

Surgery for Neuromuscular Scoliosis Is Associated with Reduced Pulmonary Mortality in Children with Cerebral Palsy

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INTRODUCTION:

Scoliosis is common in children with cerebral palsy (CP). Severe scoliosis leads to decreased health related quality of life (HRQoL) and pulmonary compromise. Scoliosis surgery in CP patients increases HRQoL and reduces caregiver burden, but effects of scoliosis surgery on pulmonary function and mortality remain obscure. The purpose of this study was to compare mortality and primary causes of deaths in scoliotic children with CP with and without spinal deformity surgery.

METHODS: Four-hundred-seventy-four children who had been diagnosed with CP and neuromuscular scoliosis between 1996 and 2022 were identified from national population-based registries. Two-hundred-thirty-six had not been operated and 238 had been operated for scoliosis during the median follow up of 17.8 (IQR 11.7-25.7) and 23.0 (IQR 18.4-28.2) years, respectively. Cohorts were compared for comorbidities, mortality, and causes of death.

RESULTS:

Both groups had similar neurological, respiratory, and gastroenterological comorbidities. During the follow up, mortality was higher in the non-surgically treated group than in the surgically treated group (n=38/236, 16% vs. n=29/238, 12%, p=0.047). In patients with non-surgical treatment, cause of death was respiratory in 76.3% (29/38) and 37.9% (11/29) in patients with surgical treatment of scoliosis (OR 5.27, 95% CI 1.83 – 15.21, p=0.002). Neurological causes of death were more common in surgically treated patients than in non-surgically treated patients, 44.8% (13/29) and 15.8% (6/38), respectively (OR 4.33, 95% CI 1.39 – 13.53, p=0.009).

DISCUSSION AND CONCLUSION:

Surgical treatment of scoliosis associates to reduced mortality due to respiratory causes in children with cerebral palsy and scoliosis.

Figure 1. Survival function showing the risk of death in non-surgically treated and surgically treated scoliosis patients with cerebral palsy starting at the age of surgery (median 12.8 (IQR 9.2-15.2) years of age (p=0.047).

