INTRODUCTION

- Scoliosis is a spinal abnormality secondary to curvature of the spine.
- The three main forms of scoliosis are idiopathic, congenital, and neuromuscular.
- Cerebral palsy (CP) is a non-progressive injury to the premature brain and is the most common cause of spasticity in pediatric patients that can require medical intervention to assist in improving functional status and mobility.
- Cerebral palsy can be classified based on
  - Gross motor functional abilities from I (functional ambulator without any deficit) to V (dependent for any type of mobility)
  - Location affected from hemiplegic, diplegic, triplegic, and quadriplegia
  - Symptoms secondary to location of brain injury (spastic, dyskinetic, ataxic, mixed).
- Spasticity secondary to CP can lead to contractures without medical interventions and result in hip subluxation, hip dislocation, and a neuromuscular scoliosis.
- Objective: To determine if pediatric patients with cerebral palsy (CP) with a quadriplegic type of CP have a stronger correlation of developing scoliosis compared to other types of CP.

METHODS

- Design: Retrospective cross-sectional study
- Setting: Tertiary Pediatric Rehabilitation Outpatient Clinic
- Participants: 500 subjects were identified by an informatics search from a quality improvement project classifying patients with cerebral palsy. 494 subjects met inclusion criteria, and those were analyzed to determine factors associated with increased radiographic Cobb angle measurements
- Main Outcome Measures:
  - Cobb angle measurement analysis by radiographic imaging of spine and orthopedic surgery evaluation
  - Location of CP involvement
  - Age
  - Weight
  - Gross Motor Functional Classification System

RESULTS

- Using an analysis of variance, a statistically significant difference in Cobb angle (p<0.0001) was found between quadriplegic patients (mean 42.7°, standard deviation ±32.9°) compared to hemiplegic (9.1°, ±3.9°), diplegic (13.5°, ±6.9°), and trip legic (17.7°, ±16.2°) patients after controlling for both weight and age.

CONCLUSION

- In comparing patients with CP, those with quadriplegic involvement or GMFCS level V patients had an increased amount of scoliosis compared to those with different locations of involvement or improved functional mobility.

REFERENCES

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- Using an analysis of variance, a statistically significant difference in Cobb angle (p=0.0001, r=0.40) between increasing age and increased Cobb angle
- However, no statistically significant correlation related to weight.
- Patients with GMFCS level V had greater Cobb angles compared to all other GMFCS levels (p<0.05).
- Using a Spearman correlation between hip dysplasia and Cobb Angle showed no significant correlation (p=0.1022)