Can We Predict Dominant Compensatory Curves in Congenital Scoliosis?

Myung-Jin Cha, William Gabriel Elnemer, Pediatric Spine Study Group, Paul D Sponseller¹

¹Children's Bloomberg Center

INTRODUCTION:

Patients with congenital scoliosis are at risk of developing a dominant compensatory (DC) curve as they grow. We aim to identify the characteristics of patients who develop a dominant compensatory curve. METHODS:

The Pediatric Spine Study Group database was searched for congenital scoliosis patients who had pre-operative X-rays over at least 2 years of natural growth (n=307). Characteristics such as type of congenital anomaly and its vertebral level, congenital and compensatory cobb angle at initial and latest follow up were identified. Comparisons of vertebral level and type of congenital anomaly via paired Student's t-test were made between the DC cohort and 91 congenital scoliosis patients without DC (non-DC cohort).

RESULTS:

Out of 307 congenital scoliosis patients, 17 patients were identified as having a DC via X-rays. DC cohort had a congenital anomaly at L4 or more caudal (17.6%) more often than non-DC cohort (0%) (p<0.001) (Fig. 1). DC cohort also had a congenital anomaly at T5 or more cranial (47.1%) more often than non-DC cohort (22%) (p<0.001) (Fig. 1). Hemivertebrae were seen more often in the DC cohort than in non-DC cohort (p<0.001). At latest follow up, the congenital and compensatory curves in DC cohort measured 55±19 degrees and 73±24 degrees, respectively. DISCUSSION AND CONCLUSION:

Dominant compensatory curve is a rare sequel of congenital scoliosis. It was associated with vertebral anomaly at L4 or more caudal or at T5 or more cranial and hemivertebra. DC tended to show significant axial deformity more pronounced than the congenital curve. These characteristics give clinicians a picture of the patient whose congenital curve may be prioritized for treatment.

