Early accounts of cervical spondylosis

JMS Pearce, MD, FRCP, is a retired Neurologist and author with a particular interest in the history of medicine and science.

Correspondence to: JMS Pearce, MD, FRCP, Emeritus Consultant Neurologist, Department of Neurology, Hull Royal Infirmary, UK. E. jms.pearce@me.com

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Abstract
For centuries, physicians did not recognise a degenerative primarily skeletal disorder causing nerve root and cord symptoms. It was variously described by Gowers, Victor Horsley and other as cervical osteoarthritis, spondylitis, chondroma, or herniated disc. Only in the twentieth century was a distinction recognised between nuclear herniation and annular protrusion, and between acute disc protrusions and chronic spondylotic pathology.

That they could cause cord damage only became widely recognised when in 1952 Russell Brain, Northfield and Marcia Wilkinson delineated the syndrome of spondylotic myelopathy with consequent neurological signs and symptoms. The progressive natural history was clarified in the same decade.

One of the most frequent causes of spinal cord and root disorders is cervical spondylosis [1]. The Edwin Smith papyrus dating from the seventeenth century BC, the oldest of all known medical papyri, refers to a neck dislocation resulting in paralysis of all four limbs with incontinence. Cervical fractures and dislocations have long been known to damage the spinal cord and nerves. Both Hippocrates and Galen described skolioisis and kyphosis as curvatures of the spine [2], but physicians did not recognise a degenerative primarily skeletal disorder causing root and cord symptoms.

An unexpected more recent source is *An Essay on the Shaking Palsy* by James Parkinson which described symptoms of both cervical radiculopathy and myelopathy in a patient with a rheumatic affection of the deltoid muscle with pain extending down the arm, forearm and the sides of the fingers in which a continual tingling was felt. In Chapter 4, p.35 he explained:

> *"Superior cervical vertebrae, must render it and the contained parts, liable to injury from sudden distortions. Hence may proceed inflammation of quicker or slower progress, disease of the vertebrae, derangement of structure in the medulla* or in its membranes, thickening or even ulceration of the theca, effusion of fluids."*

In the fourth, of eighteen classical lectures given between 1860 and 1862 on "Rest and Pain," John Hilton explicitly described another common symptom, cervicogenic headache.

We are reminded that the essential features of cervical spondylosis are a degenerative desiccation in the intervertebral disc with consequent protrusion, osteophytes, foraminal and canal narrowing that can cause symptoms of root irritation or compression in the arms, and myelopathy primarily affecting the legs. Only in the twentieth century was a distinction recognised between nuclear herniation and annular protrusion, and between acute disc protrusions and chronic spondylotic pathology.

Gowers in 1892 had described vertebral exostoses with irritation of the nerves through narrowing of the foramina causing pain and with "extreme chronicity" compression of the cord [3]. In 1901, Victor Horsley found a protruding ridge of bone compressing the cord at a C6 laminectomy (related by Taylor and Collier [4]). The patient was an intoxicated twenty year old who the day after a fall from a van developed pain and weakness of the right arm followed over two months by gradual loss of use of his legs and sphincters from which remarkably he recovered.

In 1928, a study by Stookey showed the relation between quadriplegia and cervical spinal cord compression from extradural chondromas and he distinguished ventral disc protrusions compressing the cord from lateral compression of nerve roots [5].

Cervical myelopathy

Although degenerative changes in the spine were well known for centuries, they were variously described as cervical osteoarthritis, spondylitis, chondroma,** or herniated disc. The fact that they could cause cord damage only became widely recognised when in 1952 Russell Brain, Northfield and Marcia Wilkinson in 45 patients clearly delineated the syndrome of spondylotic myelopathy with consequent neurological signs and symptoms [6,7]. They later provided a comprehensive description in their unrivalled book [8].

With aging, the frequency and size of disc pathology increases, while the sagittal diameter of the spinal canal decreases [9]. Importantly, many subjects with obvious radiological changes are asymptomatic. In a series of 50 asymptomatic patients aged 50 and over 75 per cent showed narrowing of the spinal canal; and 75 per cent showed narrowing of the intervertebral foramina due to osteoarthritis at the neurocentral and zygapophyseal joints [1]. A more recent MRI study of asymptomatic individuals showed that up to 60% of the subjects aged over forty had radiological findings compatible with cervical spondylosis [10]. Asymptomatic cervical disc bulges are even more common.

Sixty years ago, Clarke and Robinson clarified the natural history of cervical myelopathy in a meticulous clinical review in a group of 120 patients [11]. The ultimate prognosis in most cases was poor, although progression was often extremely slow and real improvement rare. They observed that in five per cent of cases there was a rapid onset of symptoms and signs, followed by long remissions, twenty per cent had slow and continuous progression, and in seventy-five per cent episodes of new symptoms and signs appeared. Between episodes, deterioration occurred in about two-thirds.

**medulla here refers to the spinal cord*
***chondroma was used to describe the cartilaginous protrusion of disc material.*

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