Evaluation and Management of Thoracic Spine Pain in the Primary Care Setting

Pathologic processes that can cause thoracic spine pain include degenerative disc disease, congenital connective tissue or skeletal disorders, traumatic and spontaneous vertebral fractures, vascular malformations, infections, spinal or meningeal tumors and metastases. This article will briefly discuss the epidemiology, red flags, clinical symptoms, diagnostic studies and management of thoracic spine conditions that every primary care provider should know in order to diagnose this condition and refer the patient appropriately.

Epidemiology
Thoracic spine pain is less prevalent than neck or low back pain, but is quite common in the primary care setting and can be equally disabling. Prevalence ranged from 4.0 – 72.0% (one time occurrence), 0.5 – 51.4% (a period of 7 days), 1.4 – 34.8% (a period of 1 month), 4.8 – 7.0% (a period of 3 months), 3.5 – 34.8% (a period of 1 year) and 15.6 – 19.5% (over the course of a patient’s lifetime) according to a systematic review performed by Briggs et al. (BMC, 2009).

Degenerative Conditions
Contrary to lumbar or cervical degenerative disc diseases, thoracic disc degeneration and herniations are less common, but they do occur and are most often in the mid- to lower- thoracic region. They can occur at any age, but young and middle-aged adults are predominantly affected. Patients complain of severe pain in the sternum, epigastrum or abdominal area or band-like pain that radiates in an intercostal nerve distribution. Due to this pain distribution, gastritis, gastric ulcers, gallbladder disease, or renal calculi are often suspected.

Neurological and clinical examination may be unremarkable or demonstrate lower extremity sensory and/or motor deficit. Myelopathy symptoms are noted for patients with herniations above the conus medullaris or sphincter and associated bowel or bladder dysfunction for the lesions compressing the cauda equina can also be seen. Radicular pain is a common initial symptom in lateral disc herniations and may resolve spontaneously in the absence of objective neurological findings. Central disc herniations can cause symptomatic cord compression (such as myelopathy) with associated paresthesias below the level of the lesion and warrant an MRI and immediate referral for neurosurgical evaluation.

Thoracic spinal stenosis symptoms are similar to lumbar stenosis and consist of neurogenic claudication, reduced walking tolerance, myelopathy symptoms, back pain and radicular pain radiating to the thoracic, abdominal or groin area.

Structural deformities
Kyphosis can occur at any age but, due to osteoporosis, compression fractures and disc degeneration, it is most often encountered in an older patient population. In turn, scoliotic deformity may be present at birth (congenital), in less than 3-year-old children (infantile), in the 3 to 10 year age group (juvenile), in 10- to 17-year-old patients (adolescent) and adult degenerative scoliosis. Besides cosmetic problems, leg weakness or gait difficulty, disabling pain and sciatica symptoms are the most common complaints for which patients seek medical care.

Imaging Studies
The primary role of plain radiographs when evaluating patients with thoracic spinal pain is to exclude fracture, infection or tumors. Although not a diagnostic finding, disc calcifications are found in about 70% of patients with thoracic disc herniations. Further MR imaging should be performed for these patients to determine the amount of neural compression and confirm the location and size of the disc herniation. Imaging studies play a significant role in the evaluation of a painful thoracic spine, but interpretation requires close consideration of clinical history in conjunction with physical examination to make the diagnosis.

Management Strategies
The vast majority of nonspecific thoracic pain cases resolve without treatment within a few weeks. Surgical treatment depends on the underlying pathology but, regardless of this, decompression, fusion and deformity correction procedures performed on the thoracic spine are technically demanding due to a high risk of damage to the spinal cord. Early surgery is recommended for the patients who develop myelopathic symptoms to avoid permanent neurologic dysfunction or even paraplegia and to increase the chances of a successful recovery. The majority of patients with radicular symptoms will respond to conservative management, which includes physical therapy, intercostal nerve blocks, anti-inflammatory or pain medications. Newer thoracoscopic-assisted minimally invasive methods are safe
and effective treatment methods in appropriately selected surgical candidates.

**Red Flags and Spine Emergencies**

Thoracic spine pain often has a musculoskeletal origin related to poor posture or overuse injuries. Generally these conditions are self-limiting, but a small number of patients present with thoracic spine pain as the initial manifestation of more serious pathological conditions and differential diagnosis should be performed to exclude other pain sources and, most importantly, emergent situations.

The most common causes of acute thoracic pain in younger adults are trauma and motor vehicle accidents. Clinical history, physical examination and imaging studies are usually sufficient to differentiate the source of such pain. However, thoracic spine fractures could occur with even minor trauma such as strenuous lifting in people over the age of 50, especially if they have a history of osteoporosis or are taking corticosteroids. Compression fractures are most often diagnosed at the lower part of the thoracic spine and, due to vertebral body collapse, may result in segmental instability, accelerated degeneration or kyphosis if left untreated. Some patients without neurological deficits could be managed conservatively, but patients with neurological impairment will require surgery.

“Red flags” that may suggest cancer include a past history of malignancy, pain at night, and unexplained weight loss, especially in patients older than 50 years. About 30% of patients with cancer develop spinal metastatic disease and about 70% of these metastases are located in the thoracic spine, particularly at T4-T7 levels. The patients present with pain related to bone destruction, pathologic fractures and mechanical instability or neuropathic pain related to root or meningeal irritation. A small group of patients may develop spinal cord compression and any delay in treatment can lead to irreversible spinal cord damage and complete paralysis.

Patients diagnosed with human immunodeficiency virus (HIV), immunosuppression, recent bacterial infection (e.g. urinary tract infection) and prolonged usage of corticosteroids or intravenous drug use should be evaluated for spinal infections if they have fever, chills, night sweats or unexplained weight loss.

The type of pain could also help to recognize the need for a more extensive clinical evaluation. If pain is severe, constant and non-mechanical without relief from bed rest or postural modifications, which progresses despite treatment for 2 to 4 weeks, a thorough clinical evaluation, diagnostic imaging studies and referral to a specialist are necessary.

Ankylosing spondylitis should be suspected in patients between the ages of 17 and 40 who complain of persistent thoracic spine pain accompanied by severe morning stiffness, which improves with activity. The other joints like shoulder, elbow, hip or ankle may also be affected. Although ankylosing spondylitis progresses slowly, an early diagnosis is challenging and there is an average of 8 – 11 years delay reported in the literature between the onset of symptoms and time of diagnosis. Early diagnosis and appropriate physical and medical therapies can lead to a complete symptomatic remission in a significant number of patients. The longer the diagnosis is delayed, the worse the functional outcomes are and may eventually result in a spine fusion, increased risk of fractures, and progressive spine deformity.

Interscapular pain can also be referred from disc herniation or spinal dysfunction affecting the lower cervical spine. It should be high on the list of differential diagnoses as ordering thoracic x-rays in such cases will provide little diagnostic information and may further delay treatment. A thorough history, clinical and neurological examination should be performed to recognize the cervical spine as the potential source of patient symptoms.

The presence of an acute onset of severe interscapular pain in the thoracic region should alert clinicians, especially if it is associated with sweating, hypotension, pallor or cyanosis. Esophageal rupture, pulmonary embolism or thoracic aortic dissection among other emergent conditions could manifest with interscapular pain.

This brief summary is not intended to be comprehensive and should not take the place of specialized evaluation and management of spinal conditions. For more information and to discuss a potential patient in further detail please call us at 303.938.5700, or email us at info@bnsurg.com. Information is also available on our website at www.bnsurg.com.