

Oral presentation

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## Stabilization of progressive thoracic adolescent idiopathic scoliosis using brace treatment and DoboMed physiotherapy

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### Background

Conservative management of progressive idiopathic scoliosis, consisting of bracing and physiotherapy, aims to stabilize the curvature during rapid adolescent growth. Prospective study using pre-defined inclusion criteria is a method of objective verification of this treatment.

### Goal

The aim of this study was to prospectively evaluate patients with progressive idiopathic scoliosis managed with Cheneau brace and DoboMed physiotherapy.

### Materials and methods

Twenty-eight consecutive pre-menarchial girls aged 10 to 14 years (mean  $12.6 \pm 1.1$  years) started a treatment plan for thoracic idiopathic scoliosis, having radiological proof of progression. Eighteen of them had an additional structural lumbar curvature. The Cobb angle revealed a magnitude of  $21.0^\circ$  to  $40.0^\circ$  (mean  $30.8^\circ \pm 5.5^\circ$ ) in the thoracic curvature and  $17.0^\circ$  to  $40.0^\circ$  (mean  $29.1^\circ \pm 8.2^\circ$ ) in the lumbar curvature. The Perdriolle angle of axial rotation of the apical vertebra was between  $2.0^\circ$  and  $28.0^\circ$  (mean  $8.7^\circ \pm 5.6^\circ$ ) in the thoracic curvature and between  $4.0^\circ$  and  $30.0^\circ$  (mean  $11.9^\circ \pm 8.8^\circ$ ) in the lumbar curvature.

A Cheneau brace was ordered to be worn full-time, accompanied by DoboMed daily physiotherapy. The initiation of treatment took place during a 2 week in-patient stay at the rehabilitation department in order to adjust the brace and teach the patient and the parents the technique

of exercises. The Cobb angle was measured once a year with an out-of-brace standing radiograph. The duration of therapy is now 30 to 68 months, mean  $43 \pm 9$  months. Eleven patients completed therapy.

### Results

The effective time of daily brace wearing was from 8 to 23 hours (mean  $12.9 \pm 5.0$  hours). At the time of the final radiograph the thoracic Cobb angle was between  $17.0^\circ$  and  $53.0^\circ$  (mean  $34.0^\circ \pm 9.2^\circ$ ), the lumbar Cobb angle was between  $15.0^\circ$  to  $51.0^\circ$  (mean  $29.2^\circ \pm 10.4^\circ$ ). Three patients (11%) exceeded the limit of a  $50^\circ$  Cobb angle, and were considered to be surgical patients: two in the thoracic and one in the lumbar curvature. Stabilization of the Perdriolle angle of axial rotation was noted:  $0.0^\circ$  to  $28.0^\circ$  (mean  $10.5^\circ \pm 7.0^\circ$ ) in the thoracic curvature and  $2.0^\circ$  to  $33.0^\circ$  (mean  $13.4^\circ \pm 9.2^\circ$ ) in the lumbar curvature.

### Conclusion

Stabilization of progressive thoracic scoliosis during the period of rapid adolescent growth was achieved in 89% of girls using the brace and specific physiotherapy.