

Arachnoid Cyst (Galassi Type II) and Neuropsychiatry Symptoms: about a Case.

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Introduction: an arachnoid cyst is caused by the alteration of one of the membranes of the meninges (arachnoid), predominantly in the middle cranial fossa. It is a rare pathology causing symptoms and if they occur, neuropsychiatric manifestations may take place.

Objective: provide clinical data, diagnosis and therapeutic methodology. **Case:** this case is about a 24-year-old female patient. She has no personal record of psychiatric or known non-psychiatric medical records. She has a one-month evolution record of psychotic symptoms and behavioral changes. A simple brain CAT was performed. Later, a contrasted brain magnetic resonance imaging was made, in order to define arachnoid cyst size, due to the possible neuropsychiatric symptoms found. By means of laboratory tests, electrophysiological studies (electroencephalogram), neuroimaging and clinical evaluation a decision was made in order to present clinical characteristics of the patient, who required treatment with antipsychotics, benzodiazepines and mood stabilizers. She had a gradual improvement against her admission symptoms (psychomotor agitation and psychosis)

Keywords: arachnoid cyst, neuropsychiatry, psychotic disorders.

INTRODUCTION

Arachnoid cysts are pouches formed anywhere in the arachnoids. It has 1% prevalence of all intracranial lesions, with predominance in the left medial cranial fossa. There are two types: primary and secondary.

Primary cysts have a congenital origin, whether it is caused by an alteration of the arachnoid membranes during the 15th week of the embryonic stage or because a potential agenesis

of the temporal lobe. Secondary cysts are caused by brain trauma, infections and/or intracranial hemorrhage.

According to Galassi's classification, these cysts located in the medial cranial fossa (MCF). Their classification is as follows:

- Galassi Grade I arachnoid cyst: these are small cysts limiting with medial anterior cranial fossa.
- Grade II: these are triangular/quadrilateral-shaped, with a moderate size, located in

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the anterior/central portion. It is extended to the Sylvian fissure.

- Grade III: these are big rounded/oval sized which occupies nearly the whole MCF. It is extended to the hemisphere by means of numerous areas.

Generally, these are asymptomatic cysts, to be randomly found by means of neuroimaging. Symptoms may be manifested with cephalaeas, nauseas, vomiting, seizures, local neurological deficit.

There are few studies on neuropsychiatric symptoms and there is no consensus about it, yet. These may manifest with schizophrenia type depression/anxiety symptoms (for instance paranoid ideas and hallucinations).

Some cases have required surgical management with improved symptoms and conservative management in other cases.^{1, 2, 3, 4}

This clinical case describes a female 24-year-old patient with a first psychotic onset, with no prior record. When neuroimaging was made, in order to discard organicity, a Galassi type II cyst was found, with displacement of the left temporal lobe in the medial cranial fossa.

Some literature deals about correlation with neuropsychiatric symptoms. To date, this could be one of the first cases reported in Panama. We have decided to publish it as an academic contribution.

Introduction of the Clinical Case

The patient is a 24-year-old woman. She has a two-year evolution clinical picture, according to her relatives. She started with changes their relatives had never seen before in the patient. These are characterized by potential decrease of the need to sleep. She is restless at night time “organizing her stuff as a teacher” more than usual. For two months she has had front cephalae with an intensity of 10/10 “the toughest in her life”. It is not irradiated, no auras, and it is associated to gastric symptoms: vomiting and nauseas.

One month ago she started with rough behavioral changes. She is vociferous and irritated before her students. At home, she has a disruptive behavior, verbal/physical aggressiveness with her relatives. She started to set pictures of rockers from the 80’s and beheaded people. She had mystical/religious type delirious ideas, such

as “The devil rules and gives me power” (This is totally against her previous religious beliefs). She wore black clothes and black lipstick. She arrived late at home during the weekends.

She had no medical record and no family record of known psychiatric disorders. She had a proper neurodevelopment and had a full college degree.

She was admitted in the in the Psychiatry Service of the Hospital Regional Nicolás Solano, Panama Oeste (La Chorrera), Panama.

She had neither altered vital signs nor altered examination performed at the emergency room, prior to her admission.

Room Examinations:

- No disturbances in full hemogram, renal function test, thyroid function test, lipid profile, glucose on empty stomach, full electrolyte test and negative HIV serological test.

Imagery:

- Simple CAT brain scan with report: Galassi type I arachnoid cyst in left medial cranial fossa (Figure 1).
- Contrasted magnetic resonance of the brain with report: Galassi type II, arachnoid cyst with displacement of the left temporal lobe in the medial cranial fossa. (Figure 2).

Electrophysiological Studies:

- Electroencephalogram with no disturbances.

Cognitive Screening:

- MOCA Test (Montreal Cognitive Test):
 - Some failures are observed in attention and concentration.

Clinical Evolution:

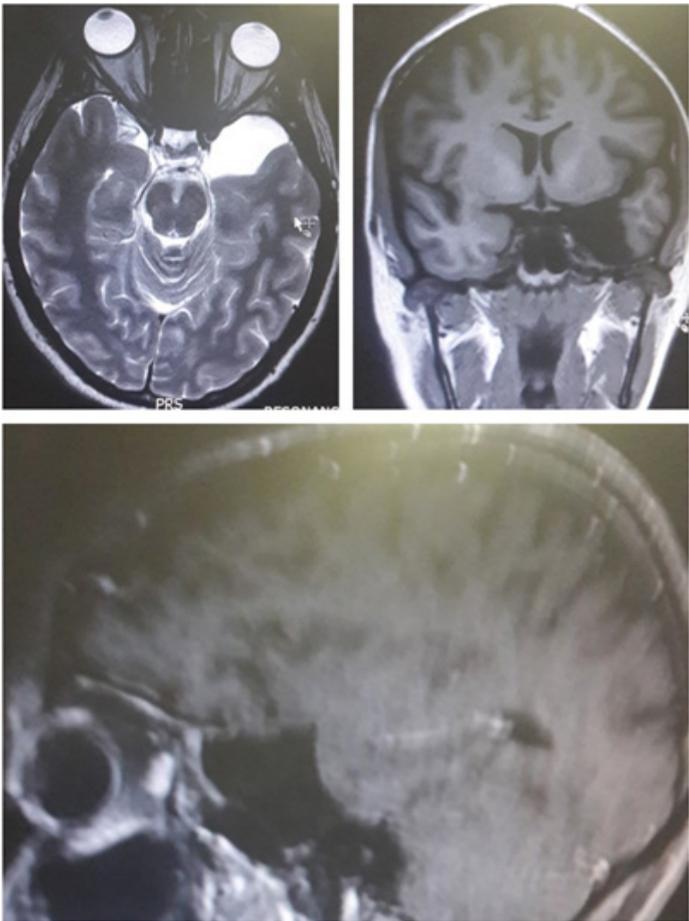
a) When she was admitted in the emergency room, with a mental examination:

- Looks and behavior: the patient was restrained at 4 points on the stretch. Her looks matched her chronological age. She was wearing hospital clothes. She had big bags under her eyes, her hair was shaggy, her face was not expressive, she was not cooperative, distrustful, she has contained violence with blank stare of her eyes, looking at the ceiling.

Figure 1. Single Brain Axial Tomography: Galassi type I arachnoid cyst: adjacent to the left temporal lobe. It measures 26.1 x 38.3mm., medial cranial fossa.



Figure 2. Brain Magnetic Resonance - Galassi Arachnoid cyst. Type 2: left medial cranial fossa, with no restriction of the diffusion, and not modified with the contrast. 28 mm rostrocaudal, 36 mm, laterolateral and 44 mm, dorsoventral, conditioning displacement of the temporal lobe. A) axial cut T2 B) coronal T1 cut C) sagittal T1) cut



- State of consciousness: awake, orientation: not cooperative.
- Memory: not cooperative.
- Psychomotor Activity: with psychomotor agitation.
- Language: Spanish, oral, good diction, soliloquy, speaking out loud sometimes, vociferous and verbose.
- Thinking: tachypsychic, disperse, inconsistent with reality, mystical/religious delirious ideas, such as “Lucifer has the power”.
- Humor and affection: irritable.
- Sense of perception: hearing/visual hallucinations.
- Critical Judgment: aberrated, inconsistent with reality.

Disease consciousness: none.

b) She remained for 15 days at the hospital. She required intramuscular antipsychotic medicament, benzodiazepine (Haloperidol 5 mg/ml #2 amp. and diazepam 10 mg/2ml #1 amp.) every 8 hours for 1 day; then it was readjusted every 6 hours, for two days.

On the other hand, a possible tonic seizure is evidenced: vacant look in her face, looking at the ceiling, short duration generalized contractions (just a few seconds) and no sphincters incontinence.

Mild improvement of symptoms and cooperation was observed. Parenteral medicament was suspended and oral medicament is started, Olanzapine 10 mg v.or. every 12 H and ácido valórico 250 mg/5 cc with a prescription of 20 cc v.or. every 12 hours.

Some days before she was discharged, her medicament was reprogrammed to Risperidone 1.5 mg v.or. every 12 hours (Olanzapine was suspended, due to day drowsiness).

A neurological examination was made, with findings of right predominance nystagmus.

After EEG and MR results she was evaluated for neurosurgery. Finally, she was conservatively managed.

When the patient was discharged she had a remission of her psychotic symptoms; gradual in her behavioral symptoms. She had a hard time trying to keep her self-control, regular introspection and no seizures at that time.

She may continue her outpatient control (Psychiatry Health Center, referenced to Neu-

rology and Neurosurgery)

DISCUSSION

Neuro psychiatric symptoms could be secondary to cyst or -at least- intensify them:

1. She had mood changes for the last two years. She recently had cephalgia and gastric symptoms.
2. Neuroimaging studies with high structural significance
3. Despite her psychopharmacological treatment, when -in general terms- her psychotic symptoms were milder, she still required a high control of her impulse. A lower level of disorganized thinking and improved critical judgment was reported.

This clinical case was compared with that of Da Silva J.A.et.al., Baquero G.A., et.al. Kahn A.H. et.al., and Tsai T. Y, et.al.^{5,6,7,8} Both cases had similar symptoms: paranoid type delirious ideas, schizophrenic symptoms, violent conduct changes, distrustful and irritable personality. Some patients had a prior psychiatric family record. These cysts were found by chance. Experts were surprised that persistent psychiatric symptoms -despite their pharmacological treatment- were possibly secondary or intensified, due to organicity. These cases were evaluated by neurosurgery. Two of them were conservatively managed. The others were subject to surgery, with further improvement (See Table 1).

Neuropsychological functions in patients with arachnoid cysts proved not to influence on verbal functions, performance or IQ Scale. However, patients studied did have 35.7% of inattention and 39.7% of higher impulsiveness. These values were not impacted by the surgical treatment⁹. Another study evaluated neurocognitive development in children with Galeassi type II and III arachnoid cysts, by means of standardized tests. No disorders in patients' neurodevelopment were reported; however, the adaptive behavior test did report a tendency to worsening results in their general functions¹⁰.

Other manifestations of arachnoid cysts are cephalgia, convulsive seizures, signs of endocranial hypertension and neurological deficit¹¹. In some cases, such situation may require surgical handling¹². These cysts may also tear, thus causing subdural hematomas and subdural hy-

Table 1. Comparison with other similar clinical cases of the literature review. (#3 and #4 in boldface, were the cases with surgical intervention, due to neurosurgery)

	Age	Diagnosis	Symptoms onset	Similar Symptoms	Neuroimagery
Patient	24	F23.8	2 years	Psychosis, irritable, violent	Arachnoid cyst, left medial cranial fossa with displacement of the temporal lobe.
#1 Khan AH, et.al.	55	F25(17 years)	6 months of relapses (despite adherence)	Insomnia, irritability, delirious ideas	Arachnoid cyst in the left frontal lobe with mass effect.
#2 Da Silva JA, et.al.	21	f19	3 years	Irritable, hallucinations.	Arachnoid cyst in the left portion of the Sylvian Fossa, with mass effect in the temporal lobe and frontal and ventriculi lateralis hypoplasia
#3 Baquero AH, et.al.	37	No app	2 months	Paranoid ideas, distrustful	Long arachnoid cyst, with displacement of the right hemisphere.
#4 Tsai T.AND., et. al.	24	F20	Impressive frequent relapses	Aggression, mystical-religious ideas, flat	Cerebellar arachnoid cyst with affection of the subarachnoid space and posterior fossa

gromas¹³.

The main diagnosis method is single-stage/contrasted/functional magnetic resonance. Magnetic resonance may reveal structural abnormalities, CSF flow patterns and brain arrangement¹⁴. Progress in various diagnosis areas have identified cyst-related¹⁴ brain functional disorders, such as positron emission tomography (PET), aimed to identify hypo metabolic patterns¹⁵. Electroencephalography depicts increasing irritability in the areas close to the cyst¹⁴, and even more, a reduction of hearing evoked potentials amplitude, in the ipsilateral frontotemporal area to the cyst¹⁴. The SPECT depicted disturbances in the perfusion of the area surrounding the cyst, apart from detriment of the local brain flow. All of this is correlated

with clinical symptoms¹⁶. The cortex thickness has been reduced, just like the white/grey matter. This finding is proportional to the size of the cyst¹⁷.

Arachnoid cysts may be correlated with psychiatric symptoms¹⁴ such as:

1. delusions
2. acoustic hallucinations and anxiety.

The disorder with attention deficit plus hyperactivity has also been correlated with arachnoid cysts of the middle fossa¹⁸.

Documentation on symptoms is the main hint of surgery¹⁹. Current surgical methods for handling arachnoid cysts are as follows: the cysto-peritoneal shunt, microsurgical fenestration and endoscopic fenestration. Reduction of symptoms, among these three methods is simi-

lar, regardless of its location.⁶

Endoscopic fenestration, despite its higher rate of immediate complications, allows to perform a smaller craniotomy and sighting of the cyst in all directions; therefore, it must be used as a first option¹.

CONCLUSIONS

Despite neuropsychiatric evidence on these cysts and when reviewing the various clinical cases, possibly in our case, the structural lesion is the cause or the exacerbation of the aforementioned symptoms.

Symptoms had a gradual improvement, but still requiring high control of impulses. was recognized A lower level of disorganization was reported in thinking and improved reality judgment.

Outpatient clinical evolution will provide a guide to an accurate diagnosis and to surgical treatment, if necessary, according to clinical observation and follow up.

Diagnostic comments:

- a. Obs.F23.0 (Polymorphic Acute Psychotic Disorder, with no schizophrenic symptoms).
- b. Obs.F06.3 (Mood Disorders (affection), organic)
- c. Obs.G40 (Epilepsy)
- d. G93.0 (Galassi Type 2 Arachnoid cyst)

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