Intracranial arachnoid cyst case series

2023

Data of children with unruptured IACs (IAC group) and those with SDH secondary to IACs (IAC-SDH group) were analysed. Nine factors, sex, age, birth type (vaginal or caesarean), symptoms, side (left, right, or midline), location (temporal or non-temporal), image type (I, II, or III), volume, and maximal diameter, were selected. IACs were classified as types I, II, and III according to their morphological changes observed on computed tomography (CT) images.

Results: There were 117 boys (74.5%) and 40 girls (25.5%); 144 (91.7%) patients comprised the IAC group and 13 (8.3%) comprised the IAC-SDH group. There were 85 (53.8%) IACs on the left side, 53 (33.5%) on the right side, 20 (12.7%) in the midline region, and 91 (58.0%) in the temporal region. The univariate analysis showed significant differences in age, birth type, symptoms, cyst location, cyst volume, and cyst maximal diameter ($P < 0.05$) between the two groups. Logistic regression using the synthetic minority oversampling technique model showed that image type III and birth type were independent factors that influenced SDH secondary to IACs ($\beta 0 = 4.143$; β for image type = -3.979; β for birth type = -2.542), and that the representative area under the receiver-operating characteristic curve value was 0.948 (95% confidence interval, 0.898-0.997).

Conclusion: IACs are more common in boys than in girls. They can be divided into three groups according to their morphological changes on CT images. Image type III and caesarean delivery were independent factors that influenced SDH secondary to IACs [1)].

2020

A total of sixty three patients (total 106 MRI examinations) with endoscopic cystocisternostomy or cystoventriculostomy of arachnoid cyst underwent 1.5-3 T MRI to determine flow patency between June 2007 and April 2018. Postoperative results, the patients' clinic and arachnoid cyst volume were used to confirm stoma and flow patency in MRI.

The stoma was open and functional in forty three patients. Minimal flow was detected in five patients. Fifteen patients with closed stoma (total 17 MR images) were evaluated with the clinician. Patients' clinic, physical examination, and growth (for pediatric patients) were evaluated. Three of fifteen patients were re-operated. Operative findings and postoperative follow-up MR imaging findings were correlated with our preoperative MRI results. The findings were in compliance in both groups (operated-non-operated groups).

3D SPACE T2 and 3D CISS are effective sequences in addition to other routine conventional sequences to evaluate stoma and flow patency [2)].

2015

A total of 13 patients < 1 year of age with intracranial cysts were operated on between 2005 and 2013. Six presented with hydrocephalus, four presented with seizure, one with abnormal head

movement, and two had large asymptomatic cysts. Four children had infratentorial arachnoid cysts; of these, three required a transaqueductal procedure. All the patients underwent endoscopic cystoventriculostomy and/or cystocisternostomy and third ventriculostomy in selected cases with a biopsy from the cyst wall.

Clinically and radiologically all children showed significant improvement with an average follow-up ranging from 8 months to 6 years. There were no intraoperative complications. Three children developed subdural hygroma that subsided with conservative treatment, and one child with pseudomeningocele required a cystoperitoneal shunt at a later date.

A symptomatic intracranial arachnoid cyst or a large asymptomatic cyst are indications for neurosurgical intervention, and endoscopy is a good tr.eatment option with the advantage of minimal invasiveness and fewer complications. Endoscopic surgery has to be tailored according to the location and presentation [3)]

Data from 69 patients with cerebral arachnoid cysts treated in our institution between 1997 and 2007 were reviewed.Cysts were located infratentorially in 20% (n = 14) and supratentorially in 80% (n = 55); of these 73% (n = 40) were in the middle cranial fossa. Mean cyst size was 61 mm (range 15-100 mm). The most common symptoms were headache (51%), dizziness (26%), cranial nerve dysfunction (23%), seizure (22%), nausea and vomiting (18%), and hemiparesis (13%). Surgery was performed in 83% (n = 57). First-line treatments were microsurgical fenestration (n = 30), endoscopic fenestration (n = 15), and cystoperitoneal/ventriculoperitoneal shunting (n = 11). More than one intervention was needed in 42% (n = 24). A particularly high rate of relapse (73%) was observed after endoscopic fenestration, following which 11 patients were admitted for reoperation. By comparison, only eight patients (28%) managed with microsurgical fenestration and four (36%) in the shunted group needed a second surgical procedure. Mean follow-up was 30 months. In the surgical series 79% (n = 45) had a good outcome.We conclude that the surgical treatment of arachnoid cysts has an overall good outcome. In our institution the best results were obtained with microsurgical decompression through craniotomy [4)].

During the period from 1985 to 1992 we treated 43 patients with intracranial arachnoid cysts (ACs). In this retrospective study Koch et al., assessed the outcome of these patients with regard to non-specific symptoms such as headaches and epileptic seizures. Twelve patients had headaches of obscure origin and a mostly temporal located AC. Six of these 12 underwent surgery. After the operation 4 patients (4/6) had no further headaches, two remained unchanged. The other 6 conservatively treated patients (6/12) had further headaches. Ten of the 43 patients had epileptic seizures. One patient dropped out of the survey. Six of the 9 remaining patients had a temporal AC. Four of these 6 underwent surgery; postoperatively the seizure disease of 3 patients (3/6) declined. One patient was unchanged. Two patients with epileptic seizures and a temporal AC did not undergo surgery and both improved. Three patients with seizures had a convex located AC. Two of these 3 underwent surgery. The first patient improved postoperatively, the second patient remained unchanged. There was a reduction in the seizures of the medically treated patient. It remains ambiguous, whether there is a relationship between epileptic seizures and intracranial ACs without obvious intracranial pressure signs. A review of the literature, however, showed mostly positive results concerning the surgical treatment of ACs under conditions of simultaneous epileptic seizures.

However, the results largely depend upon the definition of the decline of the seizures with regard to the postoperative follow-up, therefore we must remain skeptical. Therapy guidelines in the future not only depend on the clarification of the pathophysiology of the ACs, but also on a resonable outcome examination [5].

The clinical and radiographic findings, surgical treatment, and outcome in 16 pediatric patients with intracranial arachnoid cysts are reviewed. The clinical presentation reflected the anatomical location of the lesions. Computerized tomography or magnetic resonance imaging scans were diagnostic in all cases. Of the nine cysts treated primarily or secondarily by craniotomy for fenestration and drainage into the basilar cisterns, five recurred. Cyst-peritoneal shunting led to diminished cyst size and clinical improvement in all seven cases in which it was used as the initial treatment and in all four cases in which fenestration had been unsuccessful. The results in this series show that cyst-peritoneal shunting is the treatment of choice for most intracranial arachnoid cysts in children [6].

1)
Xu J, Wang J, Liu T, Wang Y, Chen F, Yuan L, Zhai F, Ge M, Liang S. Factors that influence subdural hemorrhage secondary to intracranial arachnoid cysts in children. World Neurosurg. 2023 Mar 10:S1878-8750(23)00324-8. doi: 10.1016/j.wneu.2023.03.029. Epub ahead of print. PMID: 36907272.
2)
Arslan A, Başarır M, Özek MM, Dinçer A. Postoperative patency assessment of Cystocisternostomy and Cystoventriculostomy stomas in cases with Arachnoidal cyst. Childs Nerv Syst. 2020 Jul;36(7):1415-1423. doi: 10.1007/s00381-019-04461-0. Epub 2019 Dec 21. PMID: 31865402.
3)
Raju S, Sharma RS, Moningi S, Momin J. Neuroendoscopy for Intracranial Arachnoid Cysts in Infants: Therapeutic Considerations. J Neurol Surg A Cent Eur Neurosurg. 2015 Aug 4. [Epub ahead of print] PubMed PMID: 26241198.
4)
Holst AV, Danielsen PL, Juhler M. Treatment options for intracranial arachnoid cysts: a retrospective study of 69 patients. Acta Neurochir Suppl. 2012;114:267-70. doi: 10.1007/978-3-7091-0956-4_52. PubMed PMID: 22327706.
5)
Koch CA, Voth D, Kraemer G, Schwarz M. Arachnoid cysts: does surgery improve epileptic seizures and headaches? Neurosurg Rev. 1995;18(3):173-81. Review. PubMed PMID: 8570064.
6)
Harsh GR 4th, Edwards MS, Wilson CB. Intracranial arachnoid cysts in children. J Neurosurg. 1986 Jun;64(6):835-42. PubMed PMID: 3701434.