Journal of Bodywork & Movement Therapies (2014) 18, 99–111

Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/jbmt

Adult Idiopathic scoliosis: The tethered spine

Lucy Whyte Ferguson, D.C. [a,b,c,*]

[a] *El Prado/Taos, NM, USA*
[b] *University of New Mexico School of Medicine: Pain Center, Albuquerque, NM, USA*
[c] *Project ECHO Chronic Pain and Headache Management, Albuquerque, NM, USA*

Received 8 October 2012; received in revised form 14 April 2013; accepted 5 May 2013

KEYWORDS
Scoliosis;
Idiopathic Scoliosis;
Adult Idiopathic Scoliosis;
Myofascial Pain Syndrome;
Chronic Pain;
Fascial Pain;
Benign Joint Hypermobility Syndrome

Summary This article reports on an observational and treatment study using three case histories to describe common patterns of muscle and fascial asymmetry in adults with idiopathic scoliosis (IS) who have significant scoliotic curvatures that were not surgically corrected and who have chronic pain. Rather than being located in the paraspinal muscles, the myofascial trigger points (TrPs) apparently responsible for the pain were located at some distance from the spine, yet referred pain to locations throughout the thoracolumbar spine. Asymmetries in these muscles appear to tether the spine in such a way that they contribute to scoliotic curvatures. Evaluation also showed that each of these individuals had major ligamentous laxity and this may also have contributed to development of scoliotic curvatures. Treatment focused on release of TrPs found to refer pain into the spine, release of related fascia, and correction of related joint dysfunction. Treatment resulted in substantial relief of longstanding chronic pain. Treatment thus validated the diagnostic hypothesis that myofascial and fascial asymmetries were to some extent responsible for pain in adults with significant scoliotic curvatures. Treatment of these patterns of TrPs and muscle and fascial asymmetries and related joint dysfunction was also effective in relieving pain in each of these individuals after they were injured in auto accidents. Treatment of myofascial TrPs and asymmetrical fascial tension along with treatment of accompanying joint dysfunction is proposed as an effective approach to treating both chronic and acute pain in adults with scoliosis that has not been surgically corrected.

* University of New Mexico School of Medicine: Pain Center, Albuquerque, NM, USA.
E-mail address: lwf@newmex.com.

1360-8592/$ - see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.jbmt.2013.05.002

Background

Adults with chronic pain related to IS who have major curvatures that have not been surgically corrected present various clinical challenges. In a review of almost 200 patients with IS that had not been surgically corrected, persistent pain was a problem in more than half, and the severity of pain increased linearly with both age and degree of curvature (Jackson et al., 1983). Adult scoliosis patients present predominantly with back pain; less commonly with leg pain and claudication symptoms and curve progression; rarely with neurological deficit; and almost never with cosmetic concerns (Aebi, 2005; Kuklo, 2006). Diagnostic procedures generally performed to evaluate these patients include static and dynamic imaging, myelo-CT, as well as discograms, facet blocks, epidural and nerve root blocks. MR studies may be misleading because the whole deformity is not in the same plane, and the MR study may mistakenly diagnose spinal stenosis (Aebi, 2005). Evaluation for Myofascial Pain Syndrome is not mentioned in the bulk of the scoliosis literature. Non-surgical treatment options that predominate in the literature consist of non-steroidal anti-inflammatory medications, muscle relaxants, pain medication, muscle exercises, swimming, and occasionally gentle traction while "avoiding manipulations and physical activation that may increase pain" (Aebi, 2005).

Certainly surgical correction of adults with scoliosis and significant neurological deficit can be appropriate when other more conservative measures do not sufficiently address the symptoms (Simmons and Jackson, 1979). But considering the surgical complications that can arise relating to osteoporosis and other medical conditions, non-union, and nerve root paresis, and since neurological deficit is rare, it appears that other treatment options need to be investigated. When muscles have been considered in the bulk of the literature, the focus has been on the paraspinal muscles that are most visually abnormal. Back pain has been considered the expression of muscular fatigue or of a real mechanical instability. "Unbalanced, overloaded, and stressed, paravertebral back muscles may become very sore and in return will not contribute to balance the muscle play, consequently becoming part of a vicious circle…. The back pain can be constant and non-specific, which is a bad prognostic sign regarding treatment outcome" (Aebi, 2005).

Spinal manipulation and spinal manipulation combined with various physiotherapeutic procedures to correct scoliotic curvatures has been largely unsuccessful (Morningstar et al., 2004). A few studies did treat scoliosis with some success and mention myofascial or neuromuscular treatment but none of these studies specifically identify referred pain from trigger points as a source of spinal pain. One case study combined manipulation under anesthesia with treatment of muscular trigger points using myofascial release techniques, percussion, and passive stretching, with good results (Morningstar and Strauchman, 2010). Another study of 19 subjects ranging from 15 to 65 years of age (adolescent and adult scoliosis patients) combined spinal manipulation with positional traction and neuromuscular reeducation, again with good results (Morningstar et al., 2004). Probably the most similar study to this case series study was a single case involving the use of Myofascial Release to treat an 18-year-old with painful scoliosis, with 12 treatments delivered over 6 weeks. The treatment resulted in reduction of pain and trunk rotation as well as improved posture, quality of life, and pulmonary function. The regimen included treatment of the psoas, bilateral rib release, and sustained pressure over the quadratus lumborum on the side of the concavity of the lumbar curvature (LeBauer et al., 2008). Abnormal quadratus lumborum tension having been identified as a factor in increasing stress on the concave side of the lumbar curvature, by approximating the lower rib cage with the iliac crest. This single case study does not explore the abnormal tension in the opposite quadratus lumborum, specifically the iliolumbar portion, the importance of which will be discussed below. Each of the studies discussed in this paragraph can be seen as encouragement regarding the importance of exploring the treatment of myofascial tension, myofascial trigger points and associated joint dysfunction in order to relieve back pain and other symptoms of the adult with IS, and hopefully thereby reducing the need for corrective surgery.

Purpose

The purpose of this case study series is to explore and record observations regarding myofascial restrictions and imbalances and TrPs that appear to be responsible for the both acute and chronic pain in adults with uncorrected IS, describe the articular dysfunctions that accompany the myofascial dysfunction, and describe effective treatment methods and results. One of the most significant challenges clinicians face is treating the adult with significant uncorrected IS who has longstanding chronic pain. Treating acute pain from injury in such individuals is even more challenging. While the treatment approaches used in this study have been used to treat many adults with IS and chronic pain, these cases were selected to represent the most challenging examples likely to be seen by pain management clinicians, but not involving signs of neurological deficit. These cases were also selected because they had auto accidents and therefore they also represent the challenge of treating acute injury in the individual with a history of chronic pain and IS that has not been surgically corrected.

Methods

Evaluation

Three adults with significant IS that has not been surgically corrected and chronic spinal area pain were evaluated with standard orthopedic and neurological examination and were also examined for myofascial dysfunction including taut muscle bands and associated active and latent TrPs and fascial tension including fascial knots. Patterns of joint restriction were also identified via static and motion palpation. Myofascial TrPs and taut bands were identified while the myofascially involved muscles were placed on a partial stretch, the position in which it is easiest to identify active TrPs. The superficial fascial tissues overlying and deeper fascial tissues interpenetrating the muscles were also evaluated for abnormal tension in the same partial