Dynamic Chiropractic

CHRONIC / ACUTE CONDITIONS

# Understanding Scoliosis

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The past 40 years have offered only insignificant changes in the understanding and treatment of scoliosis. Several previous authors attempted to expand the readers' clinical knowledge of scoliosis, but no real solution has come forth in the treatment protocol. The Greeks defined scoliosis as a crooked spine.[1] Unknown to them, they were some thousand years ahead of their time. Most physicians concur with Dr. J.D. Hughes when he describes scoliosis as a physical condition rather than a diagnosis.[2] In schooling, the physician is limited to a few short hours of training on a very complex subject; therefore, the norm for treatment would be to identify, observe, and employ treatment protocol which was derived from their own experiences. Physicians have been in a quandary for years as to success in some cases and deterioration in others. The clinical physician must realize that scoliosis is a multifactorial disease and with this knowledge should be properly armed with an arsenal for the treatment of scoliosis.

In this initial article, I will briefly touch upon each known facet of scoliosis, which may enhance the physician's perception of treatment protocol.

The most obvious deformity taught in school was the lateral curvature.[3] Various methodologies have been utilized in determining the factor of deformity.[4] The most universal method of measurement is the Cobb's angle of measurement.[5] The Cobb's angle of measurement is lacking in three-dimensional information. With this shortcoming, the treating physician lacks various facts providing a complete comprehension of the severity of the deformity. In the quest to properly treat the lateral deviation, it is essential for the treating physician to understand the articulation of each individual vertebral body and its dysfunctional motion in the curved segment of the scoliotic spinal column.[6]

The second most obvious deformity was vertebral rotation.[7] Dr. John H. Moe, an orthopedic surgeon, was one of the first physicians to attempt to describe the amount of rotation from a single dimension x-ray. This methodology evaluates the spinous location in an AP view. As the vertebral body rotates one thickness of the spinous process, it was clinically expressed as a +1. The degree of rotation varied from three to 10 degrees. In addition to this, the posterior pedicles were also utilized as a landmark to calculate the rotational deformities. A recent orthopedic article has described that for each +1 quantity, it would clinically be described from 0 to 20 degrees, hence +2 would be from 20 to 40 degrees, and +3 would be from 40 to 60 degrees. With the physician's appreciation for the x-ray beam distortion, one can understand the inaccuracy of the amount of vertebral rotation and the inability to correlate the x-ray data. To correlate the x-ray data to the patient's deformity leaves a questionable area.

The third deformity, which is very misunderstood, is the muscle balances of the scoliotic patient.[8] It was once thought that in the concavity of the scoliotic spine, the muscles were very strong; therefore, it was felt that it accentuated the progression of curvature. This theory also displayed that the muscles on the convex side of the spine were stretched and weakened. Recent EMG

findings have proven that the convex side displays a stronger, more excitable level of activity, and the concave side displays a more dormant activity level. Studies by Dr. C.S. O'Donnel have also revealed that with proper muscle stimulation, muscles can be rehabilitated.

The fourth facet of distortion, which is not readily recognized as a deformity, is a neurological pattern of dysfunction.[9] This deformity effects the anatomical performance of standing, locomotion, and comprehension.[10] This pattern of dysfunction can be recognized by electromyographic studies. The dysfunction is confirmed by EMG with full range-of-motion: standing, neutral, right lateral flexion, left lateral flexion, forward flexion, right rotation, left rotation, and extension. This information further enhances the need for a total understanding of the clinical findings.

The fifth deformity is a dysfunctional proprioception of the vestibular and ocular systems. Studies by Dr. R. Herman reveal that the vestibular and ocular systems display an inability to correctly react on the upper motor neurons communication of the righting reflex mechanism.[11]

The sixth deformity is a biochemical imbalance. This deformity effects the body at the microscopic level. This area of distortion reacts upon the cell formation as well as the reproduction of muscle matrix, ligamentous matrix,[12] and nerve tissue.[13] This information can be acquired through tissue analysis. By correcting this imbalance, the scoliotic progression can be controlled and enhance correction.

In reassessment, it becomes apparent that the treating physician must possess a total spectrum of knowledge in scoliosis, with the ability to establish a constant reoccurring treatment protocol for correction. With acquiring a strong knowledge base of scoliosis, the chiropractic physician can reorganize the infantile stages of the disease and establish early treatment protocol; thereby establishing their profession as the physician of choice in treating this disease. Future publication will display clinical factors answering questions arising from this writing.

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