Scoliosis

Brace treatment in juvenile idiopathic scoliosis: a prospective study with outcomes in agreement with SRS committee on bracing and nonoperative management standardization criteria

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Background
Based on age of onset, severity and evolutivity, the purpose and use of conservative methods to treat juvenile idiopathic scoliosis (JIS) is a source of great debate. The different clinical experiences highlight difficulties in applying a conservative treatment to patients with JIS, characterized by inevitable evolutivity, who are effectively facing a long growing period .

Purpose
The purpose of the present prospective study was to determine the effectiveness of conservative treatment in patients diagnosed with JIS.

Methods
A total of 1,238 individuals who were treated for JIS between 1995 and 2012 fulfilled the inclusion criteria (age between 4-10 years, full-time prescription), with 163 patients treated with progressive action short brace, Lyon brace and Milwaukee. Of these, 113 patients had a definite outcome, 27 abandoned treatment and 23 are still in treatment. The minimum duration of follow-up was 24 months. Antero-posterior radiographs were used to estimate the curve magnitude (CM) and the torsion of the apical vertebra (TA) at five points in time: beginning of treatment (t1), one year after the beginning of treatment (t2), intermediate time between t1 and t4 (t3), end of weaning (t4)and 2-year minimum follow-up from t4 (t5). Three outcomes were distinguished in agreement with Scoliosis Research Society criteria: curve correction, curve stabilization and curve progression. Moreover, results were evaluated according to compliance, dividing patients into five subgroups. Statistical analyses were performed with GraphPad Prism 6.

Results
The results of our study showed that, of the 113 patients with a definite outcome, the CM mean value was 30.55 ± 5.16 SD at t1 and 21.9 ± 7.65 SD at t5. TA was 13.58 ± 6.14 SD at t1 and 8.95 ± 5.82 at t5. The variations between measures of Cobb and Perdriolle degrees between CM t5-t1 and TA t5-t1 were statistically significantly different. Curve correction was accomplished in 88 patients (77.8%), whereas a curve stabilization was obtained in 18 patients (15.9%). Seven patients (6.19%) had a curve progression; of these, four (3.5%) were recommended for surgery. Of the 26 patients who abandoned treatment, at the time of abandonment (12.4 years of age) they had achieved curve correction in 19 cases (73.0%), curve stabilization in five cases (19.2%) and curve progression in three cases (11.5%). Of these patients, who were reviewed at the end of their growing periods, four have undergone surgery. In addition, there was a statistically significant correlation between compliance and result from t1-t5 with an interaction of 3.43 P <0.0001.

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Conclusions and discussion

Our study confirmed that conservative treatment with bracing is highly effective in treating JIS, with most patients achieving a complete curve correction and only 4.9% of patients requiring surgery. In addition, the study confirmed that full-time bracing and patient compliance is essential to obtaining positive results.

References

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