EPILEPSY FROM PERIPHERAL IRRITATION.

CURES BY REMOVAL OF AN INJURED AND DISEASED TESTICLE AND A FOREIGN BODY FROM THE NOSE.¹

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THE following case, which I was called to see in New Jersey, and in which I have been much interested, was admitted by Dr. Weir Mitchell to his ward in the Infirmary for Nervous Diseases; he has kindly placed it at my disposal. The following history was elicited:

CASE I.—Father's and mother's family healthy and free from nervous disease. Mother still living. The patient, a sailor by occupation, has always been a healthy, robust man; he is a Swede, forty-three years of age, and weighs two hundred and fifty pounds. He has lifted nine hundred and fifty pounds. He is a man of intelligence, clear-headed. On February 17, 1888, while loading a vessel, a bale of hay fell ten feet from the dock to the ship's deck, striking him on the right hip and forcing him to the entrance of the main hatch, the edge of which is elevated about a foot above the deck. On this edge he was caught; the pressure was expended in a line running from between his legs to the left shoulder. His right leg was broken. There were severe bruises, but no break of the skin.

The patient cannot say that his head was struck; he was, however, unconscious for half an hour or an hour, and was carried to the cabin. He had probably no convulsion at that time. The fracture was set by a surgeon, and he was sent to the United States Marine Hospital at Portland, Maine. There was great pain in the back and in the left side, and the patient had cramps from the start. The muscles of the left side of the abdomen were drawn up in knots, he says, the size of two clenched fists. He does not think the abdomen was discolored. There was no fever. The pain in the side was relieved in about ten days, but remained in the back.

From the start it was noticed that the left testicle had been forced out of its position; it could not be felt. The right one remained intact. On the eighteenth day he was seized with rather sharp pain running along the left groin into the scrotum. At this time he began to feel queer in the head and left shoulder, elbow, hand, heart, and thigh; not below the knee. He says the side felt heavy, without strength. He could not move it so well; it felt numb and tingled; he felt dizzy in the bed. This alarmed him, and he tried to move the arm as much as possible, but said nothing to the doctor about it.

These attacks of cramps and associated feelings occurred at first twice and then four times a day, and were like the aura subsequently felt at

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the onset of convulsions. This state of affairs continued without further change for forty-five days, and then the feelings grew worse. The doctor examined him carefully and found that no change in the testicle had occurred since the eighteenth day. After several consultations removal was advised but not done.

Epileptiform attacks had set in by this time, the first occurring on the sixtieth day after the accident. At this time he began to have a painful cramp in the left side. As the patient expressed it, the heart seemed to be squeezed and there was pain in the chest extending up to the left occipital region. He says that he heard a roaring sound; he then fell back in bed unconscious. Those about said he seemed to stop breathing. He was pale at first, and after a few moments began to contract his left side.

There were no violent movements, but he thinks that from what others said his left arm and side became rigid. He ground his teeth, but did not froth at the mouth or bite his tongue. He did not pass urine. He made no outcry as the attack came on. Duration of first about one minute. This was between 7 and 8 A.M.; second attack between 1 and 2 P.M.; third between 7 and 8 P.M.; fourth between 1 and 2 A.M. Two of these attacks were much milder than the first, and more like the attacks to which he had been accustomed.

He left Portland May 17th; having four attacks in twenty-four hours, generally about six hours apart. About May 23d the duration of the convulsions was two and one-half minutes. In all the attacks both eyes twitched, and the face gradually became red and bluish and swollen. He always felt drowsy after an attack, and generally slept one-fourth to one-half hour, but would wake up with more severe pain in the back. Always had an *aura*—pain up left side. Sense of contraction in the left groin; then a strange feeling about the heart, as though about to faint; dizziness in the head; no noises in the ear.

In the passage home his fits increased in frequency; jars seemed to increase them; they were worse on the steamer than on the railroad. In the steamer he thinks he had one every hour; had three in the street in Boston. About the end of June had only two attacks daily. Early in July for two weeks had only one attack daily. They did not respect any particular hour.

July 11th he had three attacks. They have gradually increased in number until Thanksgiving Day, 1888, when he had twenty-three. December 8, 1888, he had seventeen attacks. These all came between 2 and 3 P.M. and at night. His friends say that he turned and twisted about, totally unconscious, taking long, deep breaths. He was raised up for fear of smothering. The patient says he has had in some attacks a dim consciousness of what is going on. This only in the less severe attacks. He thinks that he has heard remarks made. It is said that his hands became clenched, and about the same time both legs became rigid. His face turns red and he grinds his teeth.

Condition—December 7, 1888: Cremasteric reflex present on both sides, but less on the left than on the right. The right testicle hangs lower and is of normal size. Left testicle about one-third size of the right; softer. Scrotum was never swollen. Pressure on the left testicle gives pain, which rising to the left side of head resembles the *aura* which precedes his attacks, but has never caused a spasm. Pressure below the inguinal canals more painful on the left side. No pain in the penis. Has

had only about four erections since the injury. Never has had sexual connection since accident. Thinks he could not, and thinks it would be too painful. The inguinal regions appear as usual. Pain in sacral region. Gait slow, but otherwise normal. Station normal. Knee-jerk, right, normal; left, diminished and easily exhausted. Diminution of knee-jerk in left was noticed by Dr. Bank, in Portland. Abdominal reflex equal on both sides and easily excited. Heart and lungs normal. Pulse 64; rather feeble. Stomach and bowels in good order. Never had any venereal disease. Sleep wakeful. Dreams occasionally. Has dreams while half awake, at this time has tingling. General health is good. Has not lost flesh. Urine passed three or four times in twenty-four hours; has never been able to make it standing though he has tried half an hour; reaction normal; specific gravity 1015; no albumin. Eyesight growing poor in left eye since he was hurt. Two months after the injury he began to see objects double, and shortly afterward as many as half a dozen images instead of one. He has this symptom every day to some extent. Pupils large; react to both light and accommodation. Left more sensitive to light. Ophthalmoscope shows rather pale fundus; otherwise normal. During his stay at the hospital he had most violent daily fits, always before 8 A.M.

Dr. Mitchell having decided that the diseased left testicle was the cause of the convulsions, on December 29, 1888, Dr. William Hunt removed that organ whilst fully etherized, and just before the first incision was made the patient had a distinct fit. Just before the cord was cut another fit began, but section of the cord caused it to cease.

A microscopic examination of the testicle made by Dr. A. C. Wood, of the University of Pennsylvania, showed atrophy of the glandular structure.

It is now over three months since the operation, and there has been no return of convulsions and no sensations like the aura. Strength has been restored to the left side, which had been very weak. Sexual power is normal. The only disability is from a weak back, which is the result of the severe blow received.

Dr. Charles K. Mills has kindly given me the opportunity to examine a patient of his, who during the late war suffered a severe gunshot wound nearly destroying the left testicle, and who for the last fifteen years has had epilepsy.

CASE II.—The patient, W. S. D., is now fifty-one years of age; no history of epilepsy in the family. The patient has never had syphilis or serious illness, or any blow upon the head. On June 27, 1861, a musket-ball entered the anterior part of the left thigh, eight inches below the crest of the ilium, emerged opposite the left testicle, piercing it and passing behind the right testicle, entering the inner aspect of the right thigh at the scrotal junction, and emerging eight inches below the outer right iliac crest. No bone was broken.

Thirteen years later he had his first fit. It came on without aura or other warning. He made some guttural noise, had convulsions of arms and legs, with movements of the eyes. During the attack he was perfectly unconscious. He had three convulsions the first night. Duration about half an hour, and was very drowsy afterward.

One month later he had a second attack similar to the first. Spasms have recurred at intervals of from six weeks to three months during the last fifteen years. The patient has had as many as eleven in twenty-four hours.

Examination shows an atrophied testicle about one-sixth the size of the right. Cremasteric reflex less in the right side than in the left. There is no aura or feeling referable to the testicles. Pressure on the testicle does not give pain in the head. Sexual power is as good as ever.

It may fairly be questioned whether in this case the injury and the epilepsy are in the relation of cause and effect, but I think that, in the absence of other known exciting causes, and coming on at the age of thirty-six, especially in view of the case first described, this may reasonably be placed in the same category.

Dr. Weir Mitchell has kindly given me the following communication :

CASE III.—The record of the case of epilepsy, which was cured by the removal of a diseased testicle, has recalled to my mind a case, of which, unfortunately, I have no notes, although I retain a vivid remembrance of it.

Many years ago, whilst in attendance as physician at the Pennsylvania Institute for the Blind, I was called upon to see a blind girl about seventeen years of age who was afflicted with epilepsy. The attacks were violent, so that she bit her tongue. After each attack she became unconscious and remained so for some hours. The attacks came on at intervals of not less than two days, and were increasingly frequent when first my attention was called to the condition. The girl was of rather weak mind, and had the history of a fall upon the head, to which the attacks had been attributed. A very careful examination revealed the fact that she had a purulent discharge from the left nostril. In the effort to treat this it was discovered that that side of the nose was completely occluded by a foreign body. This was extracted piece by piece, and was found to be a bean, which, in some foolish play, had been pushed up the nostril and lodged there. It had at one time begun to sprout, but this growth had manifestly been arrested by circumstances unfavorable to its increase.

The removal of the bean and washing out of the nostril with proper astringent solutions resulted in complete cure of the fits. As I remember it, she had one or two after the removal of the foreign body, but no more. These attacks were most positively of an epileptic nature, and they had nothing about them of hysterical quality. They had long been considered incurable. The case is so simple that there is really no more to tell than what I have here so briefly placed upon record.

Of course, these three cases ought to be distinguished from idiopathic epilepsy. They may be designated as eccentric or peripheral convulsions, and belong to the same category as dentition-convulsions, fits from worms, etc.

In the case of the sailor reported it took two months for the ebanges in the testicle to produce that degree of irritation which caused the fit. There was no special proclivity in the disposition of the patient. The

injured organ, however, produced not only in the afferent nerve but in the centre to which it is attached some interstitial change. Just what it is we are unable to say, but it was sufficient to produce motor impulses along efferent nerves.

The injured and diseased testicle was the cause of the convulsions, but the accompanying irritation was certainly not of a high inflammatory character, the organ being over tender but not actively painful. Peripheral irritations as causes of epilepsy are not necessarily accompanied by sensation. For this reason it is imperative in all cases of apparently causeless repeated convulsive attacks to seek out the points of irritation. It is the treatment of these cases for which there are tangible causes that yield the brilliant results. In an interesting communication made about one year ago on the subject of epilepsy from dental irritation, Dr. A. P. Brubaker recorded such a case, successfully treated by extraction of a carious tooth, and accounts of fifteen similar cases were collected by him.

In the case of the sailor with the injured testicle it was a matter of uncertainty whether or not the epilepsy had not become so engrafted upon the brain as to continue even after the operation. No doubt many cases of so-called idiopathic epilepsy and Jacksonian epilepsy have been reflex in their origin. In consequence of some intense reflex excitation epileptic paroxysms have come on, the cerebral cortex has discharged in a particular way, and this habit of discharge has been fixed upon certain regions of the cerebrum; and in these cases, even after the subsidence of the reflex excitement, and in some cases after the removal of the reflex cause by operation, the epilepsy which has been imposed upon the central nervous system persists. Such a case has been recorded by Dr. Mills.¹ In that instance the patient had fallen at the age of four, striking the head and injuring it. Epilepsy supervened; the convulsions were sometimes without unconsciousness, and always began in a finger of the injured hand, and extended in a peculiar order. At the age of fifteen the finger was operated upon and a neuroma found by Dr. S. W. Gross. A second operation was deemed necessary and was performed by Dr. Hearn. For at least one year the patient had the seizures as frequently as before. They then began to diminish in frequency. At this time, several years since the operation, it is reported that for two years the patient has had no convulsion.

These cases are especially interesting in view of the question of removal of the cortex. The fact that the epilepsy has been originally of reflex origin does not render a cortical operation improper, but it is, of course, not to be considered until a peripheral operation has been tried.

There is in the class of reflex convulsions a form called pleuritic epi-

¹ Trans. International Congress, 1888.

lepsy. It was first described by M. Manrice Raynaud, of Paris, in 1875.¹ It was found that the injection of weak solutions of iodine, chloral, carbonic acid, etc., into the pleural cavity in the treatment of chronic pleurisy was followed by convulsive attacks in certain cases. A partial hemiplegia has also followed such injections, and in other cases followed the convulsions. These reflex convulsions have proved fatal; the result, however, not at all due to absorption of the substances injected. It is stated that after the injection suddenly the face becomes very pale, the respiration is suspended, and the pulse is very small and scarcely felt. Generally the spasms are first confined to the face or arm of the side of the injection, but soon they become general; at first tonic, then clonic and accompanied by profound unconsciousness.

Study would doubtless bring to light many instances of the peripheral excitation of the spasms in so-called centric or idiopathic epilepsy. Echeverria believed that, on the whole, everything warrants us in thinking that in epilepsy the spasm is always induced by peripheral irritations, generally unfelt or not easily discoverable, and that, even without removing the original lesion of the disease, the fits may be subdued as long as all source of disturbance be withdrawn from the nervous system. He gives in a total of 286 a list of 28 cases of epilepsy from peripheral irritation, many of which, however, should strictly not be admitted to that class.

Herpin, whose work was published in 1852, gives no cases as from peripheral irritation in his list of 68.

Reynolds classifies epilepsy from dentition, indigestion, venereal excesses, dysentery, etc., under eccentric irritation, and records 16 cases. Hammond in 572 cases gives 21 as from dentition, 24 from blows on the head, and 4 from peripheral wounds or injuries.

Injuries of the testicles have produced reflex paralysis as well as epilepsy. Such an instance of paralysis from peripheral irritation has been recorded by Dr. Weir Mitchell² as follows:

A sergeant was shot in the right testicle; the organ was almost entirely destroyed by the ball. He fell without pain, believing himself wounded in the back; he then became senseless, but recovered in a few minutes and could walk. The right foot, however, dragged. There was paralysis of the right anterior tibial muscle and peroneus longus.

As a remedial measure for epilepsy in general castration has been advised, and, according to Gowers, has been performed without effect.

¹ H. C. Wood: *Nervous Diseases and Their Diagnosis*, p. 110, 1867.

² Echeverria: *Epilepsy*, p. 206, New York, 1870.

³ S. Weir Mitchell: *Paralysis from Peripheral Irritation*. N. Y. Medical Journal, 1869.