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The use of axial loaded MRI in place of radiographs for surveillance of Adolescent Idiopathic Scoliosis: one practice's experience and recommendations

PT Knott*, SM Mardjetko, R Kim, N Trznadel and J Huang

Address: Rosalind Franklin University of Medicine and Science 3333 Green Bay Road, North Chicago, IL 60064, USA Illinois Bone and Joint Institute, Morton Grove, IL USA 3T Imaging, Morton Grove, IL, USA

Email: PT Knott* - Patrick.Knott@RosalindFranklin.edu

* Corresponding author

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Background

There have been several recent research studies published suggesting that MRI scans may prove to be a viable alternative to radiographs in the surveillance of curves for patients with AIS.

This orthopaedic practice began a prospective study of whether these scans provided reliable curve measurements when compared to traditional radiographs. While enrolling patients in this study and obtaining axial loaded MRI's during regular clinic hours, we were able to gain experience in how to schedule patients, obtain scans efficiently, provide axial loading to simulate gravity during the scan (Figure 1), use MRI images to obtain Cobb angles, and incorporate this all into our regular patient care routine.

Methods

Our experiences are recorded in order to share them and to give recommendations to physicians interested in incorporating these techniques into their scoliosis clinics.

Results and conclusion

Our experience using axial loaded MRI to evaluate scoliosis curves led to a number of important lessons. We found that parents of adolescent patients were very aware of the dangers of repeated spinal radiographs, and were very interested in using a non-radiographic method. They were not overly concerned with the increased cost, and were willing to go through a more inconvenient process to obtain the MRI compared with the ease of obtaining an x-ray in the clinic. The MRI scan was initially about ten times the cost of a radiograph, but after working on a shortened protocol to obtain only a few coronal images on the MRI, we were able to bring the cost of the MRI down so that it was only about two times the cost of a radiograph. Doing an abbreviated MRI during clinic added between 30 and 60 minutes to the patients office visit time. Fitting in scoliosis MRI's between those of regular MRI patients was difficult, and sometimes resulted in increased waiting time for the scoliosis patients. Having the patient stand in the waiting room rather than sit helped alleviate the need to put on the axial loading device for 10 minutes before having the patient enter the MRI scanner [1-5].

Figure 1

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