Case Report

Delusions of control in a case of schizophrenia coexisting with a large cerebellar arachnoid cyst

Ying-Ying Wu', Yu-Chih Shen ab*

A rachnoid cysts are intra-arachnoid space-occupying brain lesions, typically of a benign, congenital nature. Such cysts are quite rare, accounting for only 1% of all lesions in the intracranial space and in most cases are accidentally diagnosed through neuroimaging [1]. Although arachnoid cysts are considered incidental lesions in patients with schizophrenia, the location of the lesion may influence the specific pattern of the illness [1]. We report a case of schizophrenia coexisting with a large cerebellar arachnoid cyst in a patient who presented mainly with delusions of control. The possible relationships between the cerebellar lesion, schizophrenia, and delusions of control are discussed.

CASE REPORT

A 31-year-old single woman was brought to the emergency department by the police because of psychotic behavior and delirium. She had a history of schizophrenia for 7 years and had been followed in different outpatient clinics with irregular use of various psychotropic medications. Her unusual behavior started roughly 1 week before this admission. She was confused and disoriented as to place and time. She described some vague delusions of control of someone controlling her actions, and she walked unsteadily as if about to fall. She was admitted to the psychiatric ward to rule out any medical etiology for her psychiatric symptoms. Her blood count, serum chemistry, and illegal drug screen were within normal limits. Electroencephalography showed no signs of seizure activity. Brain magnetic resonance imaging revealed an arachnoid cyst about 6.9 cm × 4.1 cm × 3.1 cm over the right posterior fossa with cerebellum compression [Figure 1]. Because of a lack of signs of neurological deficit, the neurological surgeons recommended against any neurosurgical intervention. After 3 days of hospitalization, she showed marked improvement in delirium but not in psychosis with her medication regimen (orally disintegrating [ODT] olanzapine 20 mg/day). She described that her parents were the incarnation of devils. They could control not only her actions but also her thoughts and feelings. Sometimes, she showed a fierce facial expression and said that devils were controlling her unusual actions during the interview. The devils were also planting thoughts in her brain, listening to her thoughts, and watching her no matter where she went or what she did. She displayed poor insight into her medical condition, symptoms, and need for treatment, and presented with poor medication compliance. During the initial 4-week treatment, she was administered ODT olanzapine up to 30 mg/day; however, her delusions of control persisted. Therefore, during the following 4 weeks, a liquid formulation of valproate 1000 mg plus ODT olanzapine 30 mg/day were administered. She also received

© 2017 Tzu Chi Medical Journal | Published by Wolters Kluwer - Medknow

Access this article online

Quick Response Code:

Website: www.tcmjmed.com

DOI: 10.4103/tcmj.tcmj_23_17

How to cite this article: Wu YY, Shen YC. Delusions of control in a case of schizophrenia coexisting with a large cerebellar arachnoid cyst. Tzu Chi Med J 2017;29:115-7.
showed a poor response to medication because of the relatively large size of the cerebellar lesion.

Although the association between the arachnoid cyst and her schizophrenia was unclear, the cyst may have given rise to her symptom presentation (delusions of control). In a positron emission tomography study [6], patients with delusions of control were scanned while they performed a simple motor task, in which they were required to move a joystick in 1 of 4 directions chosen at random. This willed action task was compared with a similar task, in which the joystick movements were paced. Patients with delusions of control showed overactivation of the cerebellar–parietal network relative to normal controls and to patients who did not have delusions of control. In our patient, the arachnoid cyst over the right posterior fossa with cerebellum compression may have caused abnormality in the cerebellar–parietal network resulting in her delusions of control.

Psychotic symptoms may occur in patients with abnormality in the cortico-cerebellar-thalamic-cortical circuit (CSTCC). It is thought that cerebellar feedback pathways through the thalamus to the cerebral cortex may play a role in psychotic symptoms [5]. Some postmortem and neuroimaging studies have demonstrated a significant negative correlation between cerebellar gray matter volume reduction and hallucinations [7,8]. Moreover, a significant correlation between delusions and activation of the cerebellum has been found [9]. In our patient, psychotic symptoms other than delusions of control may have resulted from CSTCC abnormality due to her large cerebellar arachnoid cyst.

This case indicates that there might be a relationship between cerebellar lesions and schizophrenia. This case report also suggests a relationship between cerebellar lesions and delusions of control. Further, neuroimaging studies are warranted to provide greater insight into the underlying neurobiological basis.

Declaration of patient consent

The authors certify that the patient has obtained appropriate patient consent form. In the form the patient has given her consent for her and other clinical information to be reported in the journal. The patient understands that her name and initial will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Wester K. Intracranial arachnoid cysts – Do they impair mental functions? J Neurol 2008;255:1113-20.
2. Bozkurt Zincir S, Kivilcim Y, Izci F, Semiz UB. Schizophrenia-like psychosis and dandy-walker variant comorbidity: Case report. Psychiatry Investig 2014;11:102-4.
3. Heidrich A, Schmidtke A, Lesch KP, Hofmann E, Becker T. Cerebellar arachnoid cyst in a firesetter: The weight of organic lesions in arson. J Psychiatry Neurosci 1996;21:202-6.
4. Maner F, Babalioglu M, Cetinkaya O, Ipekcioglu D, Ergen N, Yesil R,
et al. The coexistence of arachnoid cyst with first episode psychosis: Four cases. J Neurol Disord 2014;2:186.
5. Andreasen NC, Pierson R. The role of the cerebellum in schizophrenia. Biol Psychiatry 2008;64:81-8.
6. Spence SA, Brooks DJ, Hirsch SR, Meehan J, Grasby PM. A PET study of voluntary movement in schizophrenic patients experiencing passivity phenomena (delusions of alien control). Brain 1997;120:1997-2011.
7. Neckelmann G, Specht K, Lund A, Ersland L, Smievoll AI, Neckelmann D, et al. Mr morphometry analysis of grey matter volume reduction in schizophrenia: Association with hallucinations. Int J Neurosci 2006;116:9-23.
8. Weinberger DR, Kleinman JE, Luchins DJ, Bigelow LB, Wyatt RJ. Cerebellar pathology in schizophrenia: A controlled postmortem study. Am J Psychiatry 1980;137:359-61.
9. Manford M, Andermann F. Complex visual hallucinations. Clinical and neurobiological insights. Brain 1998;121:1819-40.