Predictors of results in a 1051 cohort of Adolescents with Idiopathic Scoliosis at High Risk of progression.

Introduction

The effectiveness of bracing is determined by multiple variables. Lower rates of failure were seen in the ISICO sample when compared to a matched cohort from the BrAIST study. AIS treatment is based on different treatment protocols according to Cobb angle risk groups (11-20, 21-30, 31-40, >41). A personalized approach is strongly endorsed by the Guidelines, the therapy is conceived as a step by step path in which we start with the less invasive therapy for patient at lower risk to the most invasive for the highest risk.

AIM Of the STUDY

To test a personalised approach in a large prospective real-life cohort to identify predictors of good results at the end of treatment

Material and Method

Design: retrospective observational study nested into a prospective database. Inclusion criteria: AIS, 21-45°, Risser 0-2, age 10-16, first consultation, no previous bracing, at end of observation (Risser 3, medical prescription). Treatments followed a personalized conservative approach following the step-by-step theory (Negrini 2018): intensity increases with estimated risk factors. A regression imputation was used to manage with missing data.

Outcomes: angle <50° <40° and <30°The factors and covariates included in the model: age, BMI, ATR, TRACE (Trunk Aesthetic Clinical Evaluation) score; real brace wear (RBW) and risk groups.

Results

1051 patients, 84% females, age 12.11+-1.05, mean Cobb at start 28.2+-7.95, mean Cobb at end 26.6+-9.88. Results is predicted by in brace correction, as the in brace correction increases the odds of ending treatment below 30, 40 and 50 degrees is 30%,24%and 23% higher respectively. The OR didn't change after covariates adjustment.

Table 1 Crude and adjusted OR , 95%CI and p value. [a]= alfa below 0.05

End Cobb <30	Crude OR (95% CI)	p value	Adjusted OR (95% CI)	p value
IBC	0.70(0.67-0.74)	<0.001 [a]	0.71(0.67-0.74)	<0.001 [a]
End Cobb <40	**Crude OR (95% CI)**	**p value**	**Adjusted OR (95% CI)**	**p value**
IBC	0.76 (0.72-0.79)	<0.001 [a]	0.77(0.69-0.79)	<0.001 [a]
End Cobb <50	**Crude OR (95% CI)**	**p value**	**Adjusted OR (95% CI)**	**p value**
IBC	0.77(0.71-0.83)	<0.001 [a]	0.76(0.70-0.84)	<0.001 [a]

Conclusion

In a large cohort of subject conservatively treated the in-brace correction resulted a very good predictor of results, this covariate was over fitting all the other involved factors. Personalized approach is essential to halt scoliosis progression even in the most severe cases.