Scoliosis

Oral presentation

Bracing different types of adolescent hyperkyphosis: end-growth results of a controlled retrospective study

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Objectives

The objective of this study was to verify the efficacy of brace treatment of adolescent hyperkyphosis, idiopathic and due to Scheuermann Disease (SD), using clinical parameters.

Background

Adolescent hyperkyphosis, both idiopathic and due to SD, is frequently treated with bracing, but results are scarce, and there are few studies about the use of TLSO.

Study design

This retrospective controlled study was conducted on a population of 15 patients diagnosed with hyperkyphosis (10 male and 5 female, average age at diagnosis 13.8 years) that completed treatment since our database started in 2003. 5 patients had idiopathic hyperkyphosis (2 females and 3 males), and 2 of them presented with back pain at the start of treatment. In the group with SD, there were 2 females and 8 males, and 5 patients were painful.

Methods

All patients were prescribed a brace after the first visit (Maguelone brace for 21 or 23 hours per day). The mean duration of treatment was 2.65 years. The outcome criteria included the following: mean C7 and L3 plumbline distance change and number of patients for which there was a significant change for C7 and L3 according to a previous study, where we considered a change of at least 10 mm to be clinically significant. Outcome criteria also included

the disappearance of back pain. We used ANOVA and a chi-square test to analyze the data.

Results

The average pre-treatment C7 distance from plumbline in the SD group was 73.5 ± 7.5 mm, and the post-treatment value was 60 ± 15.1. L3 distance changed from 70.5 ± 9.6 mm to 39 ± 8.4 mm. For idiopathic hyperkyphosis patients, we observed a C7 distance change from 71 ± 4.1 mm to 41.0 ± 7.4 mm. These changes were statistically significant in both groups but not among groups. Regarding clinically significant changes, in the SD group, 70% of patients improved and 30% remained unchanged, while in the idiopathic group, 100% improved for C7. For L3, 40%improved and 60% remained unchanged in the SD group, while 90% improved and 10% remained unchanged in idiopathic group. Back pain disappeared within the first 6 months of therapy in all patients.

Conclusion

Bracing can effectively correct adolescent hyperkyphosis, both idiopathic and due to SD, allowing a progressive reconstruction of sagittal outline. Although better results were seen in the idiopathic group, bracing also improves SD by ensuring proper vertebral body growth.