

Assessment of intraventricular pressure in fetuses with hydrocephaly: initial experience

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Objectives: Our aims are to evaluate the feasibility and safety of intracranial manometry in fetuses with hydrocephaly and to estimate the variation of pressure after drainage of the ventricular cavity.

Methods: 7 fetuses of singleton pregnancies between 20-34 weeks, presenting progressive obstructive hydrocephaly underwent intra-uterine cephalocentesis at the level of the posterior horn of the lateral ventricle. Assessment of ICP was made by the connection of a sterile high-sensitive pressure measurement system through an innovative technique developed by us. Pressure was registered in a digital monitor. We performed slow straining of cerebrospinal fluid (CSF) in the fetuses with high pressure and reassessed high intracranial pressure (ICP). The procedure was executed with maternal sedation. The patients received tocolysis and stayed in hospital for 3 days after the procedure.

Results: The procedure was technically successful in all fetuses. In 6 cases PIC was above 10, with a mean of 13,86 mmHg, confirming the hypertensive status. The only case with pressure near normal was related to cytomegalovirus infection. The difference between means before and after drainage of CSF were statistically significant (paired T-test: $p < 0,001$; CI 4,8-12,3). There was 1 case of preterm rupture of membranes 48 hours after the procedure.

Conclusions: Assessment of ICP is feasible and safe with this technique. High pressure levels were detected in pure obstructive cases, and decreased after the drainage, without bradycardia or fetal acute complications. These findings may provide background and prerequisites for the retake of fetal neurosurgery and support further studies.