

Growth of the Spine in Early Onset Idiopathic Scoliosis



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Objectives

- To radiographically measure the velocity of the spine from the infantile to later juvenile period in patients with infantile idiopathic scoliosis (IIS)
- To identify the growth pattern and velocity of the spine in early onset idiopathic scoliosis

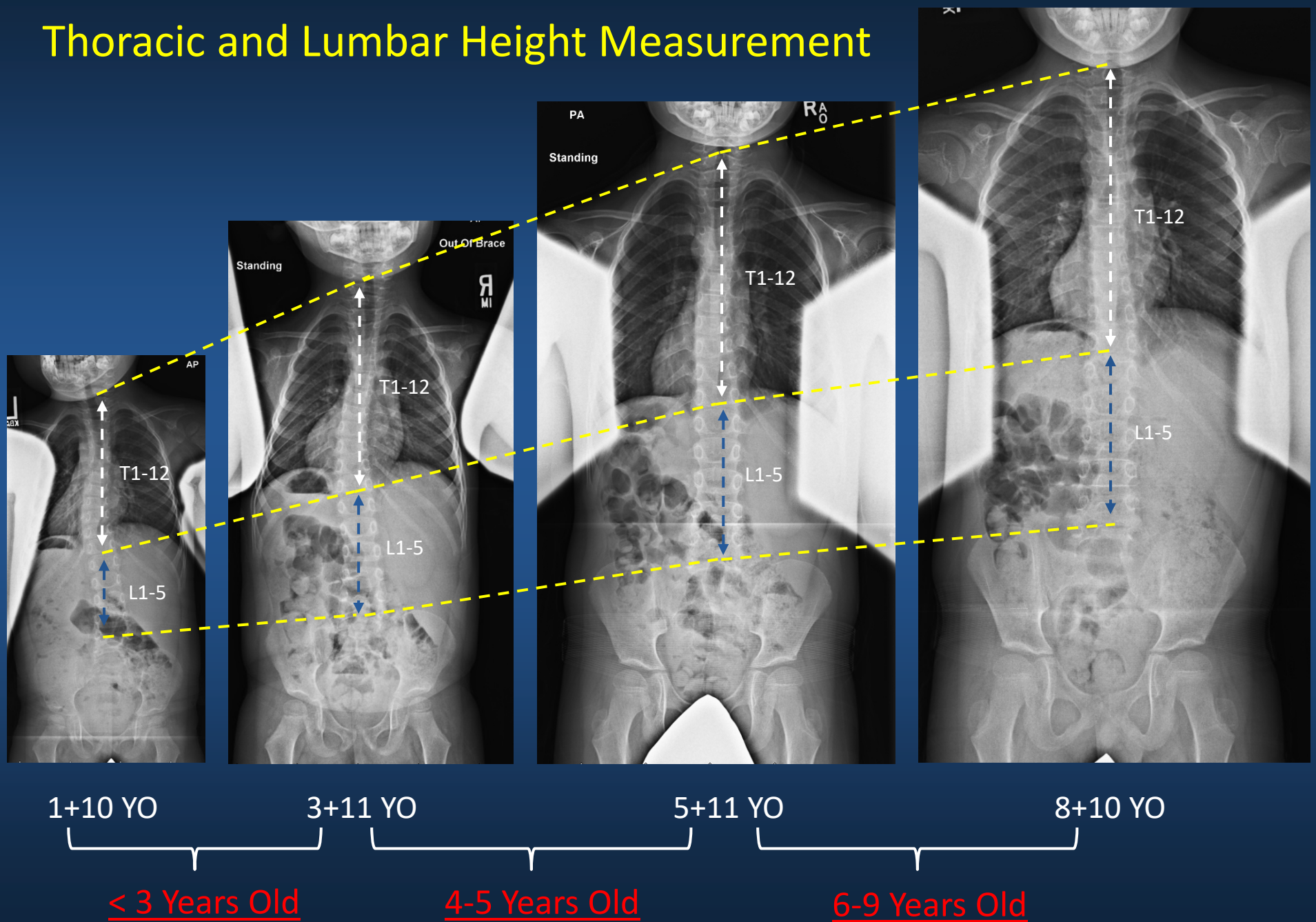
Methods

- A retrospective study in a single institution
- A consecutive series of infantile idiopathic scoliosis (IIS)
 - Total 14 patients
 - All patients had Mehta casting beginning < 3 years old
 - All curves was < 10° during the measurements
 - The mean age of the first measurement was 23.3 months (11- 47 months)
 - The mean age of final follow-up was 7.8 years old (6.5-9.2 years old)
 - The mean follow up was average of 6.3 years (5-7.4 years)

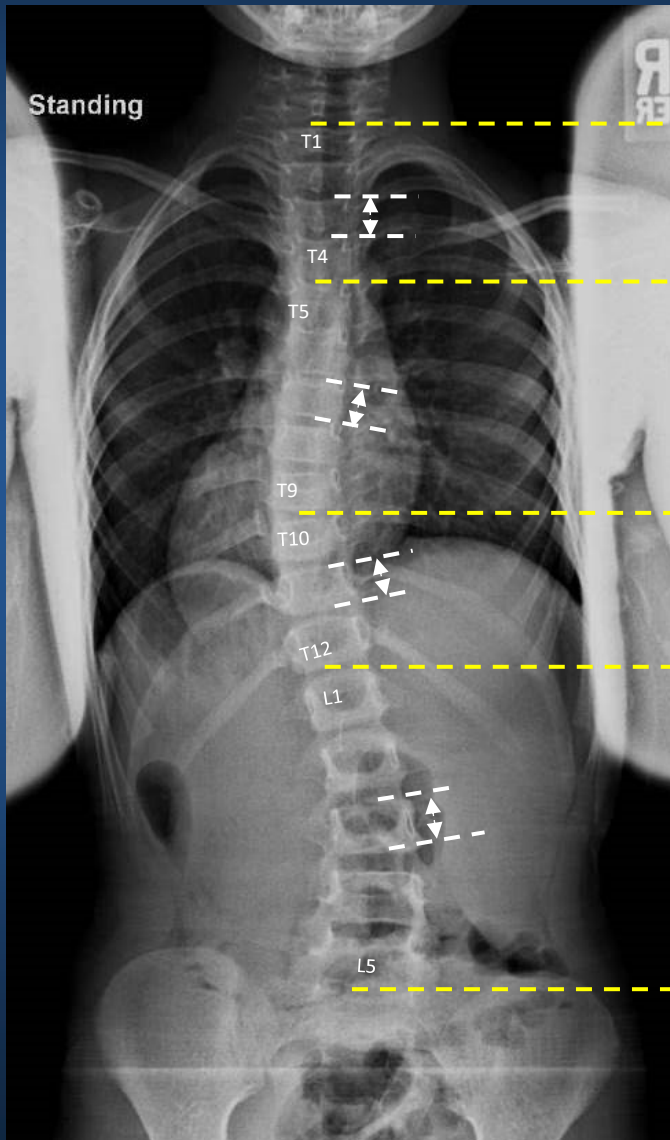
Methods

- The parameters were categorized in three time periods
 - < 3 years old
 - 4-5 years old
 - 6-9 years old
- The patients were treated with an average of 4.8 casts over a 10.2 months period

Thoracic and Lumbar Height Measurement



Each Vertebral Body Height Measurement



Mean Upper Thoracic Vertebral (T1, 2, 3, 4) Height

Mean Middle Thoracic Vertebral (T5, 6, 7, 8, 9) Height

Mean Lower Thoracic Vertebral (T10, 11, 12) Height

Mean Lumbar Vertebral (L1, 2, 3, 4, 5) Height

Results

The Growth Rate of the Thoracic and lumbar Spine in Three Time Periods

	0-3 years old	4-5 years old	6-9 years old	P Value
T1-T12 Height (cm / year)	1.32 ± 0.31	0.81 ± 0.57	0.70 ± 0.55	$<0.05^*$
L1-L5 Height (cm / year)	1.14 ± 0.82	0.59 ± 0.53	0.54 ± 0.82	$<0.05^*$

* 0-3 years old > 4-5 years old and 6-8 years old. No significant difference between the 4-5 years old and 6-9 years old.

Velocity of the Vertebral Body Height (mm / year)

	0-3 years old	4-5 years old	6-9 years old	All 3 P Value
Upper Thoracic Vertebra (T1, T2, T3, T4)	0.6 ± 0.4	0.7 ± 1.0	0.2 ± 0.5	0.03*
Middle Thoracic Vertebra (T5, T6, T7, T8, T9)	0.9 ± 0.3	0.8 ± 0.5	0.4 ± 0.7	0.08
Lower Thoracic Vertebra (T10, T11, T12)	1.1 ± 0.3	0.9 ± 0.9	0.6 ± 0.9	0.26
Lumbar Vertebrae (L1-L5)	1.3 ± 0.5	1.0 ± 1.0	0.6 ± 0.7	0.004*
All 4 P Value	<0.0001**	0.52	0.28	

* 0-3 years old > 6-9 years old. No difference between 4-5 years old and 6-9 years.

** L1-5 > T5-9 > T1-4. No difference between L1-5 and T10-12.

Conclusions

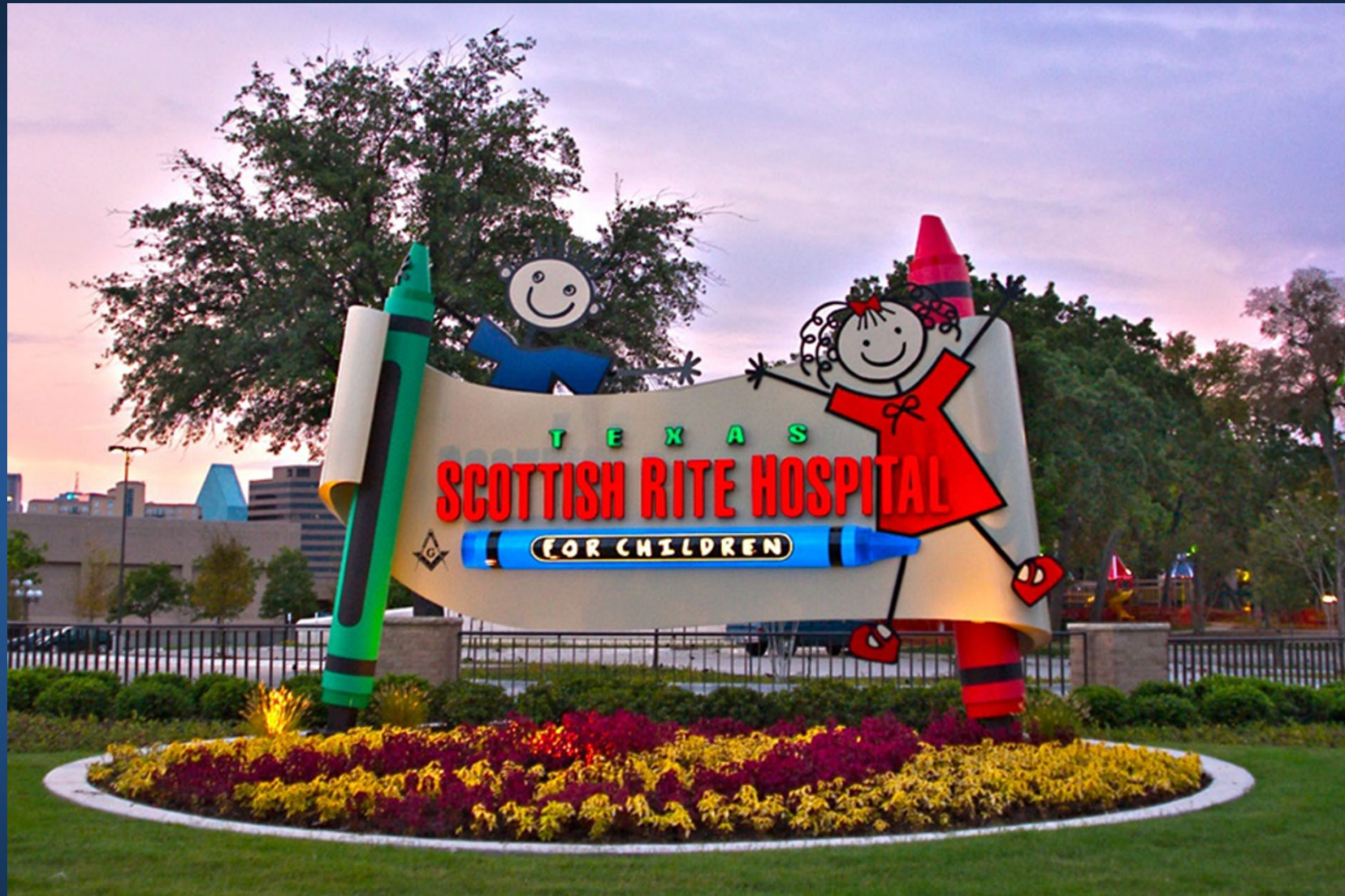
- The initial growth spurt of the spine in IIS is in the first three years of life and is greatest in the lumbar spine.
- Initiating casting prior to 3 years of age will provide the greatest opportunity for success since rapid growth occurs in this time period

Limitations

- Patients number
- Gender
- Retrospectively radiographic study

References

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Thank You