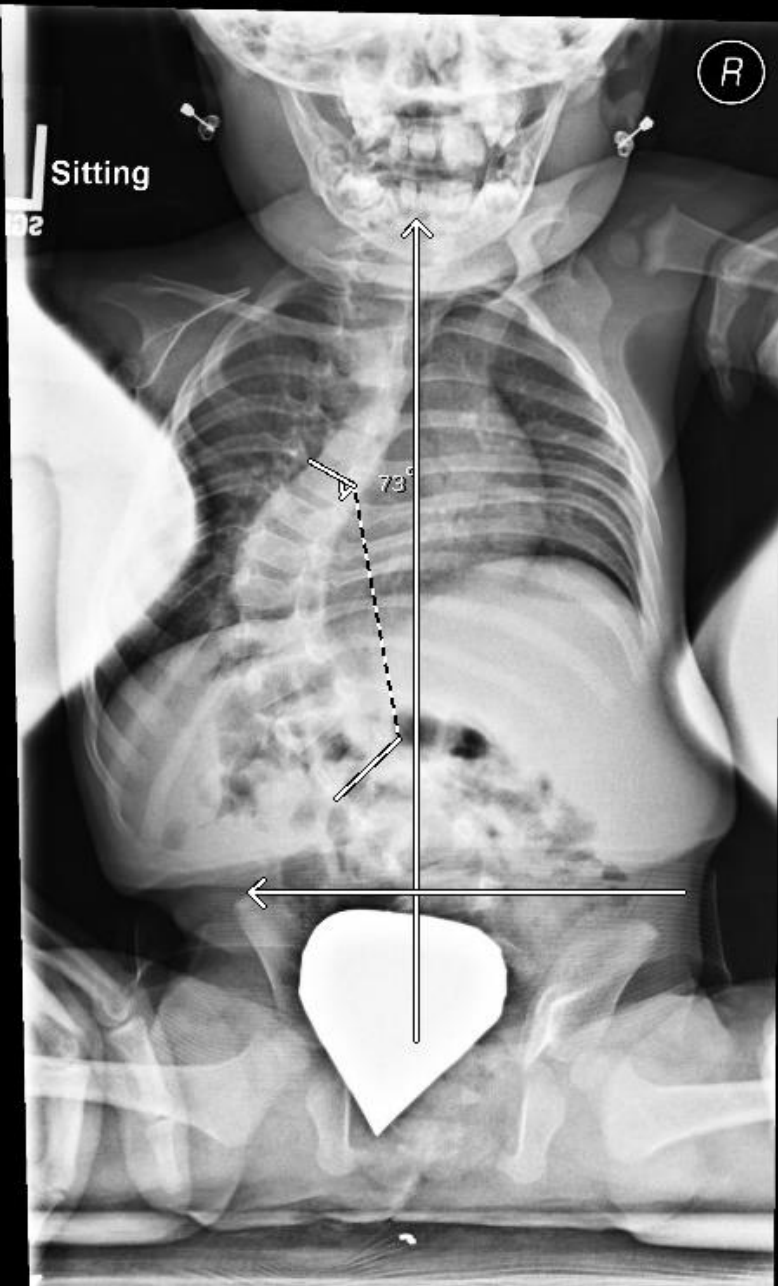


Is Mehta Casting Effective In Patient's with Infantile Onset Scoliosis and Intrathecal Abnormalities?

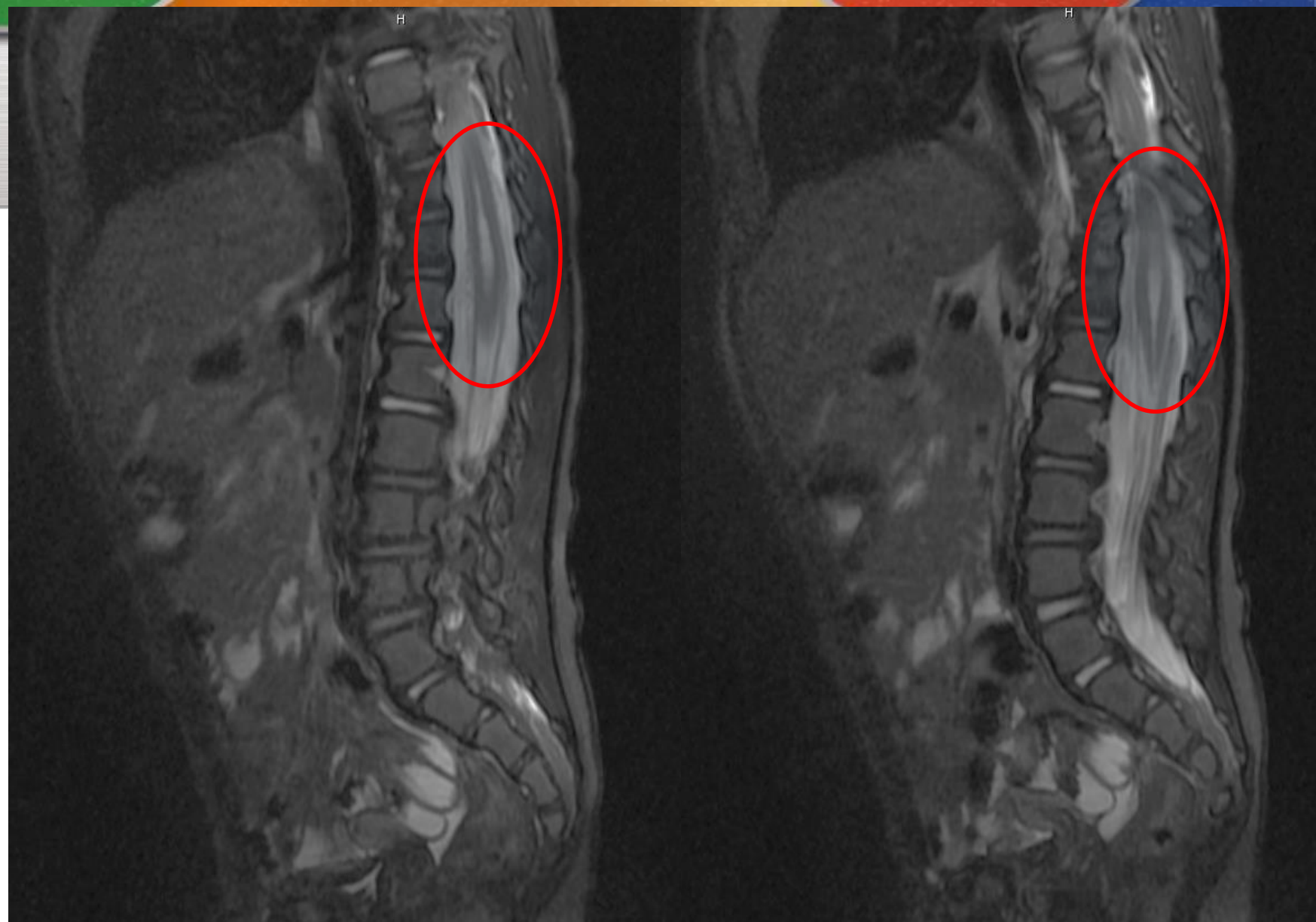
Surya N Mundluru MD, Dong-Phuong Tran MS, Charlie Johnston MD, Dan Sucato MD MS, Amy Lynn McIntosh MD, Lori Ann Karol MD, Brandon A. Ramo MD



UT Southwestern
Medical Center



10mo M



1M

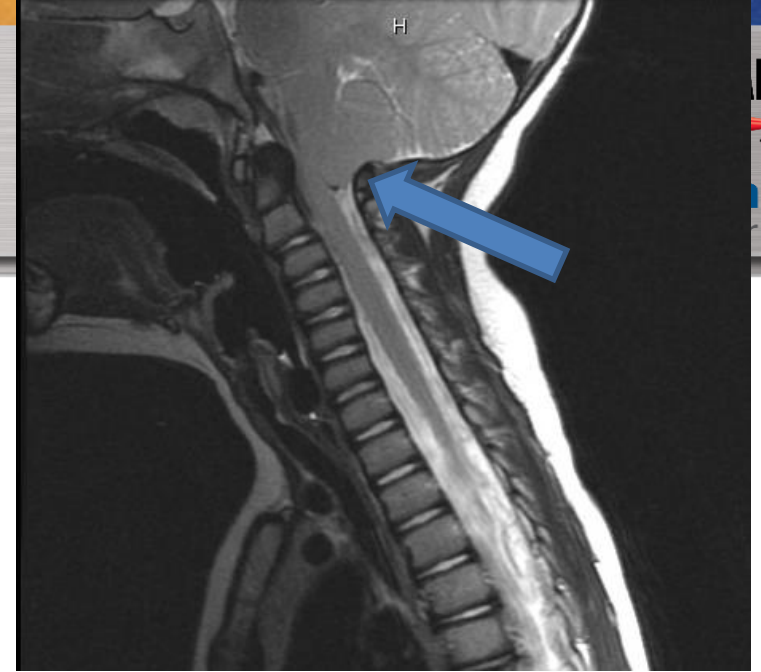
Mehta Casting

- For idiopathic infantile scoliosis
- in 1980, Mehta published series of cast treatment of infantile scoliosis on 136 patients
- Early Casting = Complete Correction
- Later Casting = Decreased Curve Magnitude



Intrathecal Abnormalities

- MRI are routinely performed at time of initial casting
- Typically if found, neurosurgical consultation is obtained prior to casting
- To our knowledge, the treatment effectiveness in patients with idiopathic-like deformity and known intrathecal abnormalities has never been described.



Hypothesis

idiopathic-like infantile-onset scoliosis
and **intrathecal abnormalities**



infantile idiopathic scoliosis
without spinal cord abnormalities



Methods

- IRB approved prospectively collected registry of patients with EOS
- Serial Mehta casting at a single institution between 2006 and 2014
- Demographic and anthropomorphic measurements were collected (see table) as were radiographic parameters
- No MRI, congenital, neuromuscular, or syndromic scoliosis, and less than 2 years follow up



Patients with at least 2 years f/u

5 patients with isolated syrinx, 1 low lying conus, 1 fibrolipoma, 2 with Chiari 1 Malformation and associated syrinx

Mehta Casting for Infantile Onset Scoliosis With and Without Intrathecal Abnormalities

| | Intrathecal (N = 9) | | Idiopathic (N=42) | | |
|---|---------------------|--------------|-------------------|--------------|--------|
| | mean | std dev | mean | std dev | pValue |
| | | (percentage) | | (percentage) | |
| Initial Presentation Patients with at least 2 years follow up | | | | | |
| Age (yrs) | 1.59 | 0.75 | 2.31 | 1.60 | 0.195 |
| Weight (kg) | 9.5 | 1.6 | 11.8 | 4.4 | 0.142 |
| Height (cm) | 76.8 | 6.8 | 85.8 | 15.8 | 0.122 |
| Armspan (cm) | 74.7 | 7.5 | 87.0 | 19.3 | 0.172 |
| Thoracic Height (cm) | 12.9 | 1.5 | 14.1 | 2.3 | 0.144 |
| Rib Phase 2* | 5 patients | 56.0% | 16 patients | 39.0% | 0.464 |
| RVAD (deg) | 21.6 | 20.9 | 22.0 | 11.7 | 0.938 |
| Major Cobb (deg) | 52.4 | 14.2 | 46.4 | 12.1 | 0.191 |

Patients with at least 2 years f/u

Mehta Casting for Infantile Onset Scoliosis With and Without Intrathecal Abnormalities

| | Intrathecal (N = 9) | | Idiopathic (N=42) | | |
|-----------------------|---------------------|-------|-------------------|-------|-------|
| Most Recent Treatment | | | | | |
| Observation | 2 patients | 22.2% | 16 patients | 38.1% | 0.253 |
| Non-operative Bracing | 4 patients | 44.4% | 21 patients | 50.0% | |
| Operative | 3 patients | 33.3% | 5 patients | 11.9% | |

Patients with at least 5 years f/u

4 isolated Syrix

Initial Presentation Patients with at least 5 years follow up

| | | Intrathecal (N = 4) | | Idiopathic (N=13) | | |
|----------------------|--|---------------------|-------|-------------------|-------|-------|
| Age | | 1.63 | 0.87 | 1.95 | 1.21 | 0.634 |
| Weight (kg) | | 9.8 | 1.3 | 10.7 | 3.6 | 0.643 |
| Height (cm) | | 78.9 | 6.2 | 82.3 | 12.4 | 0.608 |
| Armspan (cm) | | 74.5 | 5.7 | 81.9 | 15.8 | 0.456 |
| Thoracic Height (cm) | | 13.0 | 1.5 | 14.1 | 1.3 | 0.171 |
| Rib Phase 2* | | 3 patients | 75.0% | 4 patients | 30.0% | 0.250 |
| RVAD (deg) | | 15.8 | 7.5 | 20.5 | 11.1 | 0.436 |
| Major Cobb (deg) | | 52.5 | 13.6 | 44.3 | 9.8 | 0.200 |

Patients with at least 5 years f/u

| Initial Presentation Patients with at least 5 years follow up | | | | | |
|---|---------------------|-------|-------------------|-------|-------|
| | Intrathecal (N = 4) | | Idiopathic (N=13) | | |
| Most Recent Treatment | | | | | |
| Observation | 0 patients | 0.0% | 4 patients | 30.8% | 0.369 |
| Non-operative Bracing | 2 patients | 50.0% | 6 patients | 46.2% | |
| Operative | 2 patients | 50.0% | 3 patients | 23.1% | |
| # of Casts | | | | | |

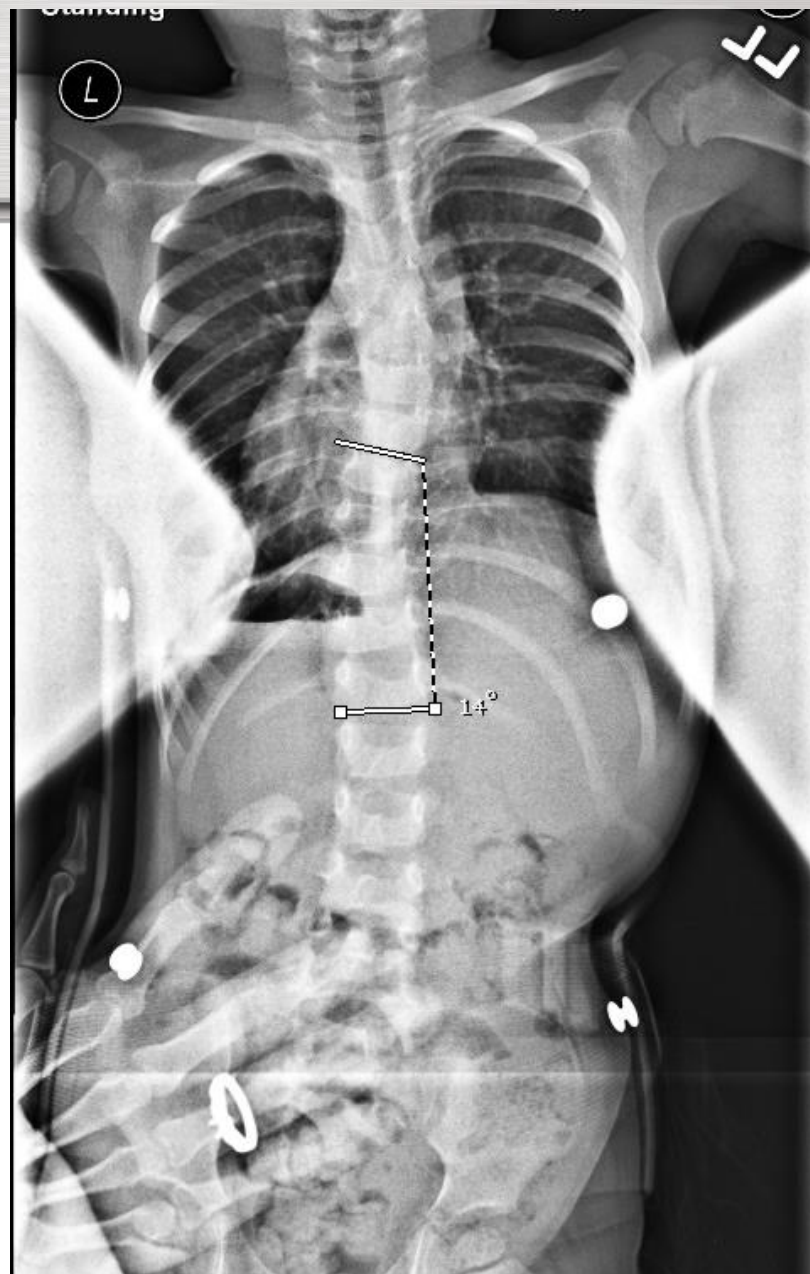
- Initial:
 - weight,
 - height,
 - arm span,
 - rib phase,
 - RVAD,
 - major Cobb,
 - thoracic height
- No different between both groups.
- Final:
 - thoracic height,
 - major cobb,
 - number of casts, and
 - final treatment
- No different at 2 and 5 years.
- No neurologic complications occurred in either group.

Limitations

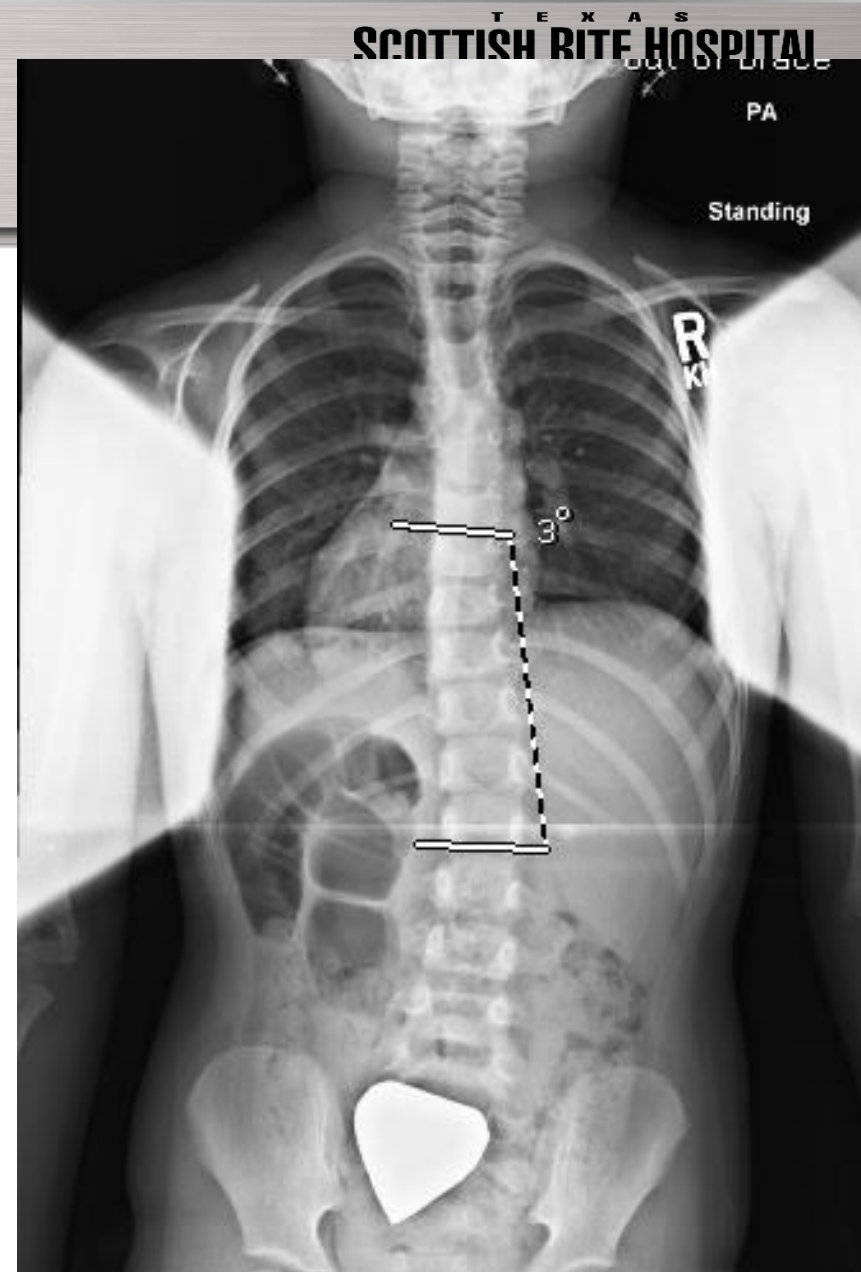
- High variability of pathology
- Small sample size in intrathecal group



1M



2+2M



5+3M

Conclusions

- Mehta casting is a proven treatment for patients with infantile onset scoliosis.
- This is the first study looking at its effectiveness in patients with idiopathic-like scoliosis in the setting of MRI-proven intrathecal abnormalities.
- Small series in past have shown that patient with intrathecal abnormalities have higher likelihood to progress to surgery
- This prospective study shows that there is no difference in patients with and without intrathecal abnormalities on overall outcomes, including number of casts, complications, and final treatment at minimum 2 years.