

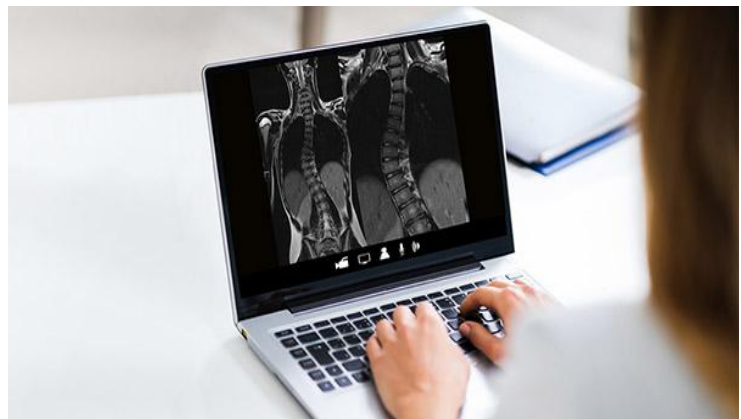
Progression risk of idiopathic juvenile scoliosis during pubertal growth

What is the progression risk for very young children with scoliosis? A child that has Juvenile idiopathic scoliosis (JIS) is characterised by a high risk of progression. The growth spurts are particularly vulnerable times for progression and therefore often critical times for implementation of treatment. This has been demonstrated by a retrospective study by Charles et al, (2006) investigating the curve progression risk in these children (1). Let's look at this study in more detail.

What was the study looking for?

The objectives of the authors were to define the risk factors of curve progression during pubertal growth and analyse the timing of the surgery in JIS. The study investigated a total of 205 patients, including 163 girls and 42 boys. The scoliosis was divided into juvenile I with an onset of 4-7 years and juvenile II with an onset of 8-10 years. In order to break down the risk factors the authors looked at:

- standing and sitting height
- Weight
- Tanner signs
- skeletal age
- menarche
- topographies
- Cobb angles.



Are kids with JIS at high risk of progression?

Yes! Of the 205 patients, 99 (48.3%) ended up in surgery. That's almost half!

Let's break the results down even further in a summary:

- Patients with curves less than or equal to 20 degrees (109 patients) at the onset of puberty, 15.6% progressed to more than 45 degrees and were fused.
- Patients with curves 21-30 degrees (56 patients), the surgical rate was 75%.

- For curves that were greater than 30 degrees the progression to surgery levels was 100%.
- Curves that were more than 20 degrees that had increased and were operated on, progressed significantly during peak growth velocity.
- Curves that progressed by 6 to 10 degrees in a year were fused in 70.9% of cases.
- Curves that progressed by more than 10 degrees per year were fused in 100% of cases.

Were there any other particular risk factors for these children?

So, we can see that the risk of progression for patients with JIS was high. The risk was highest for primary thoracic curves. There was no difference between males and females for these age groups.

Take home message

The strongest risk factors for progression of children with JIS are:

- Curve pattern (highest in thoracic curves)
- Cobb angle at onset of puberty
- Curve progression rate (degrees of progression per year).

A child with JIS and a Cobb angle greater than 30 degrees will have a 100% prognosis for surgery whereby the curve progresses to 40-45 degrees. It's a little harder to predict with curves between 21 and 30 degrees during the first two years of puberty. It's useful to look at the curve pattern and the curve progression velocity to work out which patients are at highest risk of progression. The earlier these patients can receive conservative treatment options the better!

To read the research or explore other research relevant to scoliosis visit our research page [here](#).

Reference:

Charles, YP., Daures, JP., de Rosa, V., and Demeglio, A. (2006). Progression risk of idiopathic juvenile scoliosis during pubertal growth. *Spine (Phila Pa 1976)* 1: 31 (17):1933-42.