

An Overview of Adolescent Idiopathic Scoliosis with a Focus on the Patient Psyche

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Background

Adolescent idiopathic scoliosis (AIS) is defined as a lateral or coronal curvature of the spine in patients ≥ 10 years old (1, 2). While adolescent idiopathic scoliosis is a relatively common pediatric deformity affecting 2-3% of the pediatric population (1, 2), a specific etiology has not yet been identified (1-7). Various ideas have been discussed and researched with no definitive conclusion. Genetics is the most accepted theory of the etiology of AIS. Once a diagnosis of AIS is made, an angle of lateral curvature, known as the Cobb angle, is calculated to determine the magnitude of spinal deformities. The lateral curvature is then divided into subcategories of severity dependent upon the amount of curvature calculated (1). Truncal asymmetry is undoubtedly the most common initial symptom in AIS patients (1, 8). "Most patients with adolescent idiopathic scoliosis visit the hospital when a trunk deformity, such as rib or lumbar hump and waist asymmetry, has been noted, either after a school screening or by family members, and these patients rarely visit the hospital due to back pain (8)." If pain is identified as the initial complaint concerning the spine, this is usually indicative of an underlying disease process such as neuromuscular scoliosis, and further evaluation should be conducted to determine the specific origin of the pain (1).

Diagnostic Testing

For decades, scoliosis has been distinguished as an uncomplicated screening abnormality utilizing the Adam's forward bend test (FBT) (4). This examination is commonly used in school screenings and well-patient visits (9). FBT modality advantages include cost effectiveness, ease of performing the exam and a high clinical sensitivity (4, 10). Disadvantages include scrutiny in recent years involving a narrow focus on the rotation of the spine versus an additional assessment of spinal curvature (1, 4). In the past, the FBT test was often performed in mandatory school-wide adolescent screenings (11). This practice resulted in numerous false-positive cases being referred for treatment generating thousands of dollars in treatment costs (11), and ultimately leading to questionable rationale of the screening process. Acknowledging that FBT is a useful and cost effective tool for large screenings, a definitive AIS diagnosis involves poster anterior radiograph imaging coupled with a confirmatory physical exam(1).

Radiography is critical in the confirmation of an AIS diagnosis (1). The radiographic "million dollar view" is defined by a poster anterior view of the entire spine (12), with arms bent completely at the elbows and placed on the chest. Lateral views are unnecessary during screening but are essential while monitoring patients diagnosed with AIS (12). Radiography is a necessary component of determining the exact angle and degree of curvature, but has been proven to be expensive and harmful for a maturing child (10). The use of radio graphical AIS imaging has been known to cause breast cancer, infertility, thyroid cancer and other abnormalities (10, 12). Careful consideration is fundamental prior to exposing a child to this diagnostic option.

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Treatment

Treatment of AIS remains controversial. Spinal curvature of less than 20° has been noted to remain stable for the patient's lifespan (4), but degrees of curvature greater than 50 can progress up to 1° per year for the remainder of the patient's life (1, 4). Observational techniques can be successfully employed in patients with a curvature <20° with generally no repercussions. Oppositely, patients with curvatures of >50° require surgical intervention in order to prevent further debilitating curvature of the spine. A gray area arises in curvatures between 20° and 50°.

The classical method of surgical intervention for curvatures <50° has been widely accepted up to this point as the only sure method to stop the progression of curvatures (13). Conversely, in recent years, more conservative approaches have been encouraged as the mainstay of treatment for the gray area curvatures of 20° to 50°. These less invasive methods include: observation, exercise, physical therapy and bracing. Of these methods, bracing has been the most controversial therapy. For decades, researchers have been trying to conclude the efficacy of this treatment modality. In one study, bracing was shown to decrease a lateral curvature angle by up to 5° in approximately 50% of cases (14). Another study by Dolan and Weinstein concluded the difference in surgical rates in patients who received bracing as compared to those who did not receive brace therapy and were merely observed was not considered statistically significant (9). Like all other aspects of AIS, treatment remains controversial and unsure.

Psychosocial Issues

In a diagnosis of uncertainties, one surety with adolescent idiopathic scoliosis is the extensive psychological impact on the average patient. Patients with physical ailments and deformities are at an increased risk for developing a negative body image. Reported issues span from social isolation, i.e. children being less liked by their peers, to decreased marriage rates (4, 15). An ailment in which a patient's disease is visible to the general public is more likely to cause social distress in patients (16).

Auerbach, Lonner and Crerand conducted a survey to further prove the negative effects scoliosis can have on an adolescent's body image. A survey known as the Body Image Disturbance Questionnaire-Scoliosis version (BIDQ-S) was taken by patients, primarily female, who had not yet received surgical intervention for their spinal curvature. The average spinal curvature of these patients at the time of the survey was 53.5°. The information was compared to individuals who had no history of spinal curvature or deformity. The compilation of the survey responses revealed an increased negative view of back-related body image as compared to normal peers. When the BIDQ-S was compared with other surveying tools, the results revealed a statistically significant finding of decreased body image leading to increased social insecurities, feelings of inadequacy and overall unhappiness (16).

In the same manner, a meta-analysis study done by Pinquart revealed a high rate of dissatisfaction in patients with scoliosis. The study revealed that the greater the disfigurement, the greater the dissatisfaction in body image. Overall, the dissatisfaction in total body image of these children with a physical ailment was relatively small compared to those of their adolescent peers. Pinquart proposed that exposing children to counseling as well as support groups of patients with physical ailments and disabilities could help improve overall body image (15).

It is well known that body image is important in all populations. In the patient with scoliosis, body image can be a determining factor in treatment. In treating a patient with AIS, it is important to be aware of the patient's increased sensitivity to their body image and the potential insecurities that may factor into decisions about the treatment plan. Encouraging the patient to seek out counseling and support groups can help to maintain the overall integrity of the child's mental health as well as improve treatment outcomes. Presenting the patient with a plethora of resources as soon as a diagnosis is made can only be beneficial in combating the negative outlook of an AIS diagnosis.

Some beneficial resources:

<http://www.curvygirlsscoliosis.com>

<http://www.scoliosis-support.org>

<http://www.spineuniverse.com/scoliosis-support-group>

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