

# A Left Temporal Arachnoid Cyst in a Patient with Early Onset Schizophrenia

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**Abstract** : Arachnoid cysts are mostly asymptomatic and diagnosed incidentally. In the literature, some case studies report a probable etiological association between arachnoid cysts and psychiatric disorders. We report an early onset schizophrenia case who had a left temporal arachnoid cyst and who had an inadequate response to antipsychotic treatment. We discuss the potential association between arachnoid cysts and psychiatric disorders in the light of the literature.

**Keywords**: Arachnoid, cyst, Antipsychotic, Cognitive functions, Schizophrenia.

## INTRODUCTION

Arachnoid cysts are considered to be benign brain lesions and they are noticed commonly as incidentally. The prevalence of arachnoid cysts is about 1.7%. They are frequently assumed to be developmental in origin and they rarely develop after traumas, infections and hemorrhage [1]. Although most arachnoid cysts are asymptomatic, the clinical appearance may be associated with size and location of cysts and age of patient [2]. Furthermore, some case studies report a probable etiological association between arachnoid cysts and some psychiatric disorders [3-9]. Here, we report an early onset schizophrenia case who had a left temporal arachnoid cyst and who had an inadequate response to antipsychotic treatment.

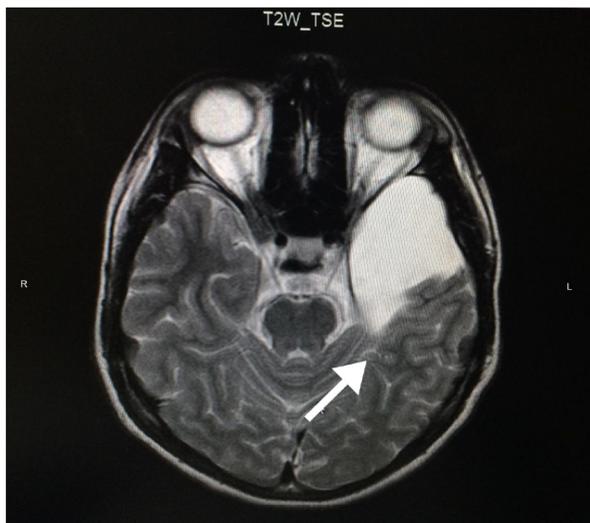
## CASE

Mr. S was 18 years old when admitted to our outpatient clinic with complaints of social withdrawal, decreased speech, hearing voices from aliens, decreased academic performance and the suspicion that his friends were humiliating him. His complaints had started with decreased speech and hygiene, abnormal face movements, and hearing alien voices two years before the admission to our clinic. The patient had then been brought to a psychiatrist, who diagnosed an acute psychotic attack and prescribed risperidone 4 mg/day and biperiden 2 mg/day. During follow-up by the psychiatrist, the complaints of hearing

alien voices and abnormal movements had remitted partially; however decreased speech and hygiene persisted and the patient's academic performance had been additionally reduced. The patient was judged to fulfil criteria for early onset schizophrenia (paranoid type) according to the Diagnostic and Statistical manual of Mental disorders, 4th edition, Text Revision (DSM-IV-TR)[10]. During one year and half, the patient had continued his follow-ups irregularly, and adherence to risperidone and biperiden treatment deteriorated. On the first psychiatric examination of the patient performed in our clinic, decreased hygiene, poverty of speech, abnormal face movements, auditory hallucinations, referential delusions, lack of insight and severe social withdrawal were noted. The patient was evaluated with the Scale of Assessment of Positive Symptoms (SAPS) [11], Scale of Assessment of Negative Symptoms (SANS) [12] and the Brief Psychiatric Rating Scale (BPRS) with total scores of 54, 83 and 52, respectively. Physical examination was within normal range with the exception of the abnormal facial movements. Analyses of routine biochemistry, including hemogram and thyroid functions, were within normal range. Brain magnetic resonance imaging revealed an arachnoid cyst in the left temporal lobe with the size of 42x42x56 mm (Figures 1 and 2). This finding prompted us to consult colleagues at the department of neurosurgery and they advised brain magnetic resonance imaging follow-up with six months intervals. Aripiprazole 5 mg/day was given to the patient and the dosage was increased to 15 mg/day at control follow-ups. At the fourth outpatient visit, the symptoms of the patients were slightly reduced with SAPS, SANS and BPRS scores of 44, 73 and 50,

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respectively. However, the patient did not continue outpatient clinic treatment after the fourth visit.



**Figure 1:** Left temporal arachnoid cyst in T2 weighted axial view.



**Figure 2:** Left temporal arachnoid cyst in T2 weighted sagittal view.

## DISCUSSION

In this case study we report on a patient suffering from schizophrenia with an early onset and only partial response to antipsychotic drug treatment. The patient also had a left temporal arachnoid cyst. We suggest that arachnoid cyst might be associated with etiology of schizophrenia in this case; because, patient did not have any family history of schizophrenia, he had several social and academic distortion in a short time period that might be associated with cognitive abnormalities and the localization of lesion was in left temporal lobe.

There have been some case studies that investigated association between psychotic disorders and arachnoid cysts in literature. Bahk *et al.* reported a case of brief psychosis associated with an arachnoid cyst [3]. Da Silva *et al.* reported an arachnoid cyst in a patient with psychosis [4], and Kohn *et al.* mentioned about eight cases with intracranial cysts and neuropsychiatric symptoms [5]. Researchers emphasize that surgical intervention can ameliorate psychiatric symptoms in some cases, and if surgery is not plausible psychopharmacological therapy is indicated. Subsequent cases, which have been reported approximately 20 years after the research of Kohn *et al.* are confirming the emphasis of former researchers. Baquero *et al.* reported a schizophrenia-like psychotic disorder case who had a right arachnoid cyst and whose psychotic symptoms were remitted after neurosurgical treatment of arachnoid cyst [6]. Shiga *et al.* reported a case with an arachnoid cyst whose psychotic symptoms ameliorated after surgical intervention [7].

Kuloglu *et al.* reported a case with schizophrenia like psychosis with a left temporal lobe arachnoid cyst [8]. Vakis *et al.* reported remission of psychotic symptoms in-patient after removal of left temporal arachnoid cyst [9].

Our patient is classified as early onset schizophrenia. Early onset schizophrenia is described as onset of disease before age 18. Early onset schizophrenia is suggested to be associated with severe clinical course, poor outcome, reduced response to antipsychotic treatment and increased brain abnormalities [14-17]. Our case had hallucinations, cognitive deterioration, and poverty of speech and delusions, which might be strongly associated with left temporal lobe functioning. Especially quick onset of cognitive impairment is of interest. It is well known that patients with schizophrenia usually suffer from cognitive impairment, but such a quick deterioration is not common. In a review, Wester remarks that a variety of cognitive functions were found to be impaired, including verbal perception and memory, more complex verbal tasks, visuospatial functions, and visual attention due to arachnoid cysts [18]. B Gjerde *et al.* investigated the effect of arachnoid cysts on executive cognitive functions and whether surgery may provide an improvement. In their study 22 patients with arachnoid cysts and 13 control patients scheduled for low back surgery were evaluated with Delis-Kaplan Executive Function System (D-KEFS) tests, one day before surgery and a minimum of three months after surgery.

In the first tests, the arachnoid cyst group scored worse than the control group in verbal knowledge, mental flexibility, inhibitory capacity, problem solving, and planning skills. In the postoperative assessment, the arachnoid cyst group significantly improved performance and were no longer different from the control group in most of the subtests. As a result the authors concluded that arachnoid cysts seem to impair not only basic cognition, but also executive functions. Most of this impairment appears to be reversible after surgical cyst decompression [19].

For our case, it is not actually clear whether the symptoms, indicating a rapid cognitive decline, were influenced by the left temporal lobe arachnoid cyst. The only way to determine any effect of the arachnoid cyst would be to remove it. However, the patient did not fulfill the criteria used for surgical intervention used at the department of neurosurgery in our hospital, such as indisputable signs of compression to neighboring tissues. Moreover, the patient did not continue to be followed up by us.

To our knowledge, this is the first case report that presents early onset schizophrenia with a left temporal arachnoid cyst. We suggest that patients with early onset schizophrenia should be assessed by brain imaging regularly. Further studies are needed to clarify the incidence and the possible etiological role of arachnoid cysts in patients with schizophrenia.

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