Case Report

An Unusual Approach to a Patient with an Arachnoid Cyst and Depression

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Objective: Arachnoid cysts are the most common intracranial cysts and their role in causing psychiatric symptoms is often underrecognized. This report is a case of a patient with intracranial arachnoid cyst and clinical finding of depression. **Case report:** A 53-year-old woman patient presented with unspecified depressive symptoms and the brain MRI finding showed an arachnoid cyst about 3 cm in size over the right temporal pole. She showed dramatic clinical response to duloxetine but the discrepancy between her verbal IQ and performance IQ were still persisted. **Conclusion:** This case report is the first to show an association between arachnoid cysts and clinical depression, and to highlight the use of an unusual approach in dealing with a patient with brain lesions and psychiatric symptoms.

Key words: arachnoid cyst, depressive disorder, temporal lobe
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Introduction

Arachnoid cysts are the most common intracranial cyst, accounting for about 1% of all intracranial space-occupying lesions. Their clinical manifestations vary and are often unspecific [1]. A few cases with associated psychiatric symptoms have been reported [2-8]. Here, we are presenting a patient with depressive symptoms and an intracranial arachnoid cyst, which is the first report of such combination. This paper presents an unusual approach on this particular patient.

Case report

This 53-year-old female patient, Ms. H, came to the psychiatric clinic of the National Taiwan University Hospital in May 2008 for management of her free-floating anxiety, indecisiveness, akathisia, and masked face. She developed initial insomnia in February 2008 after having had increased workload. She received olanzapine and gabapentin for refractory insomnia in another medical center. She was hospitalized with an initial impression of primary insomnia and drug-induced parkinsonism. She showed psychomotor

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The figure. T2-weighted MRI showed an arachnoid cyst around 3 cm in size over the right temporal pole.

retardation with rumination about health issues (e.g. insomnia) but denied having low mood or pervasive worries. The antipsychotic drugs were discontinued and she received mirtazapine 30 mg to nightly to improve her sleep disturbance. She was discharged seven days later.

During the clinic follow-up despite removal of the Parkinson's symptom, she withdrew socially and could not return to her job due to severe indecisiveness. Her mirtazapine was discontinued after a six-week trial and she received meclobemide 150 mg per day for suspected unspecified depression. Her condition persisted despite receiving an eight-week meclobemide therapy (four weeks of meclobemide being 450 mg per day). But she denied any depressed mood and even did not show a social smile during interview. Thus, the brain MRI examination was arranged, and the finding showed an arachnoid cyst about 3 cm in size over the right temporal pole (the figure). A discrepancy between verbal IQ (VIQ) and performance IQ (PIQ) (FIQ=111, VIQ=124, PIQ=93) was noted and she was re-admitted.

The findings of neurologic and physical examinations were unremarkable. The results of basic laboratory work-ups (CBC, serum chemistry, TSH, and VDRL test) were all within normal limits. The neurosurgeon proposed conservative management, and after discussion with the patient, the patient started to receive therapeutic trial with duloxetine 60 mg daily. Her indecisiveness, anxiety and rigid rumination were resolved dramatically within a week. The patient was discharged 15 days after having received duloxetine therapy under a

diagnosis of depressive disorder not otherwise specified.

Although the patient resumed her work smoothly and became socially active again, follow-up IQ test six weeks after last clinical visit still showed a discrepancy between VIQ and PIQ (FIQ=101, VIQ=111, PIQ=92). This could not be explained by her depressive symptoms.

Discussion

This is the first reported case of depression associated with an intracranial arachnoid cyst. Table 1 summarizes search in Medline, showing only seven arachnoid cyst related case reports published in English literature [2-8]. Hence, the association merits further exploration.

Ms. H had no past psychiatric or medical history and was medication-free before psychiatric consultation. She did not have any history of abusing illicit substance or alcohol. Her depressive symptoms developed when she received olanzapine and gabapentin, and still persisted more than three months after discontinuing these medications, thereby making drug-induced mood disorder unlikely. The findings of her neurologic and physical examinations were unremarkable and those of her basic laboratory work-ups were all within normal limits. The only organic finding during the physical work-up was the arachnoid cyst revealed in the brain MRI image.

The development of symptoms might be due to increased workload as the precipitating factor affecting the patient's perfectionist attitude, with her anxiety-prone trait as the predisposing factor. Nonetheless, Ms. H had a diagnosis of depressive disorder not otherwise specified since the arachnoid cyst cannot be excluded as a contributing factor. We took an unusual approach on this patient.

Ms. H's recent onset insomnia and indecisiveness, and later social withdrawal, prompted an initial impression of depressive episode. But symptoms of low mood, lack of enjoyment and definite negative thoughts, which are the central features of depression, were absent. Atypical presentation led to a suspicion of an organic contribution.

Ms. H returned to her pre-morbid status quite rapidly after taking duloxetine. Similar findings are noted in a previous case wherein psychosis was associated with a small left temporal arachnoid cyst and was quickly controlled by a low-dose of risperidone [3]. Exhaustive review reveals no published literature on the efficacy of duloxetine in organic mood disorders. Thus, this topic warrants further investigation.

Table 1. Case reports of arachnoid cyst-related psychiatric disturbances

Author	Year	Demographic data of case(s)	Psychiatric symptoms	Location and size of the arachnoid cyst
Kuhuley et al. [8]	1981	23 y/o male	Psychosis	Left temporal, large
Wong et al. [2]	1993	30 y/o female	Psychosis	Right lateral ventricle
De Volder et al. [5]	1994	10 y/o male	Childhood aphasia	Left temporal, large
Wolanczyk et al. [6]	1997	14 y/o male	Catatonia	Right parietal
Yamazaki et al. [4]	2000	3 children	Speech delay, personality changes	Middle cranial fossa
Bahk et al. [3]	2002	57 y/o male	Psychosis	Left temporal, 3×2.5×2cm
Vakis et al. [7]	2006	28 y/o female	Psychosis	Left temporal, large

The patient had no past or family psychiatric history. She was not within the 18-44 age group in which major depressive disorder is most prevalent. But it is not rare to find a person without any family history manifesting a first episode of depression at the age of 50 years. The demographic predilection of depression cannot establish an organic cause in this case.

The finding of brain MRI showed a 3-cm arachnoid cyst over the right temporal pole. As described in the literature, psychiatric symptoms are most often associated with arachnoid cysts located in temporal lobes [9]. When brain tumors involve the temporal lobe, 76% of cases show psychiatric symptoms [9].

Although the location can explain the depressive symptoms in neuropsychological terms, the size also remains the focus of dispute. Psychiatric symptoms have been linked mainly to large arachnoid cysts, even those of 3-cm size have likewise been associated with psychiatric disturbances [3]. Moreover, there are cases of small- to medium-sized arachnoid cysts with atypical symptoms, and their symptoms have been reported improved after the correction with shunting [4]. Thus, a causal relationship cannot be determined by the size alone.

After the mood disorder was resolved, most cognitive impairments were also improved. But patient's VIQ-PIQ discrepancy still persisted even after the disappearance of her depressive symptoms. There was even a decrease in VIQ. Moreover, studies have revealed the absence of VIQ/PIQ differences in depressed patients [10]. Uncharacteristic and persistent cognitive impairments in our patient led to a suspicion of an organic origin.

Reported cases with psychiatric symptoms linked to an arachnoid cyst have also always been reported to have neurologic symptoms. Pure psychiatric manifestations, although reported, is rare. In our case, the patient did not have other neurologic symptoms and signal change on the MRI finding. In one case of childhood aphasia [5], patient's PET finding revealed decreased glucose utilization in grey structures surrounding the arachnoid cyst despite the absence of a mass effect on MRI findings. Shunting led to clinical recovery has been shown in the finding of a PET examination [5]. Based on those report, we suggest in future cases, that imaging studies may be helpful in assessing the significance of arachnoid cysts.

Table 2 lists the debate on the causal relationship between brain lesions and psychiatric symptoms. The results suggest that, at least partially, the arachnoid cyst in this case has played a role in the clinical manifestations. The existence of a brain lesion may mislead proper management.

The knowledge obtained from our reported case and the literature is limited due to the nature of case reports. Therefore, generalization should be cautious. Furthermore, our patient could better be diagnosed as a case of generalized anxiety disorder (300.02 in *DSM-IV*). Duloxetine has been approved by US Food and Drug Administration for the indication of generalized anxiety disorder [11].

In summary, the causal relationship between clinical depression and arachnoid cyst in our patient was strengthened by psychopathology, drug response, psychological test, but weakened by the presence of neurologic signs. The epidemiology and features of arachnoid cysts play a little role. Comprehensive evaluation using an unusual approach is helpful in disentangling the relations among brain lesions and psychiatric symptoms, and formulating a treatment plan.

Table 2. Illustrations of the clinical approach in defining the causal relationship between arachnoid cysts and depression

Dimension	Remark	The case in our report	Contribution to the causal relationship
Phenomenology			
Psychopathology	Atypical presentation is the worsening sign of an organic cause	Indecisiveness with secondary anxiety and low self-esteem, but no depressed mood or anhedonia	+
Intervention			
Psychotropic agents	May be atypically responsive in arachnoid cyst-related psychiatric disturbance	Dramatically responsive to duloxetine 60 mg daily	+
Epidemiology			
Demographic data	Depression is common among a wide range of demographic variables	A 53-year-old married female	±
Personal and family history	Negative history does not establish an organic cause	Negative history	±
Features of arachnoid cyst			
Location	Temporal lobe is the most prevalent site of cyst development	Right temporal pole	±
Size	Size down to 3 cm has been linked to psychiatric disturbance3	Around 3 cm	±
Functional impairment			
Psychological test	Psychological test is useful in detecting subclinical decline of function	Persisted VIQ-PIQ discrepancy after resolution of depressive symptoms	+
Neurological signs	Rare case of intracranial cyst with only psychiatric symptoms had been reported	Nonspecific physical complaints	-
Mass effect (by image/EEG)	Functional image is helpful	No signal change on MRI	±

+: Causal relationship favored -: Causal relationship not favored ±: Information equivocal or unavailable

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