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Trigeminal Sensory Neuropathy Caused by Cervical Disk Herniation

Trigeminal sensory neuropathy may result from a wide variety of factors, including tumors of the trigeminal ganglion or spinal trigeminal tract, demyelinating diseases, and connective tissue disorders. Despite a long list of possibilities, the cause often is difficult to establish, and thus many cases are described as idiopathic. We report an unusual case of trigeminal sensory neuropathy caused by cervical disk herniation.

Case Report

A 33-year-old woman had had right-sided facial numbness, mild neck pain, and paresthesias of her right arm and leg for 2 weeks. She said that the symptoms had started suddenly but denied recent history of trauma. She had had trauma to her neck in a motor vehicle accident 2 years before. Neurologic examination revealed loss of sensation, including pain, temperature, and touch, on the right side of the face and forehead. Corneal sensation and corneal reflex were normal. Plain radiographs of the neck were interpreted as normal. The patient was referred to our institution for further evaluation. Head CT scans were normal. MR imaging showed disk herniation at the C3–C4 level with marked compression of the spinal cord (Fig. 1). A large disk fragment protruding through the posterior longitudinal ligament was removed surgically. The patient experienced immediate, complete resolution of the trigeminal sensory loss.

Discussion

Differential diagnosis of trigeminal sensory neuropathy is challenging because this disorder has a wide variety of causes. It has been reported in association with a variety of connective tissue diseases, including systemic lupus erythematosus, dermatomyositis, and mixed connective tissue disease [1–5], but most frequently with systemic sclerosis [6, 7]. It has been hypothesized that the association with connective tissue diseases is the result of either disturbed autoimmunity or vasculitis [6, 8, 9]. Other documented causes include trauma, tumors, and viral inflammation of the gasserian ganglion, the sensory root, or the spinal trigeminal nucleus [10–16].

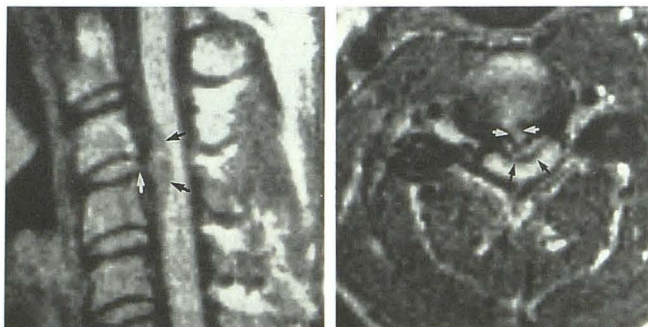
In our case, the trigeminal sensory neuropathy was the result of a cervical disk impinging the spinal trigeminal tract. The spinal trigeminal tract is formed by the fibers of the trigeminal sensory root, which turn caudally on entering the pons and extend into the upper cervical spine (Fig. 2). As the spinal tract descends, it gives off fibers to the spinal trigeminal nucleus, which also descends into the upper cervical spinal cord. The spinal trigeminal nucleus transmits pain, temperature, and some tactile sensation from the face in a somatotopic orientation. Most authors describe the trigeminal tract and nucleus as extending to approximately the second to fourth cervical level [17, 18]. As a result, a tumor or lesion of the lateral medulla or upper cervical spinal cord in the region of the spinal trigeminal tract or nucleus may cause trigeminal sensory neuropathy. The preservation of corneal sensation and reflex, as in our case, is characteristic of lesions of the spinal trigeminal tract and may occur in patients with trigeminal tractotomies [19, 20] and in trigeminal sensory neuropathy [21].

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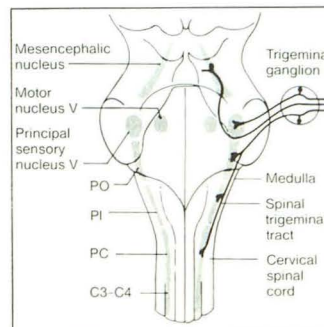
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1A

1B



2

Fig. 1.—A and B, Sagittal, 500/40, (A) and transaxial, 1000/40, (B) MR images of cervical spine show herniated disk at C3–C4 level (white arrows) and marked compression of cervical spine (black arrows).

Fig. 2.—Schematic dorsal view of brainstem shows sensory fibers and nuclei of trigeminal nerve. Both spinal trigeminal tract and nucleus extend into upper cervical spinal cord. Subnuclei of spinal trigeminal nucleus include pars oralis (PO), pars interparalis (PI), and pars caudalis (PC).