Scoliosis

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Oral presentation

Our Lyon Brace with removable neck ring (preliminary study)

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Objectives

The purpose of this study is to present a spinal orthosis to treat High Apex Thoraco-Lumbar Scoliosis (HA-TLS) according to biomechanical criteria. Our orthosis is a Lyon brace modified by a removable elongation neck ring which is easily usable during nighttime, and which maximizes compliance during full-time brace treatment with a brace not visible during the daytime.

Background

HA-TLS is very difficult to correct using other braces except for the Milwaukee brace (MB). Since the introduction of the MB, a major problem has been poor patient compliance due to the perception of the brace as cosmetically unacceptable. The forces applied to the spine by the MB are well illustrated by White-Panjabi (1). According to circadian biological rhythm, a sleeping person R.E.M. has decreased muscular tone, and gravitational loading force on the horizontal spine is absent. Therefore, common sense tells us to strike scoliosis at night with two combined forces: torsional forces provided by the Lyon brace plus very important elongation forces provided by the neck ring.

Methods and results

Inclusion criteria were as follows: girls, idiopathic scoliosis with apex curves cephalic to T8, growing age (10-14 years), Cobb angle of minimum 25° and maximum 45°. The Risser sign value was less than 3. The group consisted of 32 girls wearing our brace for more than 3 months, with a minimum time of wearing of 21 hours per day and using the neck ring at night. The braces were all made in the same workshop, and the treatment was managed by the same physician (2).

Outcome

The authors' follow-up is too small (interim results). However, radiographic control in the brace after 3 months (usually required in our protocol) demonstrated excellent initial correction of HA-TLS in all patients. The average initial in-brace correction was 45% for major curves of 35° and 65% for minor curves.

Conclusion

HA-TLS represents a significant challenge for the physician. The neck ring makes the MB brace cosmetically unacceptable to many patients. Bracing is useless without compliance (3). During growth, we believe that the psychological factor is very important, helping to obtain early improvement of compliance and a positive body image in all patients. Our orthosis has a very minor effect on the quality of life and represents an alternative brace to treat HA-TLS in adolescents.