



A PEDIATRIC *Perspective*

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SCOLIOSIS: When is a curvature of the spine worrisome?

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While a curvature of the spine can occur anytime during childhood, the vast majority of cases will be discovered during adolescence. This is largely thanks to well-established school screening programs that provide routine checks for signs of scoliosis. Also, abnormalities in spine growth are likely to become more pronounced during the growth spurt that accompanies adolescence.

How prevalent is the condition? Roughly 3 to 3.5 percent of all children screened through a school program will be referred to their physician for possible scoliosis. Of those, one-third will actually be found to have a curvature of the spine. The question that arises in the clinical setting is whether treatment is indicated once a curve is discovered. When making this determination, there are three sets of variables to consider:

the characteristics of the curve
the patient's stage of maturation
the intangibles

The curve characteristics

What is the size of the curve? What is its pattern? Is there a single curve or double? In what area of the spine does the curve occur? The answers to all of these questions provide the preliminary basis for treatment decisions.

Looking strictly at the parameter of the curve, treatment is rarely recommended if there is a deviation of less than 20 degrees. Treatment with bracing is more likely to be indicated with curves starting in the middle twenties. Candidates for surgery are those with curves starting in the mid- to upper forties. When a curvature is suspected on exam, an x-ray can provide definitive answers as to its parameter and other characteristics.

The pattern of the curve should also be considered when deciding whether to treat. Double curves are more likely to change than single curves, and curves in the thoracic part of the spine are more likely to worsen than those in other areas.

Stage of maturation

The second set of variables to factor in when deciding whether to treat scoliosis is that related to the patient's stage of maturation. The riskiest time for changes in curvatures of the spine is during the accelerated growth period of adolescence. Two curves of exactly the same parameter and characteristics might call for entirely different interventions depending on the child's developmental stage of growth.

Take the example of a young woman, 17 years old, whose scoliosis is first discovered during a sports-related physical exam. The curve is 25 degrees and consists of a single curve. Because she is skeletally mature, the risk of change in her curvature is very low, and treatment would not be warranted.

On the other hand, if a 10-year-old girl were discovered to have a curve of 25 degrees, it would be worrisome. She has yet to enter her peak growth stage, and the risk of her curve worsening over time would be great.

In girls, the onset of menstruation is an important indicator of where they are in their growth cycle. Typically, once menses have begun, an adolescent is past her peak growth velocity, and has between 12 and 18 months left of growth. This information must be measured along with the characteristics of the spine curvature when deciding whether treatment would be beneficial in the long run.

The Tanner stages of growth can also be used to determine whether a child is just starting, in the middle, or near the end of their growth cycle. Similarly, checking an x-ray for the Risser sign, to see if the bones of the pelvis have ossified, can help determine the stage of maturity. (Ossification occurs toward the end of the growth spurt.)

The Intangibles

The third set of variables to consider when making decisions about treatment is the intangibles. These attitudes and, in some cases, subtle signs that the scoliosis may be secondary to a more serious underlying condition.

Today, it is not uncommon for parents to arrive at the clinic with a certain level of knowledge about scoliosis. As Internet access continues to grow, both in homes and at school, parents and often the kids themselves will have researched scoliosis on the Web between the time of their school screening results and their first clinic visit. This can be good and bad.

While there are many reputable sites, (such as the [Scoliosis Research Society](http://www.srs.org) site at www.srs.org), there is also the risk that an Internet search will uncover inaccurate, misleading or unnecessarily alarming information. As a result, the primary care provider may have to spend some time helping the family sift through the information they've gathered to find that which is truly helpful.

A parental history of scoliosis can likewise be a powerful issue, especially if there is a surgical history. In their child's case, all tangible factors may suggest that intervention for scoliosis is not strongly indicated. The curvature may be small, and the adolescent patient may be past the peak of growth, suggesting that treatment with a brace, much less surgery, is unnecessary.

However, a parent often believes that if they themselves needed surgery for scoliosis, their child will eventually need surgery as well. Although medical studies do not support this belief, it is often difficult to dissuade the parent from their conviction in this manner. In such cases, proceeding with bracing may be the best course of action. While perhaps not necessary, it is not contraindicated. It may lead to some slight improvement in the curvature, and certainly to peace of mind for the parent and perhaps child as well.

Patient attitudes and perceptions also play a significant role in the decision-making process. Many kids are adamant from the beginning that they will not wear a brace. Worries about appearance and peer acceptance, as well as fear of teasing, can be significant influences during the adolescent years. Often a provider can win a child over to the idea that wearing a brace will

produce a better overall long-term outcome. If the patient is set against wearing the brace, however, they cannot be forced to do so, and it is doubtful that the course of treatment will be successful.

For all of these reasons, the time spent initially with the family and patient in the decision-making process is probably the single most important factor affecting the success of brace wearing. Within that context, discussing the condition, treatment options and outcomes directly with the patient can be crucial. Older children and adolescents generally respond well when they sense that their opinions, thoughts and feelings are being considered. In many cases, a feeling of ownership in the decision-making process will help the child move toward acceptance of treatment.

If pain is present

Generally speaking, idiopathic scoliosis should not be painful. That said, it is not untypical for there to be low-level complaints of occasional activity-related achiness with scoliosis. The question to ask, however, is what is the level of discomfort a child is experiencing. Atypical pain would include pain that causes the child to stop or avoid activity that they typically enjoy, or to seek medication. Complaints of numbness or tingling should also be cause for concern.

In these cases, the possibility that the child's scoliosis may be secondary to another condition should be considered. An MRI and/or bone scan is a prudent course of action in such cases, to rule out tumors or other abnormalities of the spine.