SCIATICA AND CERVICAL RIB.

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There are some points of resemblance between the two apparently very diverse conditions of sciatica, and the syndrome which goes by the name of "cervical rib," which we believe will repay study.

Symptomatology of "Cervical Ribs."

In a few cases diagnosed as cervical rib the symptoms are mainly vascular in origin. Occasionally, the subclavian artery can be felt pulsating at the root of the neck, lifted up by the rib to a higher level than usual, but the abnormally high subclavian artery with visible pulsation may be met with when there is no cervical rib present. In other cases the pulse is small and the hand tends to be blue and cold. Vascular symptoms, however, are not nearly as often seen as nervous. Tingling or numbness of the inner side of the hand, wrist and forearm, sometimes extending to the whole hand, is a common complaint. There may be actual anæsthesia. Pain is often a prominent symptom. The patient, usually a woman, may state that the hand is clumsy, or that she drops things; there may be demonstrable weakness, and not infrequently muscular wasting of the small muscles of the hand supplied by the ulnar nerve. In one of my cases the abductor and opponens pollicis muscles were also wasted. The symptoms are worse when the nerves are put on the stretch, as by a commercial traveller carrying a heavy bag of samples.

Symptomatology of Sciatica.

In sciatica, also, there is pain in the distribution of the sciatic nerve, which may last only a few weeks or may be very persistent. If the pain goes below the knee, the external popliteal area is more affected than the internal popliteal. In severe and long lasting cases, there is some numbing of sensation, muscular wasting, and weakness of the leg muscles, and loss of the ankle jerk. When the nerve is put on the stretch by flexing the hip and extending the knee, pain down the back of the thigh may be severe (Lasègue's sign). Therefore, the resemblance between the cervical rib syndrome and sciatica is very close. It is true that in sciatica the pain is more prominent and the muscular weakness and anæsthesia less apparent, but the motor and sensory function of the hand are more delicate than those of the foot and leg. A more important difference is that the sciatic nerve is usually tender on pressure in sciatica cases, whereas the ulnar nerve seldom shows tenderness. The resemblances are, however, great enough to lead one to look for analogous causes for the two conditions.

The Causation of the Nerve Symptoms in "Cervical Ribs."

No one explanation will cover all the cases. More often than not, in my experience much more often than not, a genuine cervical rib articulating with the seventh cervical vertebra is absent. Patients who have such a rib or pair of ribs shown by the skiagram frequently have no symptoms whatever. There may be a very large costo-transverse process on one or both sides of the lowest cervical vertebra, but at operation it is by no means apparent that this bony process is exercising any direct pressure on the lower end of the brachial plexus. In 1919 Stopford⁽¹⁾ advanced evidence that the real source of the pressure may be the normal first rib, and that dividing it, or resecting a short piece, will free the nerve.

More recently, Adson & Coffey⁽²⁾ demonstrated that the plexus is often tightly drawn over a tense band in the scalenus anticus muscle, and all that it is necessary to do to give relief is to divide the muscle. In a case of my own there was a bony spike, directed downwards, arising from the tip of the costo-transverse process of the seventh cervical vertebra, and from the tip of this spike a tense fibrous band ran to the first rib. The lower cord of the brachial plexus was tightly stretched across it. Division of the fibrous band released the plexus, and the patient declared next day that the pain was gone. The relief continued. The bony spike was also removed. In my experience, it is not necessary to remove the costo-transverse process of the seventh cervical vertebra even if it is enlarged; it is quite sufficient to resect a piece from the first rib, or in suitable cases to divide the scalenus anticus and fibrous bands.

The Causation of Sciatica.

The causes of sciatica are many and various. In a small but important group, the nerve is involved in a malignant growth of the rectum or uterus, which can be detected by a rectal or vaginal examination. In another group, the sciatica is a reflex from disease of the sacro-iliac joint, usually tuberculous. Putti⁽³⁾ has described a syndrome in which sciatica is associated with a lumbar scoliosis, the convexity of the curve being on the same side as the sciatica; in such a case a careful X-ray will show osteo-arthritis of the small articulations between the processes of the lumbar vertebræ. Yet again, sciatica may be associated with lumbago, and the symptoms evidently due to fibrositis. According to Halweg⁽⁴⁾ of Copenhagen, the real trouble in many cases lies in the muscles of the back of the thigh and not in the nerve at all. He maintains that harder nodules can be felt here and there in the muscles. In a few cases bony changes can be demonstrated by X-rays in the lumbo-sacral articulation, or in the neural foramina. Occasionally sciatica is part of a polyneuritis, or there may be a tumour of the spine or spinal nerve roots.

When we have eliminated all the above, many cases remain on our hands without an adequate explanation, including some of the most intractable, with muscular wasting of the leg and a lost ankle jerk. How are these to be accounted for? It is usual to ascribe the trouble to neuritis of the sciatic nerve, but histological evidence appears to be lacking; it is pure hypothesis. Several writers, as Hauser⁽⁵⁾ and Purser⁽⁶⁾, doubt if it really occurs.

Weidhoff⁽⁷⁾ found that Lasègue's sign is abolished by sacral anæsthesia, but not, in eight cases, by anæsthetic blocking of the nerve-trunk high in the thigh. This suggests that the cause of the pain lies high up in the nerve. A diagnosis of sciatic neuritis does not lead to any simple straightforward line of treatment. As a matter of fact, a multitude of treatments have been advised and followed, with varying degrees of success and failure: alterations in diet, cushions on chairs, hydrotherapy, massage, diathermy, various forms of electric treatment, a long Liston splint, the application of blistering plasters, painting the thigh with strong hydrochloric acid, injections into the sacral hiatus, stretching the nerve or injecting saline into it, and numerous other devices besides.

Some cases of sciatica are easy to cure, others are very resistant. A method of treatment followed by Crawford Renton⁽⁸⁾ and Mill Renton⁽⁹⁾ works on the theory that sciatica may be due to adhesions of the nerve to the edge of the sacro-sciatic notch, and they had operated to remove such adhesions either by cutting or by freeing with the finger, and with considerable success.

Fibrous Bands—a Cause of Sciatica. The similarity of the symptoms in sciatica and in the “cervical rib” syndrome leads to the possibility that certain cases of both ailments may be due to the pressure of fibrous bands. If one explores the sciatic nerve, under cover of the pyriformis muscle, at the point where it emerges from the sacro-sciatic foramen and crosses the bone, one will find in certain cases that there is a dense band of fascia, with a sharp razor-like edge, which reinforces the origin of the gluteus minimus muscle as it arises from the bony edge of the foramen. This dense band of fascia may be traced up into the sheath of the gluteal artery and superior gluteal nerve. It is closely applied to the antero-external aspect of the sciatic nerve, and may press upon it. It will be remembered that the external popliteal nerve-fibres suffer more in sciatica than the internal. The band is often present in dissecting room subjects, sometimes on one side of the body, sometimes on both. It may be reached by splitting the fibres of the gluteus maximus muscle. In my experience, and that of other surgeons, division of this band may cure very intractable cases of sciatica. When it is cut, the nerve is obviously freed from a very uncomfortable close neighbour.

It is not suggested for a moment, of course, that this band is the universal or even that it is the commonest cause of sciatica. The operation is not a cure-all, nor should it be undertaken until other methods have been tried and failed. But it has the merit of safety and simplicity. The incision must be made down on to the bone, or the gluteal vessels might be injured. The difficulty at present is to decide in which cases the operation is indicated. We would suggest the following rules:—

1. There must be no doubt that the diagnosis of sciatica is correct and that there is no cause to be found in the spine, spinal cord, or within the pelvis. Lumbar scoliosis must be absent.
2. The case must be one of long duration, not yielding to ordinary treatment.
3. Wasting, or numbing of sensation in the distribution of the external popliteal nerve should be present.

No special after-treatment is required. The relief from pain may be immediate, or it may not be obtained for several weeks. As far as can be judged, in view of the fact that the method has only been in use for about two years, the relief is lasting. The analogy between the causation and treatment of sciatica and of the “cervical rib” syndrome is therefore very complete.

REFERENCES.

- (1) Brit. Jour. Surg., Oct., 1919, p. 168.
- (2) Ann. Surg., June, 1927, p. 839.
- (3) Lancet, 1927, ii, 53.
- (4) Acta. Medica Scandinavica, x, 1925.
- (5) Journ. Amer. Med. Assoc., 102 5th May, 1934, p. 1,465.
- (6) Irish Jour. of Med., Nov., 1931, p. 583.
- (7) Klin. Wochen, 1927, vi., 739.
- (8) Scottish Med. & Surg. Jour., 1897, p. 35; Proc. Roy. Soc. Med., Surgical Section, May, 1908, p. 167.
- (9) Brit. Med. Journ., April, 1921, p. 557.