

A Rare Occurrence of Arachnoid Cyst in a Patient of Mental Subnormality

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ABSTRACT

An arachnoid cyst is a collection of cerebrospinal fluid (CSF) that develops in the membrane enveloping arachnoid matter in the brain or spinal cord. It is a common intracranial expansive condition, often discovered incidentally. With a prevalence of 0.5 to 2.7%, it occurs more commonly in men than women. It is mostly treated conservatively. In case of severe symptoms due to mass effect, surgical intervention may be indicated. To the best of the authors' knowledge, no aetiological significance has been ascribed to arachnoid cyst in the pathogenesis of psychiatric illnesses yet. Although there is recent evidence of arachnoid cysts occurring in patients with psychosis, it is usually labelled as an incidental finding. Here, the authors report a rare and unusual finding of an arachnoid cyst in a case of intellectual development disorder.

Key Words: Arachnoid cyst, Mental retardation, Mental subnormality, Intellectual disability, Disorder of intellectual development.

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INTRODUCTION

An arachnoid cyst is a collection of cerebrospinal fluid (CSF) that develops in the membrane enveloping arachnoid matter in the brain or spinal cord. It is a common intracranial expansive condition, often discovered incidentally.¹ With a prevalence of 0.5 to 2.7%, it affects males more than females.²

Arachnoid cysts may be found anywhere along the craniospinal axis, although they frequently occur in the temporal fossa.³ Arachnoid cysts have also been reported to occur in the posterior fossa, cerebellopontine angle, suprasellar, pineal region, petroclival area, and parietal region.²

Arachnoid cyst is mostly non-neoplastic and treated conservatively. In case of severe symptoms due to mass effect, surgical intervention may be indicated. Most common symptoms include headache, nausea, vertigo, and convulsions.^{1,2} Surgical intervention techniques most commonly performed are fenestration, cystoperitoneal shunting, or excision of the cyst. Craniotomy and endoscopy are the two prominent surgical options used to drain the cyst.^{2,4}

Psychiatric illnesses are traditionally believed to occur in the absence of any structural brain abnormality.

However, with the growing accessibility of brain imaging, structural brain anomalies are increasingly being reported in psychiatric patients.⁵ It has also been observed that psychiatric patients with arachnoid cysts benefit from electroconvulsive therapy (ECT).⁶

Recently, research has been conducted to find any possible causal effect of arachnoid cyst on cognition and neuropsychiatric symptoms.⁷ There is some indication that arachnoid cysts impair cognitive and executive functions to some degree.⁴ However, the results are inconclusive. Although arachnoid cyst has been reported to occur in patients of mental retardation, depression, anxiety, and psychosis, it is more often than not labelled as an incidental finding.^{4,8,9}

Here, the authors report a case of mental retardation or disorder of intellectual development, whose brain imaging revealed an arachnoid cyst.

CASE REPORT

A 43-year single female was brought by her family to the emergency department with complaints of self-mutilating behaviour, including pulling her hair, slapping herself, and hitting her head on the floor, along with weeping spells, headache, vomiting, and spells of unresponsiveness lasting 5 to 10 minutes. She was known to a psychiatric facility on account of moderate mental retardation and had frequent admissions in the past owing to behaviour disturbances. Aggravation of her symptoms was triggered by the death of her sister three months ago. Her verbal and communication skills were limited and poorly developed since birth, despite receiving special education. Family history was significant, engendering mental retardation in two siblings. On mental state, she had an unkempt appearance with normal psychomotor activity. She made but

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did not maintain eye contact. She had limited language skills. Mood objectively appeared low, but no prominent psychotic features or behavioural disturbance were seen.

She was admitted for indoor management in the psychiatry ward with the diagnosis of moderate intellectual disability, according to the International Classification of Diseases (ICD-11). During hospital stay, she continued to complain of a headache, but her vomiting resolved. Neurological evaluation was performed to explore any organic pathology behind her symptoms.

Physical examination was unremarkable. However, a computed tomography (CT) scan of the brain was advised, which revealed an arachnoid cyst measuring 2.6 x 2.6 x 4.1 cm at the posterior fossa, causing remodelling of the underlying right occipital lobe. No mass effect, midline shift, haemorrhage, or parenchymal lesion was seen. Intra- and extra-cerebral CSF spaces were normal. Air sinuses and mastoid air cells were normal.

Neurosurgical opinion was sought. As there was no mass effect, no surgical intervention was done, and the arachnoid cyst was labelled as an incidental finding. Within two to three days, her headache resolved spontaneously. Patient's behavioural disturbances and agitation also settled with haloperidol, quetiapine, and escitalopram. Moreover, her family was counselled and provided informational care about prognosis and behaviour modifications to aid the management plan.

DISCUSSION

Arachnoid cyst may be congenital or acquired and is mostly treated conservatively.⁴ It is a type of space-occupying lesion (SOL). Brain SOLs can have focal as well as generalised symptoms. Focal signs include: weakness, visual, or speech impairment. Generalised symptoms occur as the tumour size increases and/or when intracranial pressure rises. These symptoms include: headache, vomiting, seizures, neurocognitive symptoms, and personality changes.¹⁰ This patient also developed a transient headache. But, as it resolved spontaneously, it cannot be undisputedly attributed to the arachnoid cyst.

In Pakistan, to the authors' knowledge, no association of arachnoid cysts is reported with intellectual disability. However, there is a report of an incidental finding of cerebral varix in a patient with schizophrenia.⁵ Internationally, there are a few case reports of arachnoid cysts in psychiatric patients.

According to research, arachnoid cysts were reported to impair cognitive and executive functions, which improved after surgical decompression of the cysts. There were also some reports of psychosis in patients with arachnoid cysts, implying a potential aetiological significance.^{4,9} Arachnoid cysts have also been reported in children with moderate intellectual disability, epilepsy, and attention deficit.⁸

Patients with arachnoid cysts were said to have higher preoperative levels of anxiety and depression than the general population, and their symptoms mitigated after decompressive surgery. Furthermore, it was seen that right-sided cysts were associated with higher anxiety and depression as compared to

left-sided temporal cysts.⁴ This patient's arachnoid cyst was also located on the right side. As the cyst was an incidental finding, no neurosurgical intervention was made in this patient, and its potential therapeutic implications could not be explored.

A 22-year patient was reported whose primary complaints were hallucinations and mild intellectual disability. His magnetic resonance imaging revealed an incidental finding of an arachnoid cyst localised in the posterior infratentorial cranial fossa.¹ Similarly, a case report discusses a 55-year male with multiple psychotic episodes. His CT scan revealed a relatively large left anterior superior arachnoid cyst with a mass effect on the frontal lobe. However, it was labelled as an incidental finding, and no surgical intervention was performed.⁹

Likewise, in this patient, the finding was incidental, and no causative significance can be imputed to the arachnoid cyst. This finding sheds new light on the possible pathogenesis of mental retardation. This case report emphasises the importance of neurological examination and investigations in psychiatric patients, and highlights the need to do further research on a larger scale to unveil the possible aetiological significance of structural anomalies in psychiatric illnesses such as mental retardation.

PATIENT'S CONSENT:

Informed consent was taken from the patient's guardian to publish the data concerning this case.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

LAB: Conception, design of the work, drafting, acquisition, and revision of the manuscript for important intellectual content.

TA: Acquisition, analysis, interpretation of the data, and critical revision of the manuscript.

Both authors approved the final version of the manuscript to be published.

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