Lesions of the Cauda Equina with Clinical Notes of a Case.

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Tumours of the cauda equina are sufficiently rare to justify the description of a case when one occurs, especially when, as in the present instance, the lesion is successfully located and dealt with by operation.

The tumours that may occur are the same as those found elsewhere in connection with the spinal cord, neurofibromata probably being the most common. Gunshot wounds and fractures involving the lumbar and sacral vertebræ may also produce the symptoms that are typical of lesions in this part of the body. Such symptoms are:—

(1) Subjective, comprising chronic intermittent pains round about the pelvic girdle, in the hips, or down the legs following the course and distribution of one or more of the nerve trunks from the lumbar or sacral plexus. Sciatica is simulated, though the pain is more frequently bilateral. These pains are usually the first symptom of trouble and the only one for many months; careful investigation at this stage may enable a diagnosis to be made. The later symptoms are:—

(2) Incontinence of bladder followed by paralytic distension with overflow; loss of sexual power and loss of control of rectum.

(3) Segmental anæsthesias and paræsthesias corresponding exactly to spinal segments and the nerve roots issuing therefrom. For example: a saddle-shaped area across the buttocks (S3, S4, S5) is an important diagnostic finding.

(4) Flaccid paralysis of lower neuron type which may involve all the muscles supplied by the lumbo-sacral nerves on both sides, but which is more frequently segmental in character, one muscle group being spared and another being involved. The segmental and unsymmetrical character of the anæsthesia and paralysis distinguishes tumours of the cauda equina from tumours involving the lumbar enlargement, for in the latter case there is sooner or later complete motor and sensory paraplegia. The diagnosis between the two conditions may, however, be exceedingly difficult, especially since the tumour may be extensive enough to affect both situations. Such was actually the condition in the case shortly to be described.

(5) Trophic changes, especially bed sores, occur.

The level at which the tumour lies determines the symptoms in each particular case. For example, with a tumour situated at the level of the first and second sacral vertebræ the quadriceps and adductor muscles would remain unaffected, and the buttocks, hamstrings and muscles below the knees would be involved. The sensory changes would be similarly determined.

Other conditions from which a lesion of the cauda equina requires to be distinguished are:—(1) Sciatica; (2) pelvic tumour; (3) tabes dorsalis; (4) peripheral neutritis; (5) progressive muscular atrophy; (6) anterior poliomyelitis; (7) syringo-myelia.

Mrs. A. B., aged 51, was admitted into the Christchurch Hospital in October, 1923. She complained of chronic pain in the right hip and knee which had been present on and off for one year, and was growing worse. It was noted that her husband gave a double plus Wassermann reaction. The only abnormal physical signs observed at this time were:—Sluggist pupils and an absent knee jerk on the right side. A diagnosis of sciatica was made, septic teeth were extracted and she was discharged. She was re-admitted in March, 1924, complaining of the same pain, which was becoming more severe, and by this time weakness of the right leg had developed, causing difficulty in walking. It was noted that both knee and ankle jerks were present but were sluggish. By 19th April, paralysis of the bladder with overflow had developed, necessitating the regular use of a catheter. The Wassermann reaction of the blood was negative. No abnormal signs were discovered in the central nervous system except those already mentioned. Examination of the cerebro-spinal fluid showed a normal finding and its Wassermann reaction was negative. Two further examinations of the fluid again showed it to be normal.

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By 1st July there was extreme loss of power in the right leg and to a less extent in the left. Wasting of the quadriceps and of all the muscles below the knee on both sides had developed by this time, but the reflexes at the knee and ankle were present, though very difficult to elicit. There was severe intermittent pain in the right hip and down both legs, especially down the back of the right leg. The planter reflexes were flexor and the sensations in the legs were normal except that discrimination between heat and cold was imperfect. There were no other abnormal physical signs in connection with the C.N.S. at this stage. X-ray examination of the dorsal, lumbar and sacral vertebræ was negative.

By 14th August, there was complete flaccid paralysis of the lower limbs, including the buttocks, but not including the abdominal muscles. The knee and ankle jerks were now absent. Bed sores had developed, and the bladder required regular catheterization. No segmental anæsthesia could be definitely found except over the buttocks, where the characteristic saddle-shaped area was mapped out, which showed absence of sensation to touch and pin prick. Below the knees there was complete anæsthesia; above the knees the anæsthesia was partial and indefinite.

The light reflex all along had been difficult to elicit and this fact, combined with the other features of the case, had made the diagnosis of tabes dorsalis a probable one, until the marked muscular wasting and paralysis had developed. A lesion either of the lumbar enlargement or of the cauda equina was suspected and finally diagnosed, and an operation was decided upon with this diagnosis in view.

Operation.—On 7th October, 1924, an operation was performed. With the patient in the prone position an incision was made in the midline from the twelfth dorsal to the third lumbar spine. Laminectomy of the first and second lumbar vertebræ was done. On opening the dura mater a free escape of cerebro-spinal fluid occurred. The cauda equina was found to have a tumour lying dorsally upon its commencement, and extending upwards on the lumbar enlargement. The lamina of the last dorsal vertebræ was removed and the whole tumour exposed. It was an elongated solid tumour about two inches in length. It was held by flimsy attachments of arachnoid matter, and was removed very easily, and without bleeding of any consequence. The dura was sutured and the spinal muscles drawn together with chromic gut sutures. The wound was closed with silkworm gut sutures. The operation occupied less than an hour and was very well borne. The patient was kept in the head-low position to prevent leakage of cerebro-spinal fluid from the wound, which healed by first intention.

The tumour was reported by Dr. Pearson to be a vascular perithelioma.

There was very little shock after the operation, which was quickly recovered from, and the skin healed aseptically. The patient noticed at once that the severe pain in the hip and down the right leg had disappeared. At the end of a fortnight bladder sensation had returned, and the paralytic distension was replaced by frequency without control. Massage, passive movements and faradism were carried out daily on both legs, and, as improvement took place, active movements were encouraged and were performed in a limited manner.

At the present time, 30th December, two and a-half months after the operation, the condition of patient is as follows:— Her general health is much improved, mainly because her sleep is undisturbed by pain. The bed sores have healed; sensation has returned in both legs and is practically normal, though touch sensation below the knees is still defective. The patient complains of an aching pain in both legs, especially at night, dull in character, different from her previous pain and not severe enough to prevent her sleeping. Limited voluntary movements have returned in all muscle groups, and the muscles themselves are increasing in size. The legs are still very weak, especially the right leg; the muscle groups that show least improvement are the hamstrings and the anterior tibial muscles of the right leg. There is faradic response present in all muscle groups. The knee and ankle jerks are present on the left side, but absent on the right side. In the last few days bladder control has been present.

In view of the improvement that has already taken place, it is reasonable to expect that ultimately the patient will be able to walk, and that recovery, more or less complete, will take place.

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