Surgical Management of Spondylogenic Thoracic Pain Syndrome

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ABSTRACT

Thoracic decompression and fusion was performed on 21 patients for spondylogenic thoracic pain with and without neurologic deficits. At initial visit, 9 patients had thoracic pain only, 7 had lower extremity numbness, 4 had weakness, 4 gait disturbances, and 1 had urinary incontinence. Diagnoses were confirmed by computed tomography with and without myelography as well as magnetic resonance imaging. Anterior, posterior, and thoracoscopic surgical procedures were used. Single level decompression with fusion was performed on 5 patients and multilevel fusions performed on 14 patients. There were 2 patients that had decompression without fusion, and there were 2 patients that underwent costotransversectomy. The overall results were excellent 3 patients, good in 10 patients, fair in 7 patients, and poor in 1 patient demonstrating the effectiveness of the surgical management of disabling spondylogenic thoracic pain with and without neurologic deficit.

INTRODUCTION

Thoracic pain is a common complaint with many different etiologies. The basis of this pain may range from costochondritis to thoracic discogenic pain and disc herniation. The patient's symptoms may also be viscerogenic in nature. The challenge comes with first identifying a cause for the symptoms and then determining a course of treatment. In most cases, time and education about the problem are all that may be required for resolution of the symptoms. However, there are those patients that continue to have significant pain and disability despite conservative or non-surgical management. These patients must then be carefully selected and must have an identifiable, treatable problem prior to operating. The purpose of this article was to report the results of the surgical treatment of spondylogenic thoracic pain with and without neurologic deficits.

HISTORICAL BACKGROUND

Spondylogenic thoracic pain has been identified as early as the mid to late 1800's (1,2,3,4). The symptoms in the majority of these cases have been related to thoracic disc pathology, with or without herniation. Many studies over the past 50 years describe thoracic pain related to disc herniation and the surgical management of this problem (5,6,7,8,9,10). However, the importance of recognizing and treating the symptoms caused by the degenerated, non-herniated disc wasn't well described until recently (11). Symptomatic thoracic disc disease is quite uncommon when compared with cervical or lumbar disc disease, and diagnosis is often delayed until signs of myelopathy have developed. With the aid of computed tomography and magnetic resonance imaging, the diagnosis of thoracic spinal disorders can be made more accurately.

MATERIALS AND METHODS

Between 1985 and 2000, 37 patients were surgically treated at St. Mary's Medical Center in San Francisco, California by two surgeons for spondylogenic thoracic pain. Patients were excluded from the study if they had a diagnosis of metastatic tumor as their source of pain. Patients were also omitted if the symptoms were caused by acute trauma or if they were lost to follow-up. This leaves a total of 21 patients included in this study.

The age of the patients ranged from 34-91 years old with an average age of 50. There were 12 women and 9 men. Symptoms at initial visit were thoracic back pain only in 9 patients, lower extremity numbness in 7, weakness in 4, and gait disturbances in 4. Three patients had pain that radiated to the flanks and anterior chest wall. One patient had complaints of urinary incontinence. Eight patients had both back and leg pain while there were no patients with isolated leg pain. Twelve patients underwent surgery for pain alone. The remaining patients showed signs of neurologic deficit of some kind. Three patients had surgery at another institution prior to presentation.

On physical exam, 6 patients were found to have sensory deficits. Four were found to have diminished lower extremity reflexes and 2 patients had evidence of clonus. Two patients had significantly positive straight leg raise tests. Motor strength was evaluated as well, and 7 patients were found to have signs of significant muscle weakness.

The diagnosis was confirmed by magnetic resonance imaging and computed tomography in 19 patients and by computed tomography with myelography in 2 patients. There were 4 patients treated for herniated discs only at 1 or more levels. Six patients had internal disc derangement at 1 or more levels. Six patients had severe stenosis at multiple levels. Two patients had costovertebral angle syndrome, and two patients had significant compression fractures with kyphotic deformity (one secondary to plasmacytoma). One patient had spinal cord compression with synovial cyst in lower thoracic spine. One paraplegic patient had a burst fracture with pseudoarthrosis post fusion.

All surgeries were performed at St. Mary's Medical Center by two of the authors (KS, JZ). Anterior (5 patients) and posterior (14 patients) approaches were used as well as thoracoscopic approach (2 patients). Costotransversectomy was performed in 2 patients. Single level decompression with fusion was performed in 5 patients and multilevel fusions performed in 14 patients. There were 2 patients that underwent decompression only at one or more levels.

Patients were followed up for a minimum of 10 months (range, 10 months to 4 years). Patients were evaluated with questionnaire and physical exam to assess effectiveness of treatment.

RESULTS

Overall, of 9 patients with neurologic deficits, 6 patients showed signs of improvement or resolution of neurologic deficits. One male patient who presented with incontinence showed complete return of normal bladder function postoperatively. Two of the four patients with gait disturbance showed significant signs of improvement. All five patients who presented with muscle weakness also showed improvement in strength.

Nine patients presented with thoracic pain only. Overall, 6 patients had improvement with pain symptoms. Two patients showed no relief in pain, and one patient actually complained of worsening symptoms postoperatively. One patient required second operation for symptom relief while another patient gained significant relief after a third procedure.

Seven patients had pain symptoms in one or both lower extremities. Of those 7, four patients were asymptomatic postoperatively. One patient required a second procedure for relief of pain.

The overall results were graded on a scale looking at level of pain relief as well as return of neurologic function. The grades assigned were excellent, good, fair, or poor. To receive a grade of excellent patient had to be pain free and neurologically intact. If a patient showed signs of improvement with pain but not complete relief, then a grade of good was assigned. Any patient that did not show signs of improvement in pain or neurologic symptoms then a fair result was recorded. Any patient who had worsening pain or increasing neurologic deficit was considered a poor result. Those patients with

excellent or good results were considered a success. Those patients with fair or poor results were considered to be unsatisfactory.

Overall, there were three excellent, ten good, seven fair, and one poor result. There were 4 patients who had multiple procedures. Three patients had good results following final surgery with one patient with a fair result. There were 2 patients with pending litigation, both with a fair result. The one patient with a poor result had a two-level discectomy and fusion with worsening back pain postoperatively.

Postoperative complications were evaluated as well. There were two cases of pseudoarthroses in patients who had fusions for thoracic pain only. Both showed improvement after repeat procedures with removal of hardware and repeat fusions. There was one incidence of postoperative infection that was successfully treated with antibiotic therapy. There was no need for a second procedure in this case.

DISCUSSION

Spondylogenic thoracic pain is an uncommon problem whose source can often be somewhat of an enigma. The patients in our series had complaints ranging from pure thoracic back pain to back and leg pain with associated numbness and weakness and incontinence. Most cases of thoracic pain are usually benign and respond very well to time and limited activity (12). However, there are some cases where patients fail conservative therapy and have significant disability. These patients are the ones that require some sort of surgical intervention.

Our study showed that there are multiple causes for thoracic pain. However, we did find that most were discogenic in nature, either herniation or some type of internal disc derangement which seems to be in agreement with other studies (13,14,15). With the aid of magnetic resonance imaging and computed tomography on top of taking a good history and physical, it made the task of searching for a definitive cause much more straightforward. In a few selective cases, we also found discograms to be quite helpful.

The objective in treating patients with thoracic pain is to identify those patients that have an identifiable problem and would benefit most from a surgical procedure. We found that those patients with disabling pain and some neurologic dysfunction had the most dramatic improvement after decompression and fusion. We also noted that those patients with moderate back pain alone continued to have some amount of pain postoperatively.

Thoracic decompression only or decompression with fusion is an effective procedure for disabling discogenic thoracic pain with or without neurologic deficit. Complication rates are very low when performed by skilled surgeons who are comfortable with the procedure, in the proper setting, with an identifiable problem.

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