



Review

Management of asymptomatic cervical spinal stenosis in the setting of symptomatic tandem lumbar stenosis: A review



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ABSTRACT

Introduction: This article reviews the literature regarding tandem asymptomatic cervical stenosis in the setting of symptomatic lumbar stenosis. The presenting features of cervical spondylotic myelopathy are insidious and consistent with upper motor neuron loss. Often, asymptomatic cervical stenosis is encountered in the clinical setting during the workup of a symptomatic lumbar stenosis and degenerative disease.

Methods: A PubMed (1966 to July 2013) electronic database search was conducted for articles pertaining to the diagnosis of incidentally discovered cervical cord compression. Keywords and MESH terms were limited to asymptomatic cervical stenosis, asymptomatic cervical compression, asymptomatic spinal stenosis, asymptomatic cervical spondylosis, and asymptomatic cervical cord signal. The primary literature topics for manuscript inclusion were the development of symptomatic myelopathy from asymptomatic cord signal edema, as well as the presence of tandem stenosis as defined above by incidental cervical stenosis during the workup of lumbar degenerative disease.

Results: There were no previous systematic reviews, randomized trials, or prospective studies on the management of tandem cervical and thoracic stenosis. Five studies, all retrospective reviews containing relevant data were included in the review. Asymptomatic cervical stenosis encountered in the investigation of lumbar symptoms was had a 23% incidence. A risk of 5% per year of development of myelopathy previously reported.

Conclusions: There is insufficient evidence in the literature to support the need for preemptive decompression for asymptomatic cervical cord compression with or without a correlative T2 hyperintense cord signal. Early diagnosis of radiculopathy or myelopathy in patients with cervical stenosis (i.e., through conversion of asymptomatic to symptomatic state) is important as each patient with in this clinical setting should be followed closely, as the literature shows the tendency for a clinical progression to eventual cervical myelopathy.

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1. Introduction

Cervical spondylotic myelopathy (CSM) is a debilitating neurologic condition characterized by cervical stenosis due to osteoarthritic degeneration from facet arthropathy, ligamentous hypertrophy, and degenerative disc disease. Unfortunately, the presenting features are insidious and consistent with upper motor neuron loss. This is in the setting of a progressive degeneration of the spine. Often, asymptomatic cervical stenosis is encountered in the clinical setting during the workup of a symptomatic lumbar stenosis and degenerative disease (Fig. 1). In general, aging results in spinal degeneration by the age 65; by this time, 95% of men and 70% of women have radiographic findings of degenerative disease of the cervical spine [4–6].

There are a variety of genetic disorders that can predispose a patient to early onset spinal stenosis. Many of these conditions will be diagnosed by their serious medical conditions that form the basis of their diagnosis. These cardinal symptoms usually lead to the initial diagnosis of a genetic disorder, with a further workup leading to the diagnosis of spinal stenosis. Down's syndrome for example, is well known to present with a constellation of cervical spine abnormalities, resulting in early spinal stenosis. Many of these genetic diseases result in mental delay that call for a heightened awareness of the increased risk of spinal stenosis, as these patients may not be able to effectively communicate the symptoms attributable to myelopathy. Furthermore, a variety of relatively rare genetic conditions results in stenosis due to ligamentous and soft tissue hypertrophy which often will cause myelopathy from symptomatic spinal cord compression. Premature arthropathy from achondroplasia, neuropathies, or neuromuscular conditions all commonly can result in premature spinal stenosis.

The goal of surgical treatment for CSM is to halt the steady progression of clinical worsening. Unfortunately, many patients do not seek therapy until significant deficits are present or often due to painful syndromes of concurrent lumbar degenerative disease. The authors provide the first literature review to date addressing the management of tandem cervical and lumbar stenosis.

2. Methods

A PubMed (1966 to July 2013) electronic database search was conducted for articles pertaining to the diagnosis of incidentally discovered cervical cord compression. Keywords and MeSH terms utilized were consistent through all search engines and included asymptomatic cervical stenosis, asymptomatic cervical compression, asymptomatic spinal stenosis, asymptomatic cervical spondylosis, and asymptomatic cervical cord signal. The authors then carefully reviewed each applicable article of interest as well as evaluated each respective bibliography for articles of relevance. Articles were then evaluated based on the Centers for Evidence Based Medicine (CEBM) quality rating scheme.

2.1. Study selection

Those articles eligible for inclusion were retrospective clinical series, comparative case series, comparative cohort studies, clinical trials, meta-analyses, as well as systematic reviews, if available. Those abstracts excluded were those not published in English, animal studies, all nonclinical papers, technical notes, and case reports.

The primary literature topics for manuscript inclusion were the development of symptomatic myelopathy from asymptomatic cord signal edema, as well as the presence of tandem stenosis as defined above by incidental cervical stenosis during the workup of lumbar degenerative disease. Studies that met these criteria were included in the final analysis. Bibliographies were reviewed to ensure that no individual studies were duplicated in the final analysis.

2.2. Data extraction and analysis

Oxford CEBM ranking criteria were utilized for the assessment of each article (Table 1) [7]. Data for the number of studies, purpose, number of patients, mean age, radiographic finding of T2 hyperintensity, and progression to clinical symptoms were followed.

Literature results and data extracted were confirmed by two authors. A proprietary software package was utilized for statistical analysis (JMP Statistical Software Package v 8.0, www.jmp.com).

3. Results

A PubMed Search was utilized in July, 2013, with the aforementioned search strings, finding 1056 abstracts/titles. After a review of these abstracts by the authors, twenty articles were then evaluated in greater detail as they were deemed to be relevant to the topic. Upon further inspection, four papers containing relevant data pertinent to the clinical interests of this study were included in the review (Table 1). Sixteen of the studies did not contain data useful to the pertinent clinical topics after careful manuscript review.

Asymptomatic cervical stenosis encountered in the investigation of lumbar symptoms was found to have an incidence of 23% by Okada et al. [18]. A risk of 5% per year of development of myelopathy was found in a study by Lee et al. [13]. In a study of 100 patients with neurogenic claudication, 76 patients were found to have tandem cervical stenosis (76%) [11].

One of the four studies found (Table 1), by Bednarik et al. [3] selected 66 patients who had undergone a cervical MRI for cervical radiculopathy or axial pain, without any signs or symptoms of myelopathy. These patients were symptomatic, but not clinically myelopathic, and we included this manuscript in our analysis. In this study, on a median four year follow-up, a development of symptomatic myelopathy in 19% of patients was noted. From this, a 5% risk per year of the development of cervical spondylotic myelopathy from cervical spine stenosis can be seen. This risk rate is not insignificant, as the risk could theoretically reach 100% in aggregate at 20 years.

4. Discussion

In this study, we evaluate studies that examine incidental degenerative cervical spondylosis resulting in spinal cord compression in the setting of symptomatic lumbar stenosis to determine literature guidelines regarding the plausibility of early cervical decompression.

Other observational studies express this concern. Okada et al. followed 223 patients for ten years with lateral plain films and MRI of the cervical spine. He found a progression of cervical degenerative findings of 81% over this time, with the most common feature of progression on MRI being posterior disc

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