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Case Report

REVERSIBLE AKINETIC CATATONIA DUE TO A LEFT TEMPORAL LOBE ARACHNOID CYST AFTER STEREOTACTIC EVACUATION IN CHILDREN: CASE REPORT

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ABSTRACT

Background: Catatonia is caused by a variety of psychiatric and organic conditions. Association between temporal lobe arachnoid cyst (ACs) and catatonia was reported and largely debated, in literature. **Aim**: To report a case of reversible akinetic catatonia after stereotactic removal of left mesiotemporal ACs is reported. **Case report: A** 16-year-old female admitted for akinetic catatonic is reported. The patient was treated for schizophrenia for one year without any results. One months later, she presented with typic akinetic catatonia. Brain magnetic resonance imaging (MRI) showed an ACs in the mesiotemporal left temporal lobe. She was evacuated by stereotactic evacuation, with good results and amelioration. **Conclusion:** ACs on the left temporal lobe were reported to be related to psychological and psychiatric disorders. Catatonia can be presented as an acute onset of psychosis in a patient with a left temporal lobe arachnoid cyst in child.

Key words: akinetic catatonia; brain MRI; temporal arachnoid cyst; stereotactic evacuation; disappear of catatonia.

INTRODUCTION

Arachnoid cysts (ACs) are benign, space-occupying, intracranial, or intraspinal anomalies that are most commonly identified in childhood. They are typically considered congenital lesions, but a small proportion is believed to be secondary to trauma, inflammation, or bleeding [1]. ACs are generally congenital, primarily located in the middle fossa adjacent to the temporal lobes that have dense neuronal connections. Most cases of middle cranial fossa ACs are asymptomatic. Some children have neurological symptoms. These may include delays in development and changes in behavior [1-5].

ACs are suggested to be related to psychiatric disorders since many case reports have been published presenting the coexistence of ACs and psychosis [5-7]. Association between temporal lobe ACs and catatonia was reported and largely debated, in literature [6-9,10,11,12].

Catatonia is a complex neuropsychiatric behavioral syndrome that is characterized by abnormal movements, immobility, abnormal behaviors, and withdrawal. Symptoms can wax, wane, or change during episodes. ACs were reported as a reversible cause of catatonia after surgery [1,3].

CASE REPORT

A 16-year-old female right-handed without any comorbidities or head injuries was referred to the neurosurgical department for temporal cystic lesion and akinetic catatonia. Her history showed no developmental disorders, psychiatric illness, or familiar neuropsychiatric disorders. There was no motor or sensory deficit. There were no signs of a neurological focus. Osteotendinous reflexes were normal. She appears to be non-responsive. Response to vocal and noxious stimuli is decreased. She was alert and aware of their surroundings. She presented, mutism, posturing, negativism, and

some grimacing. Routine blood test was unremarkable.

Final diagnosis: Based on her symptoms, we diagnosed her with Diagnostic and Statistical Manual of Mental Disorders (DSM) 5 akinetic catatonia-related disorder due to left temporal ACs. A stereotactic evacuation of the cyst was proposed to the family how give their consentient to stereotactic evacuation of the ACs. Postoperative a spectacular amelioration was remarked. Postoperative brain CT scan showed a near 80% reduction in the mesiotemporal left ACs (Figure 1). Two weeks later the patient can walk. She was oriented to the psychiatric department for follow-up.

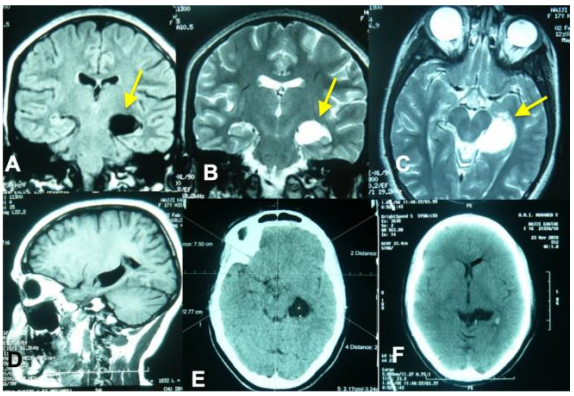

Figure 1. Coronal MRI images in T1-w **(A)** and in T2-w image **(B),** and axial T2-w images **(C)** showing hyposignal cystic CSF-like lesion in left temporal lobe (Yellow fleche) in T1 and hypersignal in T2-w images. Sagittal T1-w view showed temporal arachnoid cyst **(D).** Axial brain CT scan in axial cut **(E)** showing stereotactic planning target for evacuation and postoperative control showing reduction in cyst size **(F).**

DISCUSSION

ACs represent approximately 1% of all intracranial space-occupying lesions. ACs are leptomeningeal-lined CSF-filled sacs characterized by hyperplastic arachnoid cells, increased collagen, and the lack of normal spider-like trabeculations. ACs are benign lesions mostly localized in the temporal fossa. Although rarely caused by trauma, infection, or neoplasia, they are usually developmental defects.

The case reported here is a reversible akinetic catatonia due to a left temporal lobe arachnoid cyst after evacuation in the child. These findings are very rarely reported in literature even, though the relation between temporal ACs and psychiatric disorders is largely known and debated [1-4,6-8].

ACs are common, with a reported prevalence of 2.6% when ACs have been identified in children who have undergone neuroradiological examinations for reasons other than suspected ACs [2,4,9].

The physiopathological are debated. Two hypotheses are reported: the first stipulates that middle cranial fossa ACs represent a passive collection of cerebrospinal fluid related to temporal lobe agenesis. The second theory considers temporal lobe defects as a consequence of compression of ACs as the primary developmental malformation of the arachnoid membrane. Most cases of ACs are sporadic, nearly 40 familial forms have been reported[1].

Most cases of middle cranial fossa ACs are asymptomatic. Some children have neurological symptoms. These may include delays in development and changes in behavior. Many case reports and case series results reveal that ACs can cause psychiatric and cognitive disorders. It has been reported that surgical cyst decompression will provide substantial clinical improvement, especially for cognitive disorders [14, 15].

Some studies showed that parents of children who have undergone surgery for temporal ACs often express unexpected cognitive gains of surgery such as increased ability to concentrate

and improved school results. Many case reports and case series results reveal that ACs can cause psychiatric and cognitive disorders. Middle fossa ACs have been associated with psychiatric symptoms. Causality can be inferred by temporal lobe pathology in neuropsychiatric conditions, such as psychosis [6,10-14].The association between ACs and catatonia was reported and largely debated, in literature [2-6].Karl Ludwig Kahlbaum was the first to describe catatonia in 1868. Catatonia is a neuropsychiatric syndrome that can occur due to a medical or psychiatric disorder [4].

Middle fossa ACs have been associated with psychiatric symptoms. The association between ACs and catatonia was reported and largely debated, in literature. Wolańczyk T, and al., reported a case of catatonic syndrome preceded by symptoms of anorexia nervosa in a 14-year-old boy with an ACs [8]. Askenazy F, and al., reported a case of catatonia in a 14-year-old girl with ACs treated with clorazepam and carbamazepine [2].

Catatonia is a state of apparent unresponsiveness to external stimuli and an apparent inability to move normally in a person who is apparently awake [1,4,7]. There are 3 types: (1) catatonia associated with another mental disorder (catatonia specifier), (2) catatonic disorder due to another medical condition, and (3) unspecified catatonia. The diagnostic criteria for catatonia in the current DSM 5, require three or more of the following symptoms: stupor, waxy flexibility, catalepsy, mutism, posturing, negativism, stereotypes, mannerisms, grimacing, agitation, echopraxia, and echolalia.

The mechanism and the related catatonia with temporal ACs are generally understood as a mass effect. Two hypotheses are postulated. The first: is reorganization, hypoperfusion, and hypometabolism occur in adjacent tissue, especially with higher intracystic pressures, and decompression might improve cerebral function in seemingly asymptomatic patients. The second: alternative pathological mechanism is neural network disruption. The temporal lobes house rich club hubs of the human connectome. Temporal ACs might disrupt the connectome and produce information processing inefficiencies, manifesting as psychiatric symptoms during stress. Syndromes and symptoms to be differentiated from catatonia include coma, akinetic mutism, abulia, hypoactive delirium, and locked-in syndrome.

Neuroimaging: Diagnostic tools for the investigation of ACs are CT with contrast studies and MRI. On CT, ACs are observed as extra-axial cysts with the density of CSF, without any contrast enhancement. Brain MRI signals are similar to CSF in T1- and T2-weighted imaging, with no enhancement of gadolinium with the normal signal from the contiguous.

Management: It is largely acknowledged that surgery is not indicated for asymptomatic patients with incidental findings, whereas patients with clear signs of raised intracranial pressure or temporal seizures are candidates for surgery. Some authors consequently argue that psychiatric symptoms constitute a surgical indication in their own right. Evidence for this is largely based on the case reports. Mørkve, S.H., and al., in their prospective study, showed that surgical decompression of ACs leads to improved quality of life [11,13,15]. The decision for surgical management of the middle fossa ACs should be made more cautiously and ethical considerations must be kept in the decision. Prospective multidisciplinary studies are needed to standardize the management of temporal ACs with catatonia [5].

CONCLUSION

Middle fossa ACs have been associated with psychiatric symptoms. Causality can be inferred by temporal lobe pathology in neuropsychiatric conditions, such as psychosis. Catatonia can be presented as an acute onset of psychosis in a patient with a left temporal lobe ACs. We suggest that organic catatonic disorder must be first considered in every patient with catatonic signs, particularly in a patient with new-onset catatonia. This report confirms that akinetic catatonia is a reversible disorder after evacuation of the left temporal lobe arachnoid cyst in a child. Prospective multidisciplinary studies are needed to standardize the management of temporal ACs related to psychiatric disorders.

REFERENCES

1- Ulrika Sandvik, Tomas Adolfsson, Dan N. Jacobson and Kristina Tedroff. Cognition in Children with Arachnoid Cysts J. Clin. Med. 2020, 9, 850.
2- Askenazy F, Dor E, Benoit M, Dupuis G, Serret S, Myquel M, Seddiki Y. Catatonie chez uneadolescente de 14 ans: traitement par clorazépam et carbamazépine et évolution à dix ans [Catatonia in a 14-year-old girl: treatment with clorazepam and carbamazepine, a 10-year follow-up]. Encephale. 2010; 36(1):46-53.
3- Margetić B, Palijan TZ, Kovacević D. Homicide and subsequent catatonia associated with a large arachnoid cyst: case report. Acta Clin Croat. 2013; 52(4):497-505.
4- Rogers JP, Zandi MS, David AS. The diagnosis and treatment of catatonia. Clin Med (Lond). 2023; 23(3):242-245.
5- Steyn PJ, Van den Heuvel LL. Cut it out or wait it out? Case series of middle fossa arachnoid cysts presenting with psychiatric symptoms and a discussion of the ethics of neurosurgical management. General Psychiatry 2021; 34: e100523.
6- Siddiqui, Javed& Qureshi, Shazia. Left Temporal Lobe Arachnoid Cyst Presenting with Symptoms of Psychosis. 2021; Psychosomatic Medicine Research;2021; 03 (04):196-199.
7- Edinoff AN, Kaufman SE, Hollier JW, Virgen CG, Karam CA, Malone GW, Cornett EM, Kaye AM, Kaye AD. Catatonia: Clinical Overview of the Diagnosis, Treatment, and Clinical Challenges. Neurol Int. 2021; 8;13(4):570-586.
8- Wolańczyk T, Komender J, Brzozowska A. Catatonic syndrome preceded by symptoms of anorexia nervosa in a 14-year-old boy with arachnoid cyst. Eur Child Adolesc Psychiatry. 1997; 6(3):166-9.
9- Qureshi HM, Mekbib KY, Allington G, Elsamadicy AA, Duy PQ, Kundishora AJ, Jin SC, Kahle KT. Familial and syndromic forms of arachnoid cyst implicate genetic factors in disease pathogenesis. Cereb Cortex. 2023; 10;33(6):3012-3025.
10- Park Y.S., Eom S., Shim K.W., Kim D.S. Neurocognitive and psychological profiles in pediatric arachnoid cyst. Child's Nerv. Syst. 2009; 25:1071–1076.
11- Agopian-Dahlenmark, L., Mathiesen, T., &Bergendal, Å. (2020). Cognitive dysfunction and subjective symptoms in patients with arachnoid cyst before and after surgery. Acta neurochirurgica. 2020; 162, 1041-1050.
12- Gjerde, P.B.; Litleskare, S.; Lura, N.G.; Tangen, T.; Helland, C.A.; Wester, K. Anxiety and Depression in Patients with Intracranial Arachnoid Cysts-A Prospective Study. World Neurosurg. 2019, 132, e645–e653.
13- Kim KH, Lee JY, Phi JH, Cho BK, Shin MS, Kim SK. Neurocognitive profile in children with arachnoid cysts before and after surgical intervention. Childs Nerv Syst. 2019; 35(3):517-522.

14- Anas Ibn Auf and Hussam Kabakbji. Psychosis in a Young Patient with a Left Temporal Arachnoid Cyst: A Case Report. Majmaah Journal of Health Sciences ;2020; 8, 1 , JumadilAwwal – 1441, 120-124.
15- Mørkve, S.H.; Helland, C.A.; Amus, J.; Lund-Johansen, M.; Wester, K.G. Surgical Decompression of Arachnoid Cysts Leads to Improved Quality of Life: A Prospective Study. Neurosurgery 2016, 78, 613–625.
16- Mironov A, John S, Auerbach J, et al. Acute onset of psychosis in a patient with a left temporal lobe arachnoid cyst. Case Rep Med 2014; 2014: 204025.