Clinical Integration of Osteopathic Manipulative Medicine

Pediatrics/Family Medicine: Scoliosis

Author: Gillian Taormina OMS-IV, Sheldon C. Yao, DO

Introduction: Scoliosis is defined as a spinal curvature of 10 degrees or more in either the coronal or frontal plane, measured using the Cobb angle (a measurement made by drawing intersecting lines from the two vertebrae at either end of the curve) [1]. There may also be a deformity in the sagittal plane which manifests as an increased kyphosis. Standing radiographs are used to define the deformity and track progression annually. The etiology, which can be congenital, neuromuscular, traumatic or idiopathic, should be taken into consideration when developing a treatment plan. Scoliosis is most commonly detected during early adolescence when the spine is growing very rapidly. Primary care physicians play a large role in the diagnosis of scoliosis, and more and more children are also diagnosed during a school screening using the Adam’s forward bending test. Treatment, ranging from observation to surgery, depends on the severity of the curve and the skeletal maturity of the child [1]. The prognosis is better with smaller curves, lower segment curves, and if the child is older when the scoliosis first presents [2].

Patient presentations: Depending on the severity of the spinal deformity, patients may present with shoulder height asymmetry, deviation of the trunk from the midline, leg length discrepancy, and sacral base unleveling [2]. Chest wall deformities or a sacral dimple may suggest congenital scoliosis. Joint hypermobility may suggest a connective tissue pathology. Severe curves may compromise pulmonary or cardiovascular function. The patient rarely presents with pain initially, but may experience some pain as they reach middle age [2].

Differential diagnosis:

- Idiopathic scoliosis (infantile, juvenile, adolescent)
- Familial idiopathic scoliosis
- Myopathic scoliosis (ex. muscular dystrophy, myasthenia gravis)
- Neuropathic scoliosis (ex. poliomyelitis, cerebral palsy, spinal tumors)
- Congenital scoliosis (ex. Von Recklinghausen’s neurofibromatosis)
- Connective tissue disorders (ex. Marfan’s Syndrome, Juvenile Rheumatoid Arthritis, some types of dwarfism)
Clinical pearls:

• Functional curves will correct with side-bending while structural curves will not
• Adolescent idiopathic scoliosis is the most common form
• Thoracic curve, convex right, is the most common pattern (90%)
• Incidence is equal between males and females, but risk of curve progression is greater in females
• Bracing recommended in skeletally immature children if curve is over 25-30 degrees
• Surgery (spinal fusion) recommended if curve is over 45-50 degrees and child is still growing

Osteopathic Manipulative Medicine (OMM) Integration:

Mild scoliosis is often treated with observation and severe scoliosis is treated with surgery, but in between, there are a variety of treatment modalities to choose from. In addition to bracing and physical therapy, osteopathic manipulation has a role in treating moderate scoliosis, encouraging mobilization and stabilization of the spine [2]. OMM can help patients deal with the condition by encouraging optimal functioning. It also aims to prevent progression of the curvature, but the goal is not necessarily to decrease the curvature [2]. One study did not find any significant change in trunk morphology after treatment with OMM and suggested that it be a “complement but not an alternative” to standard orthopedic treatment [3]. On the other hand, a case study described a patient with a 20-degree curve who was treated twice with a fascial unwinding of the total body fascia, which resolved the curvature [4]. Another case report described a patient with impaired pulmonary function due to a 45 degree Cobb angle who was treated with OMM, and subsequently had improved chest wall excursion and decrease in respiratory symptoms [6]. A review of the literature at this time does not reveal any randomized controlled studies proving the efficacy of manipulation in reversing scoliosis, but other outcomes such as quality of life and functional ability must be investigated [5].

Osteopathic Structural Examination: Structural examination may reveal dysfunctions in:

• Cranial strain patterns - SBS extension
• Thoracic - Type I & II dysfunction, increased thoracic kyphosis, muscle spasms
• Ribs cage - ribs and sternal restrictions
• Lumbar Spine - Type I & II dysfunction, muscle spasms
• Sacral and Pelvic dysfunctions - Pelvic inflare/outflare, innominate rotation, bilateral sacral flexion, sacral base unleveling
• Lower Extremity – may have leg length discrepancy

Possible Treatment Options:

Osteopathic Manipulation Treatments - Goals of the treatments are to address musculoskeletal restrictions to the spine and body to allow for decreased tension and increased range of motion.

• Articulatory techniques
• Balanced ligamentous tension
• Cranial osteopathic manipulative medicine
• Facilitated positional release
• Fascial unwinding
• Muscle energy
• Myofascial techniques
• HVLA

• Additional Treatment Considerations

• Heel lift therapy
• Physical therapy
  • Active and passive stretching exercises
  • Bilateral strengthening of abdominal and paravertebral muscles
• Bracing
• Surgery

Related evidence based medicine articles:


Citations:


