Rule Breakers in Scoliosis Treatment

Adolescent idiopathic scoliosis (AIS) isn't an easy problem to treat. Just ask any orthopedic surgeon involved in the treatment of children with this condition. The cause of this type of spinal curvature in teens is poorly understood. That's why it's called idiopathic (unknown).

There are many spinal curve types: fixed curves, flexible curves, structural curves, major curves, minor curves, thoracic curves, thoracolumbar curves, double curves, triple curves, and so on. Finding a way to accurately evaluate and successfully treat this condition is a challenge.

One way to approach the problem is through the use of a classification system. Such a system helps define the location, type, and severity of the spinal curve. The goal is to direct treatment so that children with the same problem get the same treatment. A secondary goal is to guide surgical treatment (when fusion is needed).

The underlying desire of treatment is to save as much motion and flexibility as possible. The surgeon gives consideration to the need for good alignment, posture, function, and cosmetics (appearance). Sometimes there's a fine line between correcting the spinal deformity while preserving flexibility.

The Lenke classification system for adolescent idiopathic scoliosis (AIS) was first developed in 2001. There's been 10 years of data collected now using this system. This study was conducted to see how well the system is working.

There are six curve types described by this system. They are based on location (thoracic, lumbar, thoracolumbar), type (main, double, triple), and whether or not the curve is structural (cannot be corrected) or flexible (can be corrected).

Using this classification system as a guide, surgeons fuse major curves and minor curves that are structural (fixed). But there are times when individual patient factors lead the surgeon to make a different decision. These are the "rule-breakers". For example, a structural (fixed or permanent) curve that doesn't get fused or a nonstructural (flexible) curve that does get fused are "rule-breakers."

A study like this is important because what's the point of having a classification system if the guidelines ("rules") don't apply to the majority of patients? When too many patients fall outside the established criteria, then treatment varies and the system breaks down.

After reviewing the records of over 1300 patients, the authors found that 15 per cent of the group did not follow the rules when carrying out surgical treatment. They took a closer look at the patients who were evaluated using the Lenke classification but treated differently than recommended by this system.

Analysis of the data showed that treatment was more consistent when using the Lenke system (compared with before the system was put into place). Treatment deviated most often when the less common curve types were the focus of treatment. But for the most part, the system did give surgeons a better handle on which curves were structural versus nonstructural and therefore when to fuse the spine.

Future studies are needed to measure the results of treatment when the Lenke classification system is followed and compare those results to cases where the rules are broken. Another area of research focus might be looking at reasons why surgeons choose to ignore the treatment recommendations based on this classification system and outcomes in those cases as well.

Reference: David H. Clements, MD, et al. Did the Lemke Classification Change Scoliosis Treatment? In Spine. June 2011. Vol. 36. No. 14. Pp. 1142-1145.