Cervical Spondylotic Myelopathy*

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The most common cause of progressive spinal cord and nerve root deterioration is chronic cervical disc degeneration. The first complete delineation of the neurological syndrome of cervical spondylosis was made 15 years ago by Brain et al.3 The spinal cord is involved in this syndrome only when the vertebral canal is narrow in the sagittal dimension. This crucial factor was demonstrated in surgical observations by Allen,1 in neuropathological studies by Payne and Spillane,9 and in radiographic studies by Wolf et al.13

Although there is a large body of related literature, questions remain in the practical application of this knowledge. In the natural course of the disease does the impairment reach major proportions? Lees and Turner7 stated that most of their patients showed symptoms for weeks or months followed by improvement or a static condition. Brain2 stated that there is a natural tendency for the disease to become arrested, but most of those affected were left with a variable degree of disability. We have had experience with a group in whom the course was not so benign. What are the reliable radiological findings which can be correlated with the neurological picture? This question presents a problem especially when the differential diagnosis includes so-called “degenerative disease” of the central nervous system in older patients with co-existing disc degeneration. What are the relative merits and indications among the surgical approaches available now? This question is complicated by the fact that some part of the disability may be irreversible.

Between 1953 and 1964, 190 patients with a diagnosis of cervical spondylotic myelopathy were admitted to our hospitals for diagnostic investigations. A review of common diagnoses of spinal cord disorders showed spondyloitic cervical myelopathy to be the most common single cause (Table 1). Seventy-eight were judged to be of such severity and progressive nature that they were referred for surgical treatment. In this group of patients, we conducted preoperative and postoperative examinations at all stages. Changes in progress were judged by differences in findings. Subjective results from questionnaires were used in only a few patients who had moved to another district. All patients were followed for at least 1 year after operation, the majority longer, to a maximum of 10 years. Sixteen patients were not included in the final assessment because etiologic factors such as concomitant severe trauma or coexistent metabolic diseases clouded the issues. Finally 62 patients, 52 male and 10 female, were intensively investigated.

Clinical Description

The majority of our patients were middle-aged. Four patients were under 40, 17 were over 60. There were no real differences in clinical manifestations according to the emergence of the disease at different ages nor in the apparent tempo of the process. The onset was frequently insidious. The diagnosis is easier and the patient comes to examination earliest when pain is a prominent feature. Local pain in the neck, shoulder or subscapular regions, however, was present in less than half of the cases. Cervical nerve root compression, always accompanied by pain

![Table 1: Prevalent causes of spinal cord disorder](image-url)

- **UCLA**: University of California, Los Angeles, School of Medicine.
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which could be brought on by Spurling's maneuver (oblique extension with vertical compression of the head on the neck), was present in only about one-quarter of myelopathy patients. Seventeen patients experienced shock-like sensations in the trunk or limbs on quick flexion or extension similar to Lhermitte's sign. Other patients experienced ascending numbness of the lower limbs when the neck was in sustained extension even though there was no pain. Nevertheless, a large number of the remaining patients experienced only the signs and symptoms of gradual loss of function of the spinal cord.

Spasticity was almost invariably present in the common neurological findings (Fig. 1) and was severe at the initial examination of two-thirds of the patients. Spasticity of the hands, especially in the flexor forearm muscles supplied by the lowest cervical cord segment, was often evident in the slow stiff opening and closing of the fists and by inversion of reflexes. A disabling type of sensory pattern significant of spinal cord impairment was bilateral gauntlet anesthesia of the hands. Segmental sensory patterns and ascending sensory deficit were frequently found, as might be expected, with epidural lesions. Painful paresthias of a burning, fiery nature aggravated by contact were found associated with zones of partial analgesia. The diagnosis of weakness in Fig. 1 refers to patients who had atrophy or fasciculations.

In order to make comparable correlations the patients were grouped into 5 categories of neurological findings according to the predominant spinal cord syndrome. Classification of a patient was based on the initial

![Fig. 1. Symptoms and signs in 62 cases of spondylotic cervical myelopathy.](image)