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Effect of surgical treatment of intracranial cysts in children and infants – Lessons learned

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Introduction: The microsurgical or endoscopic fenestration of intracranial cysts is usually a successful strategy in most cases. In small children, however, the volume of the cysts compared to volume of whole cerebrospinal fluid (CSF) compartment may often be too large to be accommodated by the CSF circulation, thus often requiring a shunting procedure. In an attempt to define an optimal treatment strategy, we retrospectively analyzed our experience.

Methods: We conducted retrospective review of charts and images of patients aged 0-17 years operated on at our department between 2007 and 2013 for simple intracranial, mostly arachnoidal cysts. We specifically compared surgical results from those aged 0-18 months at the time of surgery with the rest of the sample.

Results: 93 children (59 boys and 34 girls) were operated on, median age 5 years (range 8 days – 17 years); 31% presented within the two first years of life. 86 cases were primarily treated by cyst fenestration and 7 by shunt procedure, respectively. Multiple operations were needed in 29 patients (31%); there was particularly high number of procedures (median 2 per patient) in those younger than 1 year. Secondary shunt placement was necessary in 9 and the third ventriculostomy in 2 of primarily fenestrated cases, whereas only one of primarily shunted patient received fenestration later in the follow-up period. At least one surgical or endoscopic re-fenestration was needed in 20 cases (23%).

Conclusion: In our experience, simple surgical fenestration of intracranial cysts tends to fail more frequently in infants as they more often present with large-sized cysts and the capacity of CSF compartment to accommodate additional volume is limited. Derivational procedures, on the other hand, expose the child to the risk of shunt-related morbidity. Optimal surgical strategy is therefore difficult to generalize and must usually be tailored to each individual patient.