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Comparison of Cobb Angles in Idiopathic Scoliosis on Standing Radiographs and Supine Axially Loaded MRI.

Diagnostics

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Abstract:

Study Design. Prospective, patient controlled.

Objective. To compare Cobb angles in idiopathic scoliosis between standing radiographs and a nonradiographic procedure.

Summary of Background Data. Repeated radiographic examinations at young age may increase the risk for breast cancer in adulthood. MRI images the spine satisfactorily but is cumbersome in standing. A harness supplying axial load to a lying subject simulates the standing radiograph appearance of the lumbar spine.

Methods. Thirty patients with idiopathic scoliosis greater than 20[degrees] performed a routine posteroanterior and lateral standing thoracolumbar spine radiograph and an MRI in supine position without and with axial loading.

Results. Mean Cobb angle for the major curve was 31[degrees] on standing radiographs, 23 [degrees] on nonloaded supine MRI, and 31[degrees] on supine loaded MRI. Axially loaded, compared with nonloaded, MRI increased the Cobb angle by 8[degrees]. The mean difference between standing radiograph and supine axially loaded MRI was 0[degrees], with an intermethodologic variation(s) of 3.4[degrees]. Radiographic and MRI (axially loaded) Cobb angles correlated positively ($r = 0.78$).

Conclusions. Axial loading on supine MRI produces coronal Cobb angles similar to standing radiographs. This is a way to acquire reliable Cobb angles without radiation in the monitoring of idiopathic scoliosis.

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