

Natural history of Adolescent Idiopathic Scoliosis

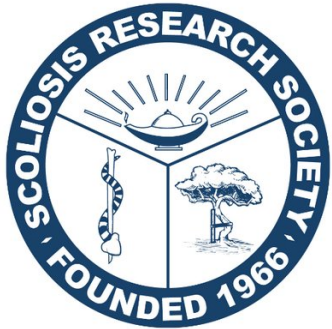
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The Natural History of Adolescent Idiopathic Scoliosis

Stuart L. Weinstein, MD

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Adolescent Idiopathic Scoliosis



“Adolescent idiopathic scoliosis (AIS) is characterized by a lateral curvature of the spine of ≥ 10 degrees with vertebral rotation.”

Scoliosis Research Society

2% to 3% of children younger than 16 years old

0.3% to 0.5% will have more than 20 degrees and treatment is recommended

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In 1968

LONG-TERM PROGNOSIS IN IDIOPATHIC SCOLIOSIS

By

ULF NILSONNE & KARL-DAVID LUNDGREN

Received 2.ii.68

Acta orthop. Scandinav. 39, 456–465, 1968

A LONG TERM FOLLOW-UP STUDY OF NON-TREATED SCOLIOSIS

By

ALF NACHEMSON

Received 14.iii.67

Acta orthop. Scandinav. 39, 466–476, 1968

Reference studies to decide how to treat scoliosis patient

Conclusion:

High mortality rates, disability from back pain and cardiopulmonary compromise

They included scoliosis of mixed etiologies: early-onset idiopathic, nonidiopathic etiologies, congenital malformations, polio and neuromuscular disease

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1976

Prospective Cohort AIS by Weinstein 40-51 Follow-ups

1990s

Average of 51 years after diagnosis, when the average age of the patients was 66 years

Evaluating mortality, pulmonary function, pregnancy, radiographic, major curve progression and osteoarthritis.

Back pain, pulmonary symptoms, general function, depression and body image.

In the clinical situation, most decisions are made based on the major curve magnitude and the risk of curve progression, the assumption being that if the curve progresses the patient may have future problems. These include pain, increased risk of mortality, increasing deformity, and increasing negative psychosocial effects.

6. Weinstein SL, Zavala DC, Ponseti IV. Idiopathic scoliosis: long-term follow-up and prognosis in untreated patients. *J Bone Joint Surg Am.* 1981;63:702-712; 10.

7. Weinstein SL, Ponseti IV. Curve progression in idiopathic scoliosis. *J Bone Joint Surg Am.* 1983;65:447-455.

8. Weinstein SL. Idiopathic scoliosis. Natural history. *Spine (Phila Pa 1976).* 1986;11:780-783.

9. Weinstein SL, Dolan LA, Spratt KF, et al. Health and function of patients with untreated idiopathic scoliosis: a 50-year natural history study. *JAMA.* 2003;289:559-567.

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RESULTS

Major Curve Progression

- Major curves <30 degrees at skeletal maturity tended not to progress
- 68% of the major curves in the cohort of untreated patients progressed after skeletal maturity.
- Major curves measuring between 50 degrees and 75 degrees at maturity, particularly thoracic curves, progressed the most.
- Major curves with both thoracic and lumbar involvement tended to balance with age and maintain coronal compensation.

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Pulmonary Function and Symptoms

- Pulmonary symptoms are the only symptom in untreated AIS associated with curve size.
- Having a Cobb angle of ≥ 50 degrees at skeletal maturity is a significant predictor of decreased pulmonary function.
- There is no evidence to link untreated AIS with increased rates of mortality in general or with cardiac or pulmonary conditions.

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Back Pain

With respect to self-reported history of back pain:

- 50% of adults without scoliosis have an episode of low back pain in any particular year with 15% reporting frequent back pain or pain that lasts > 2 weeks in a given year.

Deyo RA, Mirza SK, Martin BI. Back pain prevalence and visit rates: estimates from U.S. national surveys, 2002. *Spine (Phila Pa 1976)*. 2006;31:2724-2727.

- In AIS, back pain may arise in any patient regardless of curve size or location.
- Patients with AIS had more chronic back pain and more acute pain of greater intensity and duration than their peers.

However, their ability to work and perform activities of daily living was similar to that of controls. Despite back pain, this group of untreated patients continues to function at a high level, indicating that the natural history of AIS does not necessarily include functional disability.

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Marriage Rates and Reproductive Experiences

- Marriage rates in AIS are the same as controls.
- The reproductive experiences of women with scoliosis do not differ markedly from nonscoliotic women.
- There is no indication that becoming pregnant in the face of scoliosis will cause curve progression, nor is there evidence of any negative effects on pregnancy in women who have scoliosis

Psychosocial Aspects

- The psychosocial and depression indices were similar in AIS patients to those of controls.
- AIS patients were however were generally dissatisfied with their physical appearance.

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CONCLUSION

- Patients with untreated AIS can function well as adults, become employed, get married, have children, and grow to become active older adults.
- Unfortunately, untreated scoliosis may lead to increased back pain and pulmonary symptoms for patients with large thoracic curves.
- Patients with untreated AIS can also develop substantial deformity and the cosmetic aspect of this condition cannot be disregarded
- Although a contemporary cohort (and their peers) would be as accepting of deformity as these patients have been.