DERMATOME HYPALGESIA WITH POSTEROLATERAL HERNIATION OF LOWER CERVICAL INTERVERTEBRAL DISC

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The clinical syndrome of nerve root compression by posterolateral herniation of a lower cervical intervertebral disc has been well presented in recent articles by Semmes and Murphey, Ulmer and Meredith, Spurling and Scoville, Michelsen and Mixter, Bucy and Chenault, Elliott and Kremer, Bradford and Spurling, Young, Eaton, and Murphey and Meade. It has been brought to attention by these authors that pain which extends from the lower cervical spine over the upper scapula and down the arm, often with associated numb sensation in some part of the hand, commonly is caused by lower cervical disc herniation. Formerly this syndrome has been variously diagnosed as brachial neuritis, radiculitis, fibrositis, myalgia or reflex pain, with focal infection, cervical arthritis, acromial bursitis, cervical rib, scalenus anticus, cardiac or gall bladder disease often suspected in etiology. Now it is necessary to re-evaluate this type of pain and recognize that it more often is due to nerve root compression by herniation of a lower cervical intervertebral disc. Our present state of knowledge of this herniation is at the same stage as that of herniation of a lower lumbar disc ten years ago when the diagnosis of sciatic neuritis was in vogue, with many hypothetical explanations of its cause, now discarded.

The cervical spine and the lumbar spine are similar in their mobility, with frequent forward-bending strain placed upon them and occasional fracture or dislocation in these regions from violent force. In the lumbar region heavy weight bearing on a poor mechanical angle with the sacrum is the most important factor in causation of posterolateral herniation of the nucleus pulposus of the 5th, 4th and 3rd lumbar intervertebral discs, in this order of frequency, whereas fracture-dislocation and hypertrophic arthritis occur more frequently in the upper lumbar region. In the cervical spine similar stress and strain frequently lead to narrowing and border hyperostosis of the lower cervical intervertebral discs, commonly seen in roentgenograms, and at this same site fracture-dislocation usually occurs, indicating that this is the site of greatest combined strain in the neck.

Recognition that pathology of the lower cervical discs produces nerve root symptoms has antedated recognition of discrete posterolateral cervical disc herniation, just as other pathology in the lumbar spine was previously used to explain nerve root compression symptoms of disc herniation there. Oppenheimer and Turner have written extensively of what they have
J. JAY KEEGAN termed “discogenetic disease of the cervical spine with segmental neuritis,” relating the nerve root pain to narrowing of the intervertebral canal by adjacent vertebral border hyperostosis. This very nearly explained the mechanism involved, but they did not recognize that the commonest primary cause of this hyperostosis and “segmental neuritis” was posterolateral herniation of the intervertebral disc.

The early writings on cervical disc herniation pertained more to larger midline or transverse herniation into the spinal canal causing spinal cord compression (Stookey19), just as such reports of occasional large herniations in the lumbar region preceded recognition of the more common posterolateral discrete nucleus herniation there. The important difference between these two types of herniation is that in the lateral small nucleus herniation a single nerve root is compressed on only one side, giving rise to distinctly lateralized radiating nerve root pain and associated numb sensation which are located accurately in the distribution of that nerve root. This localized nerve root pain and hypalgesia have been shown by the author9,10,11 to be diagnostic of the site of disc herniation in the lumbar region, where the sensory distribu-

![Fig. 1. Dermatome chart of the upper extremity determined by outlining the area of hypalgesia found with single nerve root loss in the lower cervical region.](image-url)