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The geometry of the spine in the sagittal profile: a comparison of girls with and without scoliosis

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from 5th International Conference on Conservative Management of Spinal Deformities
Athens, Greece. 3–5 April 2008

Published: 15 January 2009

Scoliosis 2009, **4**(Suppl 1):O51 doi:10.1186/1748-7161-4-S1-O51

This abstract is available from: <http://www.scoliosisjournal.com/content/4/S1/O51>

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Background

Using the Formetric® system, we observed a high incidence of abnormal sagittal configurations in both scoliotic and non scoliotic patients. Those abnormal configurations could be described by using terms like Hyper- or Hypo- but not all of them. Changes in the location of the thoracic apex, lordotic apex, transitional point as well as segmental rectifications of the profile were observed with the formetric. This data is used to define a specific scale and to measure harmony of the spine (HDSS). This new, simplified scale is clinically valid and is reliable. The HDSS ranges from 0 (harmonic) to 16 (disharmonic).

Goal

The purpose of the study is to compare the sagittal configuration of scoliotic patients and normal subjects.

Materials and methods

We have studied the sagittal profile with the Formetric® system in 157 consecutive girls with non-treated IS and 39 age matched non scoliotic girls (NIS).

Results

The HDSS showed no differences in both groups (IS = 5.6; NIS = 5.4). The angle of the regional kyphosis was no different in scoliotic (43.1°) and non scoliotic (43.7°) girls. The angle of the regional lordosis was significantly lower in scoliotic girls (34.9°) compared with non scoliotic (35.4°). Harmonic/disharmonic features are similar for both scoliotic and non scoliotic girls.

Conclusion

The sagittal geometry of the spine is highly variable in both scoliotic and non scoliotic girls. The angle of thoracic kyphosis is not different between the groups. Lordosis is slightly lower in the scoliotic group.

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