Children's Hospital of Philadelphia
PolicyLab

Lower Extremity Neuromotor Function and Short-Term Ambulatory Potential following in utero Myelomeningocele Surgery

Date:

Jan 2009
Visit Article

OBJECTIVE: To evaluate lower extremity neuromotor function (LENF) and short-term ambulatory potential following fetal myelomeningocele (fMMC) closure.

METHODS: Retrospective chart review of 54 children that underwent fMMC closure at our institution prior to the NIHCD-MOMS trial. Neonatal LENF was compared to predicted function based on spinal lesion level assigned by prenatal ultrasound. Ambulatory status was classified as independent walkers (walks without assistive appliances), assisted walker (requires walking aid), and non-ambulatory (wheelchair bound).

RESULTS: Thoracic, lumbar, and sacral level lesions were present in 4, 44 and 6 fMMC infants, respectively. 31/54 of fMMC children (57.4%; median: 2 levels, range: 1-5) had better than predicted, 13/54 (24.1%) same as predicted and 10/54 (18.5%; median: 1 level, range: 1-2) worse than predicted LENF at birth. At a median follow-up age of 66 months (36-113), 37/54 (69%) walk independently, 13/54 (24%) are assisted walkers, and 4/54 (7%) are wheelchair dependent. The strongest factors predicting a lower likelihood to walk independently were higher-level lesion (>L4, $p = 0.001$) and the development of clubfoot deformity after fetal intervention ($p = 0.026$). Despite the observed improved ambulatory status, structured evaluation of coordinative skills revealed that the majority of independent ambulators and all children that require assistive devices to walk experience significant deficits in lower extremity coordination.

CONCLUSIONS: We observed that fMMC surgery in this highly selective population results in better than predicted LENF at birth and short-term ambulatory status. However, fMMC toddlers continue to demonstrate deficits in movement coordination that are characteristic for children with spina bifida.

Authors:

Danzer E, Gerdes M, Bebbington MW, Sutton LN, Melchionni J, Adzick NS, Wilson RD, Johnson MP