

CHIARI MALFORMATION TYPE 1 IN AN ADOLESCENT WITH CONVERSION DISORDER

Seda Aybuke Sari¹, Oyku Ozdemir¹ & Unal Ozum²

¹Department of Child and Adolescent Psychiatry, Sivas Cumhuriyet University School of Medicine, Sivas, Turkey

²Department of Neurosurgery, Sivas Cumhuriyet University School of Medicine, Sivas, Turkey

received: 27.11.2021;

revised: 3.2.2022;

accepted: 25.2.2022

* * * * *

INTRODUCTION

Chiari malformation type 1 (CM1) is defined as herniation of the cerebellar tonsils from the foramen magnum of more than 5 mm (Tubbs et al. 2007). CM1 is the most common and clinically least severe type of Chiari malformation. Most patients diagnosed with CM1 are asymptomatic and are usually detected incidentally in brain imaging performed for other reasons (Tubbs et al. 2015). Studies show that CM1 is detected in 1% to 3.6% of children (Strahle et al. 2011). The most common symptom of CM1 in both adult and pediatric patients is headache, which is present in approximately 80% of patients. Excepting pain, symptoms including motor and sensory deficits, hand muscular atrophy, lower cranial palsy, cerebellar ataxia, nystagmus, dysphagia, and dysphonia are observed (Ciaramitaro et al. 2019).

Psychiatric disorders accompanying CM1 have been mentioned in a few case reports. These cases are generally adult patients diagnosed with anxiety disorders, major depression, panic disorder, and bipolar disorder. In a comprehensive study conducted on adult CM patients, 43.8% of the patients were found to have psychiatric disorders. The most common psychiatric disorders were major depressive disorder and anxiety disorder, with a rate of 18.8% and 12.5%, respectively (Bakim et al. 2013). In a study in which 86 pediatric CM 1 cases were evaluated, at least one psychiatric disorder was found in 47% of these children (Lacy et al. 2018). Here we present a case of CM1 accompanying conversion disorder for the first time in the literature.

CASE REPORT

A sixteen-year-old girl was admitted to our outpatient clinic with a tremor on her right hand and fainting. In her anamnesis, she reported a feeling of tightness in the heart, shortness of breath, tremors, and numbness in the whole body, which ended with crying and started four months ago after a serious argument with her father. This condition takes about half an hour, and it started to happen almost every day after school started, and for the last week, fainting taking about half an hour was accompanied by tremors that disappeared in her sleep. Due to increasing symptoms, she was not going to school for the last week.

Concerned about this situation, the family was admitted to the emergency service several times during this period. Due to ongoing symptoms, they were directed to the neurology department one month ago. MRI and EEG were requested. Her EEG was normal but CM1 was detected in the MRI. The neurologist consulted her with the neurosurgeon due to CM1 and the child psychiatrist with a preliminary diagnosis of conversion disorder. In the neurosurgery outpatient clinic no surgery was considered, but the follow-up was recommended for her.

In psychiatric assessment, we learned that she did not have good school success, had bad peer relations, and had no close friends. Moreover, she had no good relations with her father, felt pressure from him, and occasionally argued with him. Her complaints began four months ago following a severe argument with him. She had an age-appropriate appearance; her mood was euthymic, her affect was compatible with her mood. In her thought content, she had no concerns about her condition. She was pleased that her family had fallen on her and taken care of her and that their interest had increased. It wasn't a problem for her not to go to school (secondary gains).

After the psychiatric interview, she was diagnosed with conversion disorder. Medical treatment was adjusted as fluoxetine 20 mg/day and lorazepam 1 mg/day. Follow-up after one month, she had no fainting during this time, and she experienced none of these symptoms, but tremor on her right hand was continuing on the second and third fingers. In her subsequent follow-up, the tremor on her hand was again in her whole hand, and she had started experiencing a feeling of tightness in the heart, shortness of breath, tremors, and numbness in the entire body again. But it wasn't accompanied by fainting. Lorazepam treatment was stopped, and fluoxetine treatment increased to 30 mg per day. The monthly follow-up of the case continues in our outpatient clinic.

DISCUSSION

Conversion disorder is a psychiatric disorder accompanied by one or more symptoms that usually appear after a stressful life event, affect sensory or voluntary motor functions, and mimic a neurological or other general medical condition (APA 2013). The

main problem in CD is the conflict underlying the subconscious and the expression of the anxiety created this conflict by transforming into somatic symptoms (Dogan 2007).

Several studies have examined the relationship between CM I and psychiatric disorders and hypothesized the underlying mechanism. Schmahmann and Sherman (1998) reported that the cerebellum has also been non-motor functions such as cognitive processes and emotion regulation along with motor functions. They defined 'cerebellar cognitive, affective syndrome,' which manifests itself with cognitive abnormalities and emotional dysregulation, especially because of abnormalities and specific cerebellar lesions affecting the posterior region of the cerebellum and vermis. Although CM1 does not directly involve the posterior region of the cerebellum, several mechanisms such as afferent pathways involving the middle cerebral peduncles, disruption of cerebrospinal fluid flow dynamics, and increased intracranial pressure may result in symptomatic complaints. CM may cause depression and anxiety by pressing on the brain stem, affecting serotonergic and noradrenergic systems, including the dorsal and median raphe and locus coeruleus (Peterson et al. 2016).

Furthermore, fMRI imaging studies in children with CM1 showed impaired white matter tracts, especially in the middle cerebellar peduncle. White matter abnormalities have been associated with many psychiatric disorders such as depression and anxiety disorder (Lacy et al. 2018).

CONCLUSION

Studies show that changes in the cerebellum as a result of CM can cause psychiatric symptoms as well as symptoms such as pain, cerebellar ataxia, motor deficits, dysphagia, dysphonia, and sensory deficits. In line with all this information, we thought that the symptoms in our case might be due to CM1. To date, there has not been a case report with CD and CM1 coexistence in the literature. Therefore, we believe that our case will make a significant contribution to the literature.

Acknowledgements: None.

Conflict of interest: None to declare.

Contribution of individual authors:

Aybüke Sari: case design, writing the case report.

Oyku Ozdemir: writing the case report.

Unal Ozum: approval of the final version.

References

1. American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5)*. 5th ed. Arlington: American Psychiatric Association, 2013
2. Bakim B, Goksan Yavuz B, Yilmaz A, Karamustafalioglu O, Akbiyik M, Yayla S et al: *The quality of life and psychiatric morbidity in patients operated for Arnold-Chiari malformation type I*. *Int J Psychiatry Clin Pract* 2013; 17:259-263
3. Ciaramitaro P, Ferraris M, Massaro F, Garbossa D: *Clinical diagnosis-part I: what is really caused by Chiari I*. *Childs Nerv Syst* 2019; 35:1673-1679
4. Doğan O: *Konversiyon bozukluğu*. Köroğlu E, Güleç C. *Psikiyatri Temel Kitabı*. Baskı, Ankara HYB Basın Yayım 2007 s. 377-85 (In Turkish)
5. Lacy M, DeDios-Stern S, Fredrickson S, Parikh S, Nader T, From DM: *Prevalence of psychiatric diagnoses in pediatric Chiari malformation type I*. *Pediatr Neurosurg* 2018; 53:371-378
6. Peterson KA, Housden CR, Killikelly C, DeVito EE, Keong NC, Savulich G et al: *Apathy, ventriculomegaly and neurocognitive improvement following shunt surgery in normal pressure hydrocephalus*. *Br J Neurosurg* 2016; 30:38-42
7. Schmahmann JD & Sherman JC: *The cerebellar cognitive affective syndrome*. *Brain* 1998; 121:561-579
8. Strahle J, Muraszko KM, Kapurch J, Bapuraj JR, Garton HJ, Maher CO: *Chiari malformation Type I and the syrinx in children undergoing magnetic resonance imaging*. *J Neurosurg Pediatr* 2011; 8:205-13
9. Tubbs RS, Lysterly MJ, Loukas M, Shoja MM, Oakes WJ: *The pediatric Chiari I malformation: a review*. *Childs Nerv Syst* 2007; 23:1239-1250
10. Tubbs RS, Griessenauer CJ, Oakes WJ: *Chiari malformations*. In: Albright AL, Pollack IF, Adelson PD, editors. *Principles and practice of pediatric neurosurgery*. 3rd edition. New York: Thieme Publishers 2015. p. 192-204

Correspondence:

Assoc. Prof. Seda Aybuke Sari, MD

Department of Child and Adolescent Psychiatry, Sivas Cumhuriyet University School of Medicine

Sivas 58 000, Turkey

E-mail: aybuke_sari@hotmail.com