

Oral presentation

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Myelomeningocele in fetal rabbit: effect of preterm delivery and corticosteroid treatment

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from 49th Annual Meeting of the Society for Research into Hydrocephalus and Spina Bifida
Barcelona, Spain, 29 June – 2 July 2005

Published: 30 December 2005

Cerebrospinal Fluid Research 2005, **2**(Suppl 1):S3 doi:10.1186/1743-8454-2-S1-S3

Background

Damage of neural elements in myelomeningocele seems to be progressive during gestation because of amniotic fluid chemical contact. Corticosteroids administration and preterm delivery seem to improve the outcome in gastroschisis (bowel exposition to amniotic fluid) We studied the effect of preterm delivery and corticosteroid treatment in a model of myelomeningocele (MMC) in the rabbit fetus.

Material and Methods

Twelve New Zealand White rabbits underwent laparotomy and hysterotomy at 23 days of gestation. Fifty-nine out of 107 fetuses underwent lumbar laminectomy (3 to 4 levels). Dura was opened to expose the neural elements to the amniotic fluid. Six rabbits underwent caesarean section on gestational day 31 for fetal harvest; three of them had no treatment (group T) and three received corticosteroid treatment (group TC). The other six rabbits underwent caesarean section on gestational day 29 for fetal harvest (preterm delivery); three of them had no treatment (group P) and three received corticosteroid treatment (group PC). Alive newborns were clinically, neurophysiologically and histologically analyzed.

Results

None of mothers died during the procedure. After birth, newborns show lower weight and higher vitality in corticosteroids treated groups (TC and PC). Deformity of lower extremities was less important in groups TC (Term and Corticosteroids) and P (Preterm) and no deformity was observed in group PC (Preterm and Corticosteroids). Lower kyphosis was observed in group PC (Preterm and

Corticosteroids). Pain related and spontaneous mobility of lower extremities was higher in groups treated with corticosteroids (TC and PC). Only newborns at term (T and TC groups) show response to evoked potentials (CMEP's). The response was early and higher in group treated with corticosteroids (TC). Histologically, we observed progressive lesion of the spinal cord. Groups treated with corticosteroids (TC and PC) show less inflammatory response. Arnold Chiari Malformation was present in all groups.

Conclusion

Preterm delivery and prenatal corticosteroid therapy seem to be an effective treatment to decrease neural injury in myelomeningocele fetuses. More studies in this line are required to obtain consistent conclusions.