidity with which the paralysis disappeared after the pressure had been removed from the brain, the increased mental activity and the re-establishment of co-ordinate movements, were highly gratifying, and even though these conditions lasted but a few weeks, they are not without significance. While it is not claimed that the utility of the operation is fully established, the history of this case, taken in connection with that of Dr. Shaw, where the improvement following the operation was so pronounced that the surgeon felt it his duty to discharge the patient as recovered, warrants the further trial of trephining in cases of general paresis, and the writer is inclined to believe that by means of this method of treatment, if made use of early in the course of the disease, one may, in some cases at least, arrest its progress, and give to the patient months, and perhaps years, of useful life.

NOTE.—Since the foregoing case was recorded the writer has learned that Dr. Shaw's patient continued apparently well for a period of over six months after the operation, but that on the 14th of February last he had a severe attack of convulsions, was comatose several days, and on the 20th died. It is to be regretted that a second operation was not performed.

C. G. W.