Case Report

The sylvian fissure arachnoid cysts: diagnosis and endoscopic treatment

Pleşco A., Bajurea A.

PMSI Mather and Child Institut , Chisinau , Republic of Moldova
Public Institution State University of Medicine and Pharmacy "Nicolae Testemiţanu", Chisinau ,Republic of Moldova

Abstract

Chistul arahnoid al fisurii silviene: diagnosticul si tratamentul endoscopic

Chistul arahnoid al fisurii silviene (SAC) este o localizare bine recunoscută pentru chisturile arahnoide intracraniane la copii. Aceste tipuri de formațiuni chistice sunt depistate destul de frecvent la examenul imagistic intracranian la copii. Au fost raportate mai multe modalități de tratament, inclusive cele endoscopice. Raportam rezultatele clinice şi radiologice ale fenestratării endoscopice ale acestor chisturi.

Cuvinte cheie: Chisturi arahnoide, fisuri silvice, tratament chirurgical, copii.

Abstract

A Sylvian fissure arachnoid cyst (SAC) is a well-recognized location for an intracranial arachnoid cyst in the pediatric population. They are a frequent finding on intracranial imaging in children. Several treatment modalities have been reported. We report clinical and radiological outcome of fenestration of these cysts by endoscopy.

Keywords: arachnoid cysts ;Sylvian fissure,surgical treatment, children.

Correspondence to: e-mail: bajureaala@mail.ru; mob. +373 69187148

Introduction

The term arachnoid cyst is a congenital cerebrospinal fluid-filled lesion that arise during development from splitting of arachnoid membrane [5]. The first case of an intracranial arachnoid cyst was described by Bright in 1831 [10].

Arachnoid cysts can be found anywhere in the brain, but in 50-60 % occur in the Sylvian fissure [4, 6]. Cysts in the middle cranial fossa are found more frequently in males than females, they occur predominantly on the left side. Most arise as developmental anomalies [4]. Galassi and associates (1982) have pro-

vided a useful classification of the arachnoid cysts of the Sylvian fissure based on computed tomographic appearances. Type I: cyst is a small, biconvex, located in anterior temporal tip. No mass effect. Communicates with subarachnoid space on water-soluble contrast CT cisternogram (WS-CTC). TypeII: involves proximal and intermediate segments of Sylvian fissure. Completely open insula gives rectangular shape. Partial communication on WS-CTC. Midline displacement, if any, is minimal. Type III: involves entire Sylvian fissure. Marked midineshift. Boni expansion of middle fossa. Minimal communication on WS-CTC [1]. Clinical symptoms depend from the location of the cyst. Sylvian cysts may cause seizures and hemi-syndromes, headache [5].

Clinical case: The 5 years old patient, domiciled in Chişinău, district Ghidighici, was hospitalized on 15th June 2015, in the neurosurgical department of the " Institute of Mother and Child". The causes of his hospitalization were headaches complain, idiopathic intracranial hypertension, emesis, nausea, focal convulsive seizures, paresthesia of the right hand and the presence of a cyst in the Sylvian fissure, as presented on the MRI. It had been performed endoscopic cystocisternostomy on 25th December 2015.

The skin incision was performed 2cm upwards from the zygomatic process and the temporal muscle was incised. It was, also, done an incision of the menix, through a hole burr, by drilling the parietal capsule of the cyst cavity. Right after, the endoscope was inserted, the cyst had been inspected. It could be viewed the cortex with the cortical blood vessels and its anatomical features, such as the cerebral carotid artery, the optic nerve and the oculomotor nerve. With a propulsive force of the endoscope towards the prepontine cistern, it was performed a fenestration between the oculomotor nerve and the carotid artery. Therefore, it was achieved a way of communication with the prepontine cistern. Through the prepontine cistern it could be visualized the basilar artery, the oculomotor nerve and the abducens nerve.After the surgical treatment the neurological signs regressed.

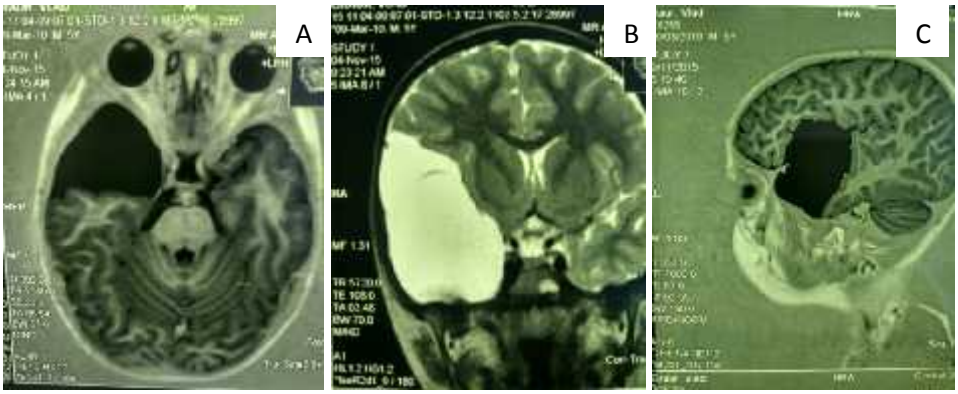

Fig. 1. Pre-operative MRI, the cyst appears with significant compression of the brain and midline displacement

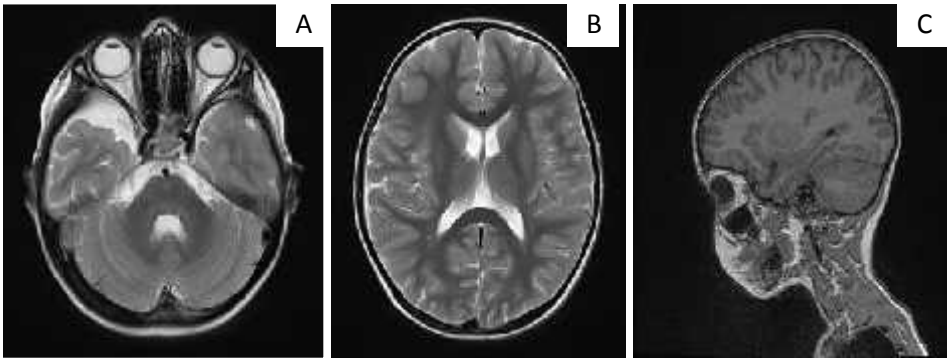

Fig. 2. Post-operative MRI, no mass effect without midline displacement

Discussions

Arachnoid cysts cause a wide spectrum of clinical symptoms. Often it is difficult to clearly establish the relation between the presence of an arachnoid cyst and problems reported by the patient, which may, although not necessarily, be due to chronically elevated intracranial pressure. In recent years, increasing attention is paid to cognitive disorders accompanying arachnoid cysts, such as memory disorders, attention disorders, or language function disorders [9]. Many authors recommend not treating arachnoid cysts that do not cause mass effect or symptoms. The surgical indication for asymptomatic arachnoid cysts remains controversial [2, 8]. In children however, asymptomatic cysts with a significant mass effect that may hinder the normal development of the adjacent brain tissue should be treated surgically [2, 3]. Symptomatic arachnoid cysts are an indication for surgery. They usually show a mass effect on MR imaging with flattening of cerebral gyri, midline shift, and/or ventricular compression. The optimal treatment for Sylvian arachnoid cysts is still under discussion. Surgical treatment options for arachnoid cysts are:

- Drainage by needle aspiration or burr hole evacuation. The advantages are simple and quick, but disadvantages are a high rate of cyst and neurologic deficit.
- Craniotomy, excising cyst wall and fenestrating it into basal cisterns.
- Endoscopic cyst fenestration through a burr hole.

The second and third treatment options have the next advantages: permits direct inspection of cyst, loculated cysts treated more effectively. The disadvantage is subsequent scarring that may block fenestration allowing re-accumulation of cyst.

- Shunting of cyst into peritoneum or into vascular system.

The advantage is low rate of recurrence and disadvantages - patient becomes “shunt dependent” and there is a risk of infection of foreign body (shunt).

Routine evaluation with CT or MRI is the procedure of choice because of its ability to demonstrate the exact location, extent, and relationship of the arachnoid cyst to adjacent brain. Further evaluation with CSF contrast or flow studies are necessary for the diagnosis of midline suprasellar and posterior fossa lesions: suprasellar cyst from dilated third ventricle, interemispheric cyst from porencephaly, posterior fossa cyst from Dandy-Walker malformation, cyst associated with isodense tumors [5, 9]. In Sylvian arachnoid cysts, the success rate is approx. 60–90% [7, 8]. Severe complications resulting in mortality and permanent morbidity are fortunately very rare (in most reports in the literature). Subdural hematomas (10%), CSF leaks (5%), and meningitis (5%) were the most frequently reported complications [7, 8].

Conclusions

The endoscopic treatment of the sylvian fissure arachnoid cysts is the most effective option and it should seriously be considered as the best choice in therapy. If the endoscopic procedure fails,craniotomy, excising cyst wall and fenestrating it into basal cisterns is the second line treatment. Shunting should be avoided when-ever possible.

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