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Image Report

Giant arachnoid cyst in adult presented with secondary epileptiform activity

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Received : 21 June 2021
Accepted : 30 July2021
Published : 24 August 2021

DOI
10.25259/SNI_617_2021

Quick Response Code:

ABSTRACT

Background: Current studies contain controversies regarding indications and preferable surgical techniques for arachnoid cysts.

Case Description: In this paper we present case report of giant arachnoid cyst of right frontal lobe in young left-handed adult with headache, MRI sings of brain compression and epileptiform activity on EEG, treated by microsurgical cystostomy.

Conclusion: We add a case of young adult with tension headaches and possible sub-clinical seizures due to arachnoid cyst, whose symptoms disappeared after surgical management of the cyst, including normalization of EEG.

Keywords: Adult, Arachnoid cyst, Cystostomy, Epilepsy, frontal lobe

INTRODUCTION

Arachnoid cysts (ACs) are common benign congenital intracranial lesions, most of them are an accidental finding.[1] Pathogenesis of cysts formation is not clear and presumably associated with splitting of arachnoid layer during embryogenesis. Rare localization of supratentorial ACs is interhemispheric fissure. Usual clinical appearances of such ACs are headache, seizures, and focal deficit. There is no generally accepted approach to surgical treatment of ACs. We discuss a case of giant AC with sings of brain compression and epileptiform activity on electroencephalography (EEG) without seizures.

CASE DESCRIPTION

A Left handed adult patient with head deformity and everyday intensive headaches in the right temporal region, worsening with straining, presented in our neurosurgical department. Magnetic resonance imaging (MRI) scans showed giant arachnoid cyst of the right hemisphere [Figure 1].

No cognitive impairment was found: Mini Mental State Examination scale 30/30, Frontal Assessment Battery 18/18, Montreal Cognitive Assessment scale 30/30, Trial Making Test (TMT) A 27 s, TMT B 69 s, and Hamilton depression rating scale 5. Neurological examination showed no focal deficit. Ophthalmological examination reviled no signs of increased intracranial pressure (ICP). EEG detected epileptiform activity from the right frontal lobe [Figures 2a and

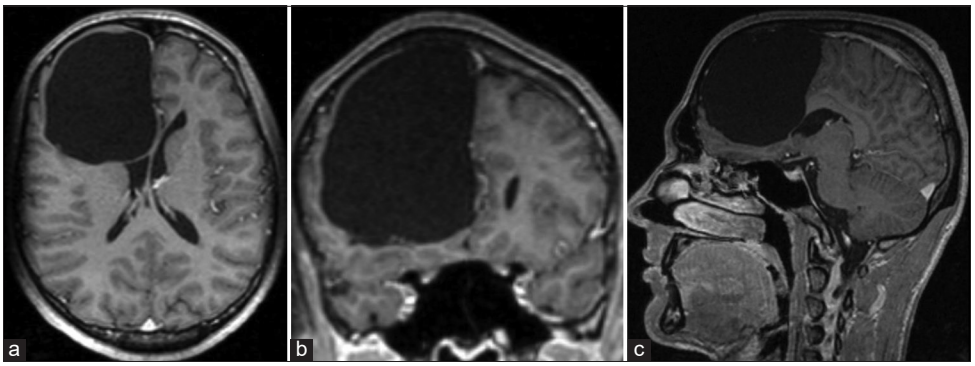

Figure 1: Axial (a), coronal (b), and sagittal (c) T1 gadolinium-enhanced brain MRI of arachnoid cyst (7 × 8 × 7 cm).

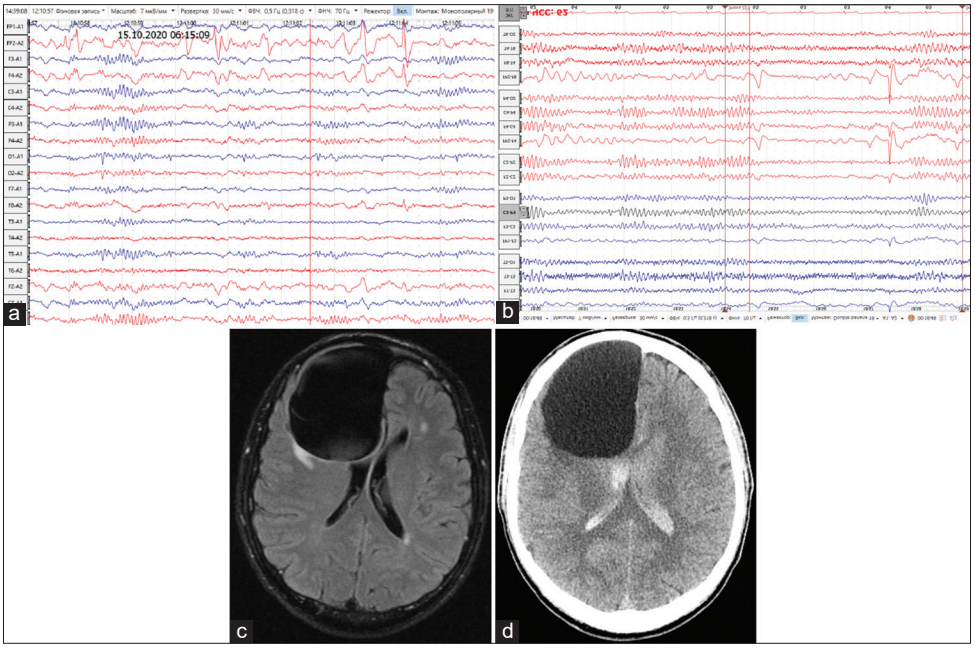

Figure 2: Monopolar (a) and bipolar (b) EEG showing epileptiform activity. T2-FLAIR MRI (c) revealed signs of local swallowing of brain tissue. CT cisternography (d) shows no signs of contrast in the cyst's cavity despite filling of lateral ventricles with contrast.

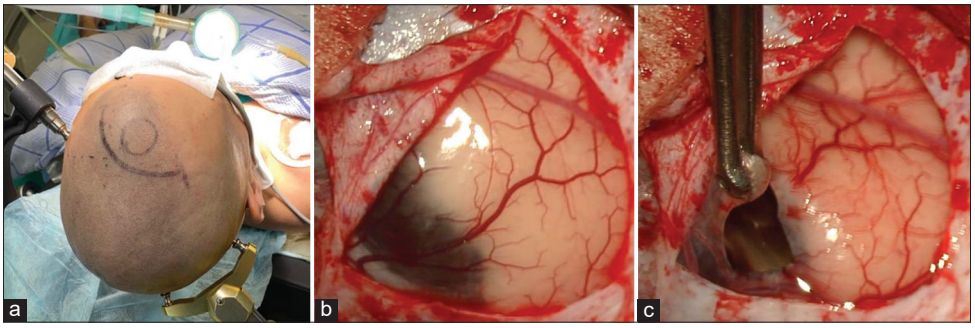

Figure 3: Patients positioning (a), intraoperative findings (b and c).

b]. Computed tomography (CT) cisternography confirmed that cyst was isolated from subarachnoid space [Figures 2c and d]. Lumbar cerebrospinal fluid (CSF) opening pressure during lumbar puncture was 18 cm.

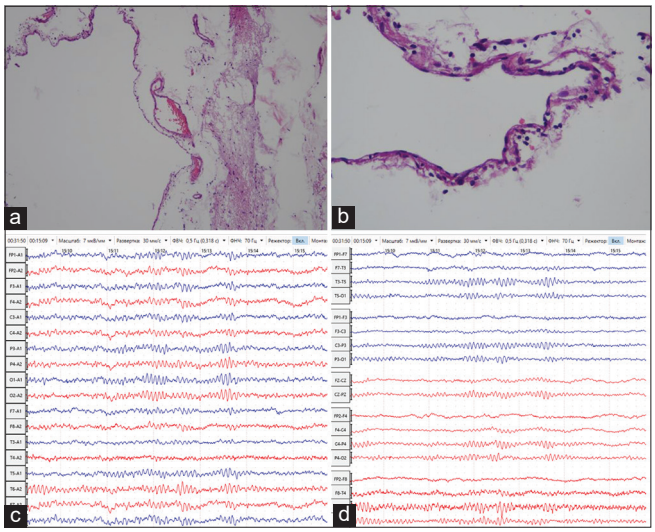

Figure 4: Histological findings (a and b) and postoperative monopolar (c) and bipolar (d) EEG.

Taking into account headaches, abnormal EEG, MRI signs of brain compression, and isolated type of cyst, we performed microsurgical cystostomy [Figure 3].

Based on light microscopic findings, a histologic diagnosis of AC was made [Figure 4a and b].

Postoperative course was fine, headaches disappeared, EEG showed resolution of epileptiform activity [Figure 4c and d]. The patient was symptom free at 12 months follow-up and EEG showed no signs of previously seen epileptiform activity.

DISCUSSION

The common prevalence of ACs in adults is estimated at 1.4% and slightly higher in men then in women.[1] The most cases are clinically silent. Sometimes, natural history of ACs includes spontaneous or traumatic rupture,[6] cysts enlargement with brain compression, and hydrocephalus, increasing focal deficit. ACs could be presented with parkinsonism,[7] cognitive impairment,[3] anxiety, and depression,[4] however, described case had no such presentation. Even large and giant ACs could be asymptomatic.[5]

Four main theories of cyst's enlargement are as follows: (1) CSF secretion by inner surface of the cyst, (2) osmotic gradient between the cystic content and the CSF, (3) slit-valve mechanism between cyst and the subarachnoid space, and (4) pulsation of intracystic fluid of venous or arterial origin.[10] We did not find any valve-like structures during intraoperative examination.

Presented case characterized by unspecific symptoms, so treatment has been controversial. Despite the benefits from surgery of symptomatic arachnoid cysts, some authors proposed that seizures and headaches often persist after treatment.[2] Wang *et al*. supported the view that patients with unspecific symptoms may profit from surgical cyst decompression.[9] At the same time, Rabiei *et al*. found no changes in surgically treated patients despite self-reported improvement.[8] Some authors recommend medical treatment for patients with headache or seizures.[9] The current case had been suspected symptomatic despite absence of raised ICP. Indications for surgery were signs of brain compression, epileptiform activity, and isolated cyst during CT cisternography.

Surgical modalities available for ACs are as follows: microsurgical resection of cyst's wall with or without connection with ventricles or basal cisterns; endoscopic fenestration; and cyst-peritoneal shunting. Several studies propose independence of clinical outcome from surgical modality.[9] We prefer to avoid cyst shunting due to the patient's young age and not to cause shunt dependence.

Yamasaki *et al*. noted that epileptic seizures may remain unchanged or worsen after surgery on interhemispheric ACs.[10] Apparently, we present rare observation of normalization of EEG after cyst's fenestration.

CONCLUSION

ACs are rare reasons of headaches and seizures in adults. Surgery could be preferable treatment option despite minimal clinical presentation. Indications for surgery are as follows: increased ICP, evidences of cyst's enlargement, hydrocephalus, signs of brain compression, and epileptiform activity. CT cisternography is useful for establishing indications for surgery while isolated cyst confirmed.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Stanishevskiy A, Gizatullin S, Davydov D. Giant arachnoid cyst in adult presented with secondary epileptiform activity. Surg Neurol Int 2021;12:418.