



Clinically Significant Psychological and Emotional Distress in 32% of Adolescent Idiopathic Scoliosis Patients

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Abstract

Study Design: Prospective study of 92 patients.

Objectives: To determine if the incidence of clinically significant psychological and emotional distress in adolescent idiopathic scoliosis (AIS) patients is higher than the general population and if this correlates with deformity severity.

Summary of Background Data: Adolescents with scoliosis may exhibit a less positive outlook on life, suffer from lower self-esteem, and have more difficulty connecting with peers; however, there is conflicting evidence whether different stages of treatment prompt different psychological problems and the long-term psychological effect of scoliosis.

Methods: Patients aged 12–21 years with a diagnosis of AIS were included. The Behavioral Assessment System for Children, Second Edition (BASC-2), is a validated 139-item survey normed on more than 1 million children in the United States. It can detect clinical and subclinical levels of psychosocial problems in five domains: school problems, internalizing problems, inattention/hyperactivity, emotional symptoms index, and personal adjustment. The BASC-2 self-report form was completed by 92 adolescents with AIS (mean age = 14 years; range 12–18) and a parent. BASC-2 scale scores were compared to validated age-matched normative data. Comparisons were made between those undergoing surgery (n = 31), bracing (n = 31), or observation (n = 30) at the start of treatment.

Results: 32% (29/92) of patients scored in the clinically significant range in at least one of the subscales. There were no clinically significant emotional or behavioral differences when stratified by treatment type (p = .560), Cobb angle (0.630), or age (0.313). Twenty-one percent (19/92) of parent responses deemed their kids as having clinically significant emotional or behavioral differences. In only 34% (10/29) of the cases did children and parent concurrently report clinically significant psychological difficulties, such that 66% of parents were unaware that their child has clinically significant emotional or behavioral problems.

Conclusions: AIS patients undergoing observation, bracing, and surgery are all at risk for clinically significant psychological symptoms.

Level of Evidence: Level II.

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Introduction

Previous studies have raised concern that adolescent idiopathic scoliosis (AIS) and its treatment may impact the psychological health of patients. Adolescents with scoliosis may exhibit a less positive outlook on life, suffer from lower self-esteem, and have more difficulty connecting with peers [1-3]. There is conflicting evidence whether different stages of treatment prompt different psychological problems and the long-term psychological effect of scoliosis [4,5]. There is also ample evidence for the negative relationship between psychological problems and medical compliance [6-8]. Thus, not only does scoliosis have the potential to impact the adolescent's mental well-being in addition to their physical state but additionally the scoliosis treatment outcome may in turn be affected by the patient's mental health.

Researchers and clinicians have employed the Behavioral Assessment System for Children, Second Edition (BASC-2) to evaluate the emotional, behavioral, and adaptive functioning of children and adolescents from their own perspective and that of their parents for a variety of situations. The BASC was published in 1992 and by 2003 had been used to evaluate more than one million children and adolescents in the United States alone, and appeared in more than 125 research articles and dissertations [9]. The success of the BASC led to revisions and the development of the BASC-2, which has been used in hundreds of articles, evaluating children with a variety of medical conditions including cancer, obesity, and epilepsy, since its release in 2004 [10-12].

The Self-Report of Personality (SRP) for Adolescents is a 176-item questionnaire with a combination of True/False questions such as "Things go wrong for me, even when I try hard" and "I worry about little things" or questions with the response options of never, sometimes, often, or almost always such as "Teachers are unfair" and "I am lonely." The responses are evaluated to reveal the five composite scales: school problems, internalizing problems, inattention/hyperactivity, emotional symptoms index, and personal adjustment. These composite scales are made up of 16 subscales representing anxiety, depression, attention problems, and more. For each subscale, a raw score, T score, percentile rank, and confidence interval are provided.

The Parent Rating Scale (PRS) is a 150-item questionnaire that only uses the 4-point Likert-type scale of never, sometimes, often, or almost always to evaluate their child's behavior. Examples of the questions for the parents include "Has trouble making new friends" and "Complains about health." From the parent responses, the four composite scales obtained are externalizing problems, internalizing problems, behavioral symptoms index, and adaptive skills. These composite scales are made up of 14 subscales, six of which overlap with the subscales for the self-report forms.

For each subscale, a summary is provided outlining whether the scores are normal (T score ≤ 59), at-risk

(T score 60–69), or clinically significant (T score ≥ 70). The at-risk range identifies that there is a potential for a problem and should be monitored, whereas the clinically significant range identifies a high level of behavioral and emotional dysfunction. The combination of these subscales determines if the overall composite score is considered normal, at-risk, or clinically significant.

The purpose of this study is to determine if psychological problems are prevalent in patients with AIS and if differences exist between treatment groups at the start of treatment.

Materials and Methods

This study was an institutional review board–approved, single-center, prospective study evaluating the psychological health of patients with AIS. At their initial clinic visit, patients between the ages of 12 and 21 with AIS were asked to complete the BASC-2 Self Report of Personality (SRP) for Adolescents while one parent was asked to complete the BASC-2 Parent Rating Scale (PRS).

Patients were also grouped according to initial treatment type for scoliosis (observation, bracing, or surgery) to determine the presence of psychological differences at the start of treatment. Treatment type was determined by the surgeon's clinical evaluation, including the best prognostic recommendation based on age, curve progression, and deformity severity. The treatment patients received was not altered by study involvement. Patients were enrolled in the study until the appropriate number for each patient group was achieved. Patients were also evaluated by age and Cobb angle of major curve to determine if either of those factors correlated to psychological distress. Comparisons between parent and child evaluations were made to determine the level of agreement or disagreement.

Statistical analysis was performed using Stata with statistical significance defined as $p < .05$. Multivariate analyses of variance were used to determine if age and Cobb angle of major curve differed between the treatment groups. A Fisher exact test was used to compare differences in clinical significance of psychopathology between the treatment groups.

Results

Between September 2014 and June 2015, a total of 109 patients with a diagnosis of AIS between the ages of 12 and 21 were approached regarding the study. Five did not return the survey and 12 declined to participate, leaving a total of 92 patients and 92 parents for the study (92/109, 84.4%). Patients were grouped according to the type of treatment they were initiating, including observation ($n = 30$), brace ($n = 31$), or surgery ($n = 31$). Patients in the brace group completed the survey prior to using the brace. Patients in the surgical group completed the surveys preoperatively. There was no statistical difference between the three

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