

Conservative treatment of juvenile and adolescent idiopathic scoliosis

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The aims of this clinical, radiographic, and comparative retrospective study on conservative treatment of juvenile and adolescent idiopathic scoliosis were to (1) evaluate the efficacy of brace treatment of the present study with the reported natural history of idiopathic scoliosis in untreated cases, (2) identify prognostic parameters at the start of brace treatment which could be of value in predicting curve progression of more than 10° Cobb despite bracing, (3) find out whether changes in the radiographic appearance of the deformity are matched by similar changes in the clinical appearance of the deformity and (4) compare the results achieved in this study with those reported in the literature.

The study was carried out on 290 (94 percent) of 301 consecutive patients diagnosed with juvenile and adolescent idiopathic scoliosis who started with brace treatment at the St. Maartenskliniek in Nijmegen, the Netherlands, from 1970 to 1982.

It was shown that brace treatment does favorably and significantly influence the natural history of the curve before maturity, as has also been reported by others. Both the incidence and the amount of curve progression were decreased by approximately 50 percent in juvenile and adolescent patients with an initial curve of 20°–50° Cobb, as compared with no treatment.

Patients classified as brace failures (approximately 15 percent) were significantly younger and achieved less in-brace curve correction at the start of treatment as compared with the remaining patients, irrespective which one of the three definitions of brace treatment failure used. A prognostic index was calculated, based on these two above-mentioned predictive factors for curve progression. The index made it possible to correctly predict curve progression of more than 10° Cobb in approximately 80 percent of the patients by taking one radiograph in and one out of the brace at the start of brace treatment.

Changes in the radiographic appearance of the deformity (lateral curve, apical vertebra rotation) correlated significantly with changes in the hump. Correlations concerning spinal dysbalance and the other three above mentioned parameters of the scoliotic deformity were poor or not significant. High correlations ($r = 0.50$) were found between changes in the major and minor curves in response to brace treatment.

The results achieved in this study compare relatively well with other studies on brace treatment of patients with idiopathic scoliosis before maturity. Reports showing better results of brace treatment appear mainly in the 1970s when patients showing poor compliance with brace wear and patients considered to require surgery because of curve progression were excluded from the evaluations. Furthermore, only a proportion of patients for whom a brace had originally been prescribed was included in such reports. Reports showing similar or worse results of brace treatment appeared mainly in the 1980s with inconsistent brace wearers and surgical patients being included.