



Prenatal repair of myelomeningocele: Experience in Hospital Universitari Vall d'Hebron, Barcelona. Part II: Neurological and postnatal outcomes

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Objective

To analyse the neonatal neurological outcomes after prenatal surgical repair of fetal myelomeningocele in Hospital Universitari Vall d'Hebron (Barcelona).

Methods

Observational prospective study including patients affected by myelomeningocele, treated in our center from March-2011 to January-2016 with prenatal surgery. Three groups are contemplated: O) Open approach, with 'patch and glue' coverage technique, F1) Fetoscopic approach ('patch and glue' technique), F2) Fetoscopic approach (skin closure technique). Presurgical fetal evaluation included the sonographic estimation of the anatomical and the segmental neurological levels of the lesion as previously described by our group. Postnatal standard neurological examination was performed. The state of the lesion at birth was classified as 1) Covered 2) Cutaneous defect requiring minor or no reparation 3) Uncovered. Neonatal neurological outcomes were described and compared between groups.

Results

Twenty-eight fetuses with myelomeningocele were operated in our center. Group O included 7 patients (23 first months), group F1 had 12 cases (23 months) and group F2 included 9 cases (13 last months). The median gestational age at delivery was 31. 4 weeks (group O), 36. 9 weeks (group F1) and 34. 3 weeks (group F2), respectively. There was a neonatal death in group O and an intrauterine death in group F2, both at 26 weeks. A ventriculo-peritoneal shunt was needed in 100% (O), 91. 7% (F1) and 44. 4% (F2) of the cases, respectively. Four cases in group F1 had an uncovered lesion at birth and the postnatal neurological level worsened from 1 to 3 levels with respect to the presurgical estimation. The rest of the patients in all groups had a complete coverage of the lesion or a minor skin defect, and the postnatal neurological level remained the same before and after birth, except for 2 cases (groups O and F2, S1 to L5). The concordance between the prenatal anatomical level estimated by ultrasound and the neurological level of lesion assigned at the postnatal examination was poor (weighted kappa = 0. 03).

Conclusion

In our experience the prenatal correction of myelomeningocele helps preventing the 'second hit' damage of the neural tissue. The skin closure technique (group F2) dramatically reduced the need for ventriculo-peritoneal shunting, probably for its better watertight coverage. In addition, when the defect was properly covered, function was preserved in all groups. The anatomical level does not correlate to neurological level thus that is not a good predictor for postnatal motor outcomes.