

ORAL PRESENTATION

Open Access

The reliability and prognostic implications of a simplified bone age classification system for adolescent idiopathic scoliosis

L Dolan^{1*}, K Masrouha¹, G El-Khoury², S Weinstein¹

From 8th International Conference on Conservative Management of Spinal Deformities and SOSORT 2011 Annual Meeting
Barcelona, Spain. 19-21 May 2011

Background

Sanders et al. [1,2] describe a simplified system for determining digital skeletal age (DSA) and its use in predicting the likelihood a curve will reach surgical magnitude. We assessed the inter- and intra-rater reliability and prognostic implications of this classification system using data from a multicenter trial of outcomes in AIS (BrAIST).

Material and methods

36 subjects were randomly selected. We determined the predicted prognosis by cross-classifying the DSA and Cobb angle using Sanders' estimates.

Results

Kappa coefficients ranged from 0.76 to 0.88. For example, one rater's reading corresponded to a 0% risk of the curve reaching surgical magnitude, while the other rater's reading for the same subject corresponded to a 92% risk.

The high level of agreement in DSA found by Sanders et al. was replicated in this study, and would be considered "substantial" to "almost perfect" using widely applied standards [3]. Despite this agreement, different prognoses were predicted for 11% of these subjects.

Conclusions

Clinicians and researchers should consider seeking a second review of the DSA (especially if it appears to be in the DSA 2 to 3 range), and the Cobb angle, prior to using it to make prognostic predictions and treatment decisions.

Author details

¹University of Iowa, Department of Orthopaedic Surgery, Iowa City, IA 52242-1007, USA. ²University of Iowa, Department of Radiology, Iowa City, USA.

Published: 27 January 2012

References

1. Sanders JO, Browne RH, McConnell SJ, et al: **Maturity assessment and curve progression in girls with Idiopathic Scoliosis.** *J Bone Joint Surg Am* 2007, **89**:64-73.
2. Sanders JO, Khoury JG, Kishan S, Browne RH, Mooney JF 3rd, Arnold KD, McConnell SJ, Bauman JA, Finegold DN: **Predicting scoliosis progression from skeletal maturity: a simplified classification during adolescence.** *J Bone Joint Surg Am* 2008, **90**(3):540-53.
3. Landis JR, Koch GG: **The measurement of observer agreement for categorical data.** *Biometrics* 1977, **33**:159-74.

doi:10.1186/1748-7161-7-S1-O14

Cite this article as: Dolan et al.: The reliability and prognostic implications of a simplified bone age classification system for adolescent idiopathic scoliosis. *Scoliosis* 2012 7(Suppl 1):O14.

Submit your next manuscript to BioMed Central and take full advantage of:

- Convenient online submission
- Thorough peer review
- No space constraints or color figure charges
- Immediate publication on acceptance
- Inclusion in PubMed, CAS, Scopus and Google Scholar
- Research which is freely available for redistribution

Submit your manuscript at
www.biomedcentral.com/submit



¹University of Iowa, Department of Orthopaedic Surgery, Iowa City, IA 52242-1007, USA

Full list of author information is available at the end of the article