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Adolescent idiopathic scoliosis and eating disorders: Is there a relation? Results of a cross-sectional study

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ABSTRACT

A recent study suggests a correlation between idiopathic scoliosis in adolescence and eating disorders. However, this does not correspond with our clinical experience in the same population. The aim of this study was to verify the correlation between scoliosis and eating disorders in adolescence. A cross-sectional study was designed including 187 consecutive adolescent girls with a diagnosis of idiopathic scoliosis (mean Cobb angle 26°, range 11–73°, age 15.2 ± 2.5; 24% juveniles, 76% adolescent type) and 93 schoolgirls as controls (age 14.9 ± 1.0). All of the participants answered the Italian validated questionnaire EAT-26 about eating habits in order to identify any eating disorders. Body mass index (BMI) was calculated for all participants and compared to reference data. Statistical Analysis: chi-square test, Student's *t*-test, Pearson's correlation coefficient. Only 3 (1.6%; 95% CI −0.2–3.4%) participants in the scoliosis group showed EAT-26 scores suggestive for eating disorders versus 7 (7.5%; 95% CI 2.2–12.9%) in the school population ($p < 0.05$). The BMI was slightly lower ($p < 0.05$) for scoliosis patients (19 ± 0.2) than for school girls (21 ± 0.3). EAT-26 is recognized among the most valid questionnaires for eating disorders and has been widely applied in various countries. By applying this questionnaire, a lower incidence of eating disorders in female scoliosis patients was found than in the general population (using both our own controls and Italian reference values). This contrasts with some expert opinions and a recent study performed in Italy. The low BMI already reported in the literature as being typical of scoliosis participants is confirmed by our data.

1. Introduction

Idiopathic scoliosis (IS) is a three-dimensional spinal deformity consisting of a lateral curvature, reduction of the sagittal profile and axial vertebral rotation of an unknown cause Negrini et al., 2012a). Severe forms of scoliosis can affect the quality of life because of the esthetic impact (Donaldson et al., 2007; Negrini et al., 2006), the risk of progression and the higher risk of low back pain (Weinstein, 1986; Weinstein et al., 2003). The pathology itself affects self-image, but the treatment,

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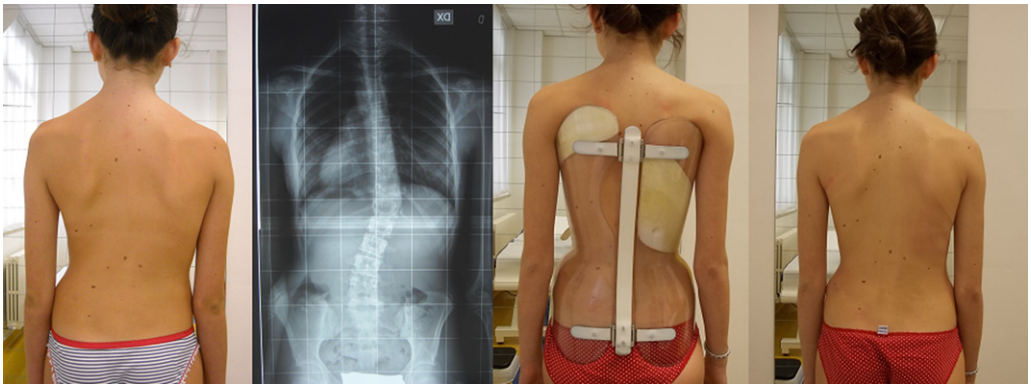

Fig. 1. A scoliosis patient: BMI 16.44, age 11. From left to right: first evaluation, initial radiograph, her first brace, and initial esthetic results after 4 months.

especially bracing, and bracing with long braces like the Milwaukee, can also cause psychological impairments (Fallstrom, Cochran, & Nachemson, 1986; Kahanovitz, Snow, & Pinter, 1984; Noonan, Dolan, Jacobson, & Weinstein, 1997). Being a deformity of the trunk, scoliosis affects the appearance of patients, so that one of the main aims of treatment is the improvement of the esthetic deformity (Negrini, Aulisa et al., 2012; Zaina, Negrini, Fusco, & Atanasio, 2009). This result can be achieved with a well-shaped short brace, which can recreate a symmetric trunk (Negrini, Donzelli, Lusini, Zaina, 2012; Zaina et al., 2009) and is managed according to the SOSORT Guidelines for scoliosis management (Negrini, Grivas, Kotwicki, Rigo, & Zaina, 2009),

Fallstrom et al. (1986) showed that 9 years after the treatment with the Milwaukee brace, patients showed signs of negative body image, with an emotional disturbance in 33% of the study population. These disturbances can be consequences of a difficult treatment, as the brace partially limits movement in everyday life and makes patients feel different from their friends during a critical period of life (i.e. adolescence), so that psychological damage can persist during adulthood; many studies have documented scant self-esteem in women affected by scoliosis (Danielsson & Nachemson, 2001; Weinstein et al., 2003). Payne et al. (1997) studied a large group of scoliosis patients using the Adolescent Health Survey, which is a generic health status measure with established validity and reliability for adolescence; the study found that scoliosis was an independent risk factor for suicidal thoughts, worry and concern over body development and peer interactions. As a consequence, another psychological aspect has traditionally been considered altered in scoliosis: the attitude toward food. Girls with adolescent idiopathic scoliosis (AIS) are typically quite slim (Fig. 1), so they have frequently been considered to be affected by anorexia (Smith, Latchford, Hall, Millner, & Dickson, 2002), and a recent study demonstrated a correlation between AIS and eating disorders (Alborghetti, Scimeca, Costanzo, & Boca, 2008). On the contrary, another study showed that body mass index (BMI) is typically lower with respect to the general population of the same age with up to 25% of participants being severely underweight, but with a prevalence of eating disorders being very low and similar to the general population (Smith, Latchford, Hall, & Dickson, 2008). These differences could be the result of the tools used in the studies, as well as of the relatively small sample sizes.

1.1. Aim of the study

According to actual literature, there is conflicting evidence about the prevalence of eating disorders in scoliosis that requires further studies. To fill this void we designed this study, with the aim of verifying whether the prevalence of eating disorders in AIS female patients is higher than in the general population of the same age. Moreover, we wanted to verify whether AIS patients show a lower BMI and if this is correlated to eating disorders.

2. Method

2.1. Study design

A cross-sectional study was designed.

2.2. Population

One hundred and eighty seven consecutive adolescent girls with a diagnosis of idiopathic scoliosis were included (age 15.2 ± 2.5, mean Cobb angle 26°, range 11–73°, 24% juveniles, 76% adolescents). These girls were under treatment at our facility for AIS, in the form of braces (65%), specific exercises (12%) or observation (23%). Ninety three healthy schoolgirls without scoliosis served as controls (age 14.9 ± 1.0).