Ependymal cyst endoscopic fenestration

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Glioependymal cysts are rare congenital lesions of the central nervous system. Reported surgical treatments of these lesions have varied and yielded mixed results, and the optimal surgical strategy is still controversial.

Alvarado et al. report the clinical and surgical outcomes for three adult patients successfully treated with neuroendoscopic fenestration into the ventricular system. The patients had presented with symptomatic glioependymal cysts in the period from 2013 to 2016. All underwent minimally invasive neuroendoscopic fenestration of the glioependymal cyst into the lateral ventricle via a stereotactically-guided burr hole. Presenting clinical and radiological findings, operative courses, and postintervention outcomes were evaluated. All three patients initially presented with symptoms related to regional mass effect of the underlying glioependymal cyst, including headaches, visual disturbances, and hemiparesis. All patients were successfully treated with endoscopic fenestration of the cyst wall into the lateral ventricle, where the wall was thinnest. Postoperatively, all patients reported improvement in their presenting symptoms, and neuroimaging demonstrated decompression of the cyst. Clinical follow-up ranged from 4 months to 5 years without evidence of reexpansion of the cyst or shunt requirement. Compared to open resection and shunting of the cyst contents, minimally invasive endoscopic fenestration of a glioependymal cyst into the ventricular system is a safe and effective surgical option. This approach is practical, is less invasive than open resection, and appears to provide a long-term solution ¹⁾.

Case series

Twelve pediatric patients (mean age 4.3 years) with symptomatic intraventricular ependymal cysts

(IVECs) were the subject of this study. The cyst was located inside the lateral ventricle in all cases (100%), it was present in trigone (10 patients, 83.3%), and in the temporal horn (2 patients, 16.7%). Concomitant hydrocephalus was present in two patients (16.7%). All patients underwent operations through a purely endoscopic procedure. Communication of the cyst with the subarachnoid space was performed in six patients (50%); endoscopic cystocisternostomy was performed in four patients (33.3%), and endoscopic cystoventriculostomy in two patients (16.7%).

Postoperative clinical improvement associated with a postoperative reduction in cyst size was encountered in ten patients (83.3%). Improvement of hydrocephalus occurred in both patients who had hydrocephalus (100%). There were no deaths or permanent morbidity. During the follow-up period (mean 44.3 months), none of the patients required a repeat endoscopic procedure due to the recurrence of symptoms or an increase in cyst size.

Intraventricular ependymal cysts can be effectively treated by endoscopy. Endoscopic fenestration of the cyst wall into subarachnoid space, basal cisterns, or ventricular system can be used in the treatment of these patients with postoperative symptomatic improvement and reduction of cyst size. The procedure is simple, effective, minimally invasive, and associated with low morbidity and mortality rates ².

6 patients harboring an intracranial ependymal cyst. The cyst location was frontoparietal, parietal, occipital, or mesencephalic. Patients presented with several symptoms according to the location of the cyst (i.e., epilepsy, hemiparesis, diplopia, hemianopsia). All patients were treated by navigation-guided endoscopic fenestration of the cyst to the ventricular system. Two complications occurred: a cerebrospinal fluid leak, which was managed surgically by wound revision without the need for cerebrospinal fluid shunting, and a chronic subdural hematoma, which occurred 6 weeks after surgery and required burr hole evacuation. The follow-up period ranged from 6 months to 9 years. Magnetic resonance imaging revealed that all cysts decreased in size. Symptoms improved in all patients.

Endoscopic fenestration of ependymal cysts to an adjacent ventricular cavity is a treatment option with excellent long-term results and minimal morbidity. It should be considered the therapy of choice to avoid craniotomy and shunt dependence ³⁾.

8 patients who were treated in their department for symptomatic mesencephalic ependymal cysts in the past 10 years. The patient age ranged from 22 to 60 years with a mean age of 44 years. In 4 cases the authors performed a suboccipital infratentorial supracerebellar approach by using endoscope-assisted microsurgery. The other 4 patients underwent a pure endoscopic procedure over a frontal bur hole trepanation.

Four patients became symptom free, and the remaining 4 improved significantly after a mean followup duration of 38.5 months (range 5-119 months). One patient underwent 2 operations: first a ventriculocystostomy and 4 months later endoscopic third ventriculostomy because of recurrent hydrocephalus. In 1 case a second surgery was necessary because of a wound infection. In all of the patients an adequate fenestration of the cyst was achieved.

A symptomatic mesencephalic ependymal cyst is an indication for neurosurgical intervention. These cysts can be treated successfully and most likely definitively by a pure endoscopic or endoscope-

assisted keyhole neurosurgical technique. There were no morbid conditions or death due to the procedures in this group of 8 patients. Therefore, the authors regard these surgical procedures to be good alternatives to treatments such as shunt placement or stereotactic aspiration of the cysts ⁴.

Case reports

A 9-year-old boy presented with a mild headache. MRI revealed a cyst with cerebrospinal fluid signal intensity, occupying the body and trigone of the right lateral ventricle. Conservative treatment with regular clinical and radiological follow-up was chosen because neurological examination findings were normal. Three years later, the patient experienced blurred vision with a temporal crescent defect in the left eye. Endoscopic cyst fenestration was performed, and the pathological findings indicated a glioependymal cyst. After surgery, the monocular temporal crescent disorder was resolved. MRI indicated shrinkage of the cyst and improvement in the narrowing of the anterior calcarine sulcus. These findings suggested that the temporal crescent syndrome was caused by a lateral ventricular glioependymal cyst. In patients with monocular temporal crescent disorder without intraocular disease, a retrochiasmal lesion in the most anterior portion of the striate cortex should be considered ⁵⁾.

A 35-month-old girl with truncal ataxia was referred to the authors' hospital. Magnetic resonance imaging revealed a giant cystic mass extending from the anterior to the posterior cranial fossa. Hydrocephalus was caused by obstruction of the sylvian aqueduct. Endoscopic fenestration of the cyst wall was performed. Histochemical and immunohistochemical staining identified the lesion as a glioependymal cyst. Magnetic resonance imaging performed 8 months later suggested that the cyst originated from the tela choroidea. At 5-year follow-up, there was no tumor recurrence and she had fully recovered. The origin of glioependymal cysts is discussed, and the authors suggest that their origin is the tela choroidea ⁶.

A 30-year-old man developed acute hydrocephalus secondary to an obstruction of the cerebral aqueduct by a midbrain cystic lesion. After a ventriculoperitoneal shunt was placed to relieve symptoms of intracranial hypertension, the patient underwent a neuronavigation-assisted endoscopic fenestration of the cyst. A careful immunohistochemical staining confirmed the diagnosis of an ependymal cyst. An extensive review of the literature has revealed that this is the first report of a periaqueductal ependymal cyst with a definite histological diagnosis. This is a rare cause of acute non-communicating hydrocephalus but an important entity in the differential diagnosis⁷.

Case report from the HGUA

Clinical presentation of forgetfulness and recent memory impairment of approximately 10 years of evolution. Additionally, it is associated with nonspecific dizziness without object rotation and gait instability that has caused several falls. This clinical picture is intermittent, but 2 years ago, progressive visual loss began, leading to a cerebral MRI that revealed a left occipital cyst.

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Inferior right quadrantanopia on confrontation campimetry.



Left occipital cystic lesion. After gadolinium administration, no abnormal contrast enhancement is observed. The ventricles appear deformed due to the mass effect of the lesion, but there is no modification in the signal intensity of the parenchyma. The midline is not displaced.

Endoscopic cystoventriculostomy

The patient was positioned supine with a Mayfield skull clamp in place. The surgery was performed with the assistance of electromagnetic navigation. A left parietal incision was made, followed by an underlying minicraniotomy. The cyst was fenestrated endoscopically, targeting the ventricle and temporal horn. Hemostasis was achieved, and Spongostan was applied to the cerebral cortex. A hermetic dural closure was performed, and bone replacement was done using medilevel miniplates. The incision was closed in layers, and the skin was secured with surgical staples. The procedure proceeded without any complications.

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Alvarado AM, Smith KA, Chamoun RB. Neuroendoscopic fenestration of glioependymal cysts to the ventricle: report of 3 cases. J Neurosurg. 2018 Nov 1:1-5. doi: 10.3171/2018.7.JNS172501. Epub ahead of print. PMID: 30544360.

El-Ghandour NMF. Endoscopic treatment of intraventricular ependymal cysts in children: personal experience and review of literature. Childs Nerv Syst. 2018 Dec;34(12):2441-2448. doi: 10.1007/s00381-018-3965-9. Epub 2018 Sep 5. PMID: 30187181.

El Damaty A, Marx S, Fleck S, Schroeder HW. Neuroendoscopic Approach to Intracranial Ependymal Cysts. World Neurosurg. 2017 Jan;97:383-389. doi: 10.1016/j.wneu.2016.10.021. Epub 2016 Oct 14. PMID: 27751924.

Conrad J, Welschehold S, Charalampaki P, van Lindert E, Grunert P, Perneczky A. Mesencephalic ependymal cysts: treatment under pure endoscopic or endoscope-assisted keyhole conditions. J Neurosurg. 2008 Oct;109(4):723-8. doi: 10.3171/JNS/2008/109/10/0723. PMID: 18826361.

Yamaguchi I, Pooh KH, Azumi M, Takagi Y. Temporal crescent syndrome caused by a lateral ventricular glioependymal cyst: case report. J Neurosurg Pediatr. 2020 May 15;26(3):232-236. doi:

10.3171/2020.3.PEDS2021. PMID: 32413853.

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Morigaki R, Shinno K, Pooh KH, Nakagawa Y. Giant glioependymal cyst in an infant. J Neurosurg Pediatr. 2011 Feb;7(2):175-8. doi: 10.3171/2010.11.PEDS10270. PMID: 21284464.

Prieto R, Subhi-Issa I, Pascual JM. Ependymal cyst of the midbrain. Clin Neuropathol. 2013 May-Jun;32(3):183-8. doi: 10.5414/NP300563. PMID: 23254139.

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