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Muscular Action a Cause of Fracture Among Paretics.

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MUSCULAR ACTION A CAUSE OF FRACTURE AMONG PARETICS. A REPORT OF TWO CASES.*

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It is contemplated in the present paper merely to add to the literature of this subject a report of two cases of fracture from muscular action occurring in patients suffering from general paresis, which have come under observation at the Eastern Michigan Asylum within the past year. I refrain from taking your time in discussing the question of the fragility of bones in paresis, and would merely point out that there is among surgeons a perfect unanimity of belief that the existence of ataxic diseases renders the bones peculiarly liable to fracture. Every authority I have consulted has mentioned the fragility of bones in patients suffering from such maladies as a predisposing cause of fracture. Erichsen, Hamilton, Wyeth, Stimson and other surgeons, speak of the deleterious effects of certain nervous diseases upon bone structure. Mickle and other authorities upon paresis have gone over the same subject exhaustively, and have described the pathological changes which the bones undergo. At the present time I believe no doubt exists in the minds of medical men of accurate observation that nervous diseases—particularly those from syphilitic, scrofulous and tubercular causation, and those attended with ataxia, as one of the chief manifestations—are peculiarly to fracture from muscular action and causes which would ordinarily prove insufficient to occasion so serious an injury. This liability arises from two causes—the fragility of the bones themselves and the unequal action of the muscles upon them. It naturally follows that the long bones—particularly those of the lower extremities—will be most apt to suffer, and this surgical experience demonstrates.

A female patient fifty-four years of age, was admitted to the Eastern Michigan Asylum in October, 1887, suffering from general paresis; which disease, by the way, as the statistics of the asylums of Michigan show, has been rapidly increasing in the female sex for the last three years. The patient evidently inherited from her

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parents a neurotic tendency—her father having died from brain fever, and her mother from some form of paralysis. She had been suffering in mind for about five months previous to her admission. At the time of her admission she did not show the characteristic physical signs of paresis, but her mental action was elated and confused, and her conversation extravagant. She was much excited and showed a tendency to do mischievous and purposeless acts; but her attention, as is often the case where marked mental impairment exists, could be easily diverted, and her excitement thus momentarily allayed. She attempted work, but was unable to pursue it in a careful manner, and ruined what she undertook to do. She is thought to have sustained a paretic seizure about one and one-half months after admission. Soon after this she complained of pains in the abdomen and right leg, indicating the locality of the latter pain in the central part of the tibia. At this time it was first observed that she was ataxic. She had difficulty in rising from her chair, and seemed in danger of falling. Her manner usually indicated strength and good feeling—as is commonly observed in patients suffering from paresis. The pain and ataxia in connection with the lower extremities were soon followed by incoördination of the movements of the arms. She had difficulty in feeding herself, in directing the spoon towards a dish, and would sometimes drop the spoon and use her fingers. She suffered from frequent severe headaches, and muscular incoördination was more noticeable at these times. In the following month she was more confused, and extremely destructive to clothing. The ataxia rapidly increased, and her mental powers failed. In the February following admission an inequality of the pupils was noticed, and in the latter part of this month there occurred a second paretic seizure, attended by difficulty of respiration, high temperature, and choreiform movements. In March she suffered from polyuria and great thirst. Her condition being feeble, it was thought necessary for her to remain in the hospital, but her mischievousness and tendency to meddle with the fire in the grate prevented her continuing there. On the 17th of April she met with a severe accident. Hearing the supper bell ring, she started in her confusion, in the direction of the dining-room as she supposed; had gone somewhat hurriedly several steps, when the attendant called to her by name, and said, "The dining-room is this way." She quickly turned, and in turning fell to the floor. She could not rise, and was assisted to the sofa. On examination it was found that she had fractured the right femur in the lower

third. There was no bruise or evidence of any contusion of the soft parts; and from the nature of the fall it is believed that the action of the turning produced the fracture, and that it was the cause, not the result, of the fall to the floor. For the first week after the injury—owing to the patient's restlessness, tendency to get up from the bed and move about when she wanted anything—it was deemed inexpedient and even dangerous to attempt to apply extension. She appeared to have no pain whatever, and during the dressing of the fracture never complained. If she had a desire for drink—as was the case hundreds of times during the day—if the nurse was not constantly present at her bedside, she would attempt to get up and help herself. At the end of the week however, after an arrangement of her bed so that her getting out of it was impracticable, extension was applied. Hamilton's dressing was used, the extension being made by means of weight, and counter-extension by raising the foot of the bed. At the time extension was applied it was found possible to overcome all shortening, which had not any time been marked. In fourteen days the dressing required to be renewed, owing to its becoming saturated with highly ammoniacal urine. (And just here I would say that all through her illness there was a tendency to a catarrhal condition of the bladder—the production of a highly offensive muco-pus and decomposition of urine. This condition was speedily and promptly relieved by the exhibition of salol in doses of ten grains three times a day.) At the time of the last dressing the limb was in excellent position and showed no shortening. There had been an immense development of callus. On the 19th of May—thirty-two days after the reception of the injury—extension was removed. The limb was in good position and showed no shortening. The callus was firm. Nine days later the long splints were replaced by short, light splints applied to the anterior and posterior portions of the thigh. At that time she lifted the leg easily; not because asked to do so, by any means, but unconsciously, while the dressing was being applied. On the first of June all dressings were removed. She showed a desire to walk about and use her limb; and it was necessary to keep her sitting in a rocking chair, with a sheet tied about her. She amused herself by raveling out old cloths which the nurse gave her, was incapable of any other employment, and at that time her mental action was barely sufficient to enable her to answer the simplest questions in monosyllables. On the 7th of July it was noted that although she favored the injured leg in walking, it showed no shortening. On the 14th

of the same month she sustained an apoplectiform seizure, which was followed by erysipelatous inflammation, cellulitis and phlebitis of the injured leg. From this time her condition gave rise to renewed anxiety. There was ulceration of the skin of the calf, a swollen œdematous condition of the tissues, and ten days later, an abscess on the foot. This first abscess was followed by two others in the foot, and later (about four months after her injury) one at the seat of the fracture, above the knee, which on being evacuated discharged an immense amount of pus. Counter openings, the introduction of a drainage tube, and syringing with antiseptic solutions, were necessary. Suppuration continued during the following month, which, inasmuch as no disease of the bone could be discovered, was attributed to necrosis and liquefactions of portions of the superabundant callus. The amount of pus discharged was very great, and her bodily health became very much reduced. Her right knee became contractured and stiff. Shortly after the cessation of suppuration, a striking improvement in her mental condition was noticed. She became quiet, passed her nights in sleep, and was not noisy, as had been the case previously. She became tidy in her habits, improved physically, and showed more and more appreciation of visits from her friends. With increased mental activity however, hallucinations of hearing came on, which for a time gave her intense distress. These slowly disappeared, and from this time until her discharge in the following December she improved with great rapidity. She became industrious, her memory returned, she talked easily, and betrayed less and less difficulty in speech and in muscular movement. She was able to do knitting and sewing, and gave other patients watchful care. The stiffness of her knee gradually improved, and at the time of her discharge, although she limped in walking, there was no indication of especial shortening of the limb.

I have gone into the above case somewhat at length for several reasons apart from the particular one for which the paper was written. It is of interest, first, because of its development in one of the female sex. The improvement in the condition of the patient following prolonged suppuration is also of decided interest. This is one of many cases on record where the mental condition is paresis has undergone a striking amelioration in consequence of protracted illness, prolonged suppuration, or debilitating diseases. The occurrence of disintegration of callus, and suppuration at the seat of the fracture, without evidence of necrosed bone, was also to me a novel and interesting feature. The experience in the use

of salol to overcome the catarrhal condition of the bladder—which in similar cases is a source of great discomfort to patients, and annoyance to those who have the responsibility of their care—was most gratifying; and in view of its efficacy in this, and in similar cases in which I have employed it, I would recommend the remedy most highly.

The second case, of which I shall speak less in detail, is that of a male patient suffering from general paresis, aged 42, who has been under treatment in the asylum for more than two years. He suffers from paresis due to specific disease, and had been out of health for two years previous to his admission. Ataxia was from the first a prominent feature of his disease. His gait was clumsy and uncertain, his pupils sluggish, the tendon reflex absent. He was at times extremely apprehensive, at others had extravagant delusions and suffered from mental excitement of a furious type and purposeless character. At the time of the occurrence of the following accident his disease was in a quiescent stage. While out walking, on an even board walk, he attempted to turn, and fell to the ground. As he fell, his attendants perceived an audible snap, and reported to the office that it was believed the man had broken his leg. Such was found to be the case on examination. He had fractured the tibia and fibula in the lower third. The fracture united promptly, and convalescence went on uninterruptedly.

The case is particularly interesting in view of its syphilitic origin and the marked ataxia which the patient showed. In the previous case however, the cause of the nervous malady cannot be assigned. There is no history of syphilitic or constitutional disease, and apart from the existence of pains in the tibia, no symptom strongly pointing to specific infection. The brittleness of the bones in the first case must therefore be ascribed to changes in their structure consequent upon the nervous disorder.

Since writing the above, the patient's mind has again become clouded, and she is less comfortable mentally than for the two or three weeks immediately following the operation. While infinitely better than previous to the operation, the hope that convalescence would proceed without drawback has been doomed to disappointment. The unfavorable change in her mental condition is coincident with the appearance of albumin and hyaline casts in her urine, which is of low specific gravity and passed at frequent intervals.