

Oral presentation

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Adolescent girls with idiopathic scoliosis >45 degrees, treated with TLSO brace, reveal less clinical deformity than non-treated girls having similar scoliosis angle

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Objective

The aim of the study was to compare clinical deformity in two groups of girls with curves >45 degrees: Group 1 admitted for surgical treatment, and Group 2 under brace treatment.

Study design

Two groups, matched for age and Cobb angle (unpaired t test with Welch correction), were compared with respect to surface deformity. Group 1 consisted of twenty-two girls, aged 14.1 ± 1.8 years, Cobb angle 59.7 ± 14.6 degrees (range 45–86 degrees, median 54 degrees), admitted for surgical treatment. Group 2 consisted of 23 girls, aged 14.9 ± 1.3 years, Cobb angle 55.0 ± 6.8 degrees (range 45–68 degrees, median 55 degrees), who refused surgical treatment and had been wearing a Cheneau thoracolumbar sacral orthosis (TLSO) for more than one year. We examined the hypothesis that wearing the brace for more than one year may significantly reduce clinical deformity (trunk rotation) in adolescents with curves >45 degrees.

Methods

Angle of trunk rotation was measured using Bunnell scoliosimeter [1] at three levels of the spine: upper thoracic (Th1–Th5), main thoracic (Th5–Th12), lumbar or thoracolumbar (Th12–L4). The maximal angle was noted at

each level and the sum of three levels was calculated. Posterior trunk symmetry index (POTSI) was measured using surface topography [2].

Results

The value of angle of trunk rotation in the main curvature was 15.1 ± 5.6 degrees (range 6–25) in non-treated girls and 11.9 ± 3.4 (range 5–18 degrees) in braced patients; this difference was significant at $p = 0.027$ (unpaired t-test with Welch correction). The value of the sum of angles of trunk rotation at 3 levels of the trunk was 21.8 ± 6.1 degrees (range 14–32 degrees) in non-treated and 17.9 ± 4.7 degrees (range 10–26 degrees) in braced patients; this difference was significant ($p = 0.024$). The POTSI did not differ significantly between groups ($p = 0.78$).

Conclusion

(1) Adolescent girls with Cobb angle above 45 degrees who have been treated with TLSO brace for more than one year, reveal smaller clinical rotational deformity of their back than non-treated girls having similar Cobb angle. (2) Parameters describing clinical deformity (trunk rotation) have to be considered together with radiological data for evaluation of the outcome of scoliosis treatment. (3) Systematic radiological exam during brace treatment is mandatory because scoliosimeter readings may underestimate radiological deformity.

References

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