

# A Case of Type II Citrullinemia Misdiagnosed as Conversion Disorder

Seda Aybuke Sari<sup>1</sup>, Esin Ozatalay<sup>2</sup>

<sup>1</sup>Cumhuriyet University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Sivas - Turkey  
<sup>2</sup>Akdeniz University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Antalya - Turkey

## ABSTRACT

A case of type II citrullinemia misdiagnosed as conversion disorder

Conversion disorder (CD) is a psychiatric disorder which can mimic organic disorders due to symptom similarities. It is characterized by the presence of one or more neurologic or vegetative symptoms that are usually triggered by stress. Therefore, medical diseases, neurological and psychiatric disorders should be considered in the differential diagnosis. We describe a case of a 12 year-old girl with type II citrullinemia that has been initially misdiagnosed as CD because of family attitude, secondary gains, and presence of symptoms such as clouding of consciousness and irritability. She has had no abnormal organic findings in previous exams. Metabolic disorders should also be considered in differential diagnosis of CD, even though they may be seen rarely.

**Keywords:** Childhood, clouding of consciousness, conversion disorder, type II citrullinemia

## ÖZET

Konversiyon bozukluğu ile karışan tip II sitrülünemi olgusu

Konversiyon Bozukluğu (KB), belirtiler arasındaki benzerlikler nedeniyle organik patolojileri taklit edebilen, genellikle stresör faktörlerle tetiklenen bir veya daha fazla nörolojik veya vejetatif semptom varlığı ile karakterize psikiyatrik bir hastalıktır. Bu nedenle ayırıcı tanıda genel tıbbi hastalıklar, nörolojik ve psikiyatrik bozukluklar göz önünde bulundurulmalıdır. Burada bilinç bulanıklığı, iritabilite vb belirtilerle başvuran, önceden yapılan organik tetkiklerinde patoloji saptanmayan; belirtiler, aile tutumu ve ikincil kazançlar nedeniyle Konversiyon Bozukluğu düşünülen fakat sonrasında Tip II Sitrülünemi tanısı alan 12 yaşında bir kız olgu anlatılacaktır. Nadir görülmelerine karşın metabolik hastalıkların da KB ayırıcı tanısında düşünülmesi gerektiği vurgulanmak istenmiştir.

**Anahtar kelimeler:** Çocukluk çağı, bilinç bulanıklığı, konversiyon bozukluğu, tip II sitrülünemi



**How to cite this article:** Aybuke-Sari S, Ozatalay E. A case of type II citrullinemia misdiagnosed as conversion disorder. *Dusunen Adam The Journal of Psychiatry and Neurological Sciences* 2017;30:364-367. <https://doi.org/10.5350/DAJPN2017300411>

Address reprint requests to / Yazışma adresi:  
Seda Aybuke Sari,  
Cumhuriyet University, Faculty of Medicine,  
Department of Child and Adolescent  
Psychiatry, 58000 Sivas, Turkey

Phone / Telefon: +90-346-258-1188

E-mail address / Elektronik posta adresi:  
sedaysari@gmail.com

Date of receipt / Geliş tarihi:  
May 25, 2017 / 25 Mayıs 2017

Date of the first revision letter /  
İlk düzeltme öneri tarihi:  
June 29, 2017 / 29 Haziran 2017

Date of acceptance / Kabul tarihi:  
August 7, 2017 / 7 Ağustos 2017

This case report was presented as a poster at the 25<sup>th</sup> National Child and Adolescent Psychiatry Congress.

## INTRODUCTION

Conversion disorder (CD) is a subtitle of Somatic Symptom and Related Disorders and is also referred to as Functional Neurological Symptom Disorder in Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) (1). The incidence of CD in psychiatric outpatient clinics is 1-3% in developed countries and about 10% in developing countries. There is no gender difference in incidence before puberty, but it is 2-10 times more common in women after adolescence (2,3). In a study conducted in our country, the incidence in childhood psychiatric outpatient clinic was reported as 2-3% (4).

Type II citrullinemia is an autosomal recessive

inherited urea cycle deficiency due to argininosuccinate synthetase deficiency. It is a hereditary metabolic disease which presents with hyperammonemic encephalopathy episodes that is characterized by sudden deterioration in consciousness, restlessness, and bizarre behaviors (5). The prevalence varies from 1/100,000 to 1/230,000 in Japan, but is lower in North America and Europe (6). In this case report, we aimed to draw attention to the fact that CD may be confused with any organic disorder case, and that patients may be misdiagnosed as CD if the diagnoses and analyses are overlooked. A case diagnosed with type II citrullinemia—after having been followed with CD diagnosis for 10 months—will be presented. A written legal consent has been obtained from the family of the subject.

## CASE

The patient is a 12-year-old girl and 6<sup>th</sup> grader. She was referred to our outpatient clinic from pediatric neurology for her “irritability, loss of appetite, restlessness and bizarre behaviors”. She was visiting with her father.

According to the history obtained from the father; the patient has had 2-3 hours persisting symptoms of sleepiness, eyes rolling back, fatigue, fluctuations in consciousness, screechy voice, slurred speech, strange jumps, and not responding when called. She has been having the symptoms—intensified or calmed down on and off—for about 4 years then. Since these episodes recurred at least 10-15 days per month, the family got worried about it and each time admitted either at an emergency service or a physician’s clinic. They thought that the episode might recur when the child was unattended, so they have not sent her to school most days, even if she has not had any symptoms. Because of the complaints, the patient has been previously investigated at our hospital and another medical center (at several outpatient clinics, including the pediatric metabolism outpatient clinic) to no avail. Given that the main complaint was faint-like presentation and changes in consciousness, she was once again referred to the pediatric neurology outpatient clinic. Since blood biochemistry, MRI and EEG performed in the pediatric neurology outpatient clinic were normal and neurological examination revealed no abnormalities, she was referred to our clinic with the provisional diagnosis of conversion disorder (CD).

The patient stated that; she has not remembered the fluctuations in consciousness afterwards; has not recently had any trouble that could cause or trigger this condition; did not like to eat meat, and experienced these conditions after having meat dishes; and she expressed her pleasure about the family’s interest by saying “I wish I got fainted, so they will again care about me”

S, was born vaginally, in term, as the 2<sup>nd</sup> child of the family, was not incubated, has not had any seizure, her walking, speech, and toilet training was in time. She has been a picky eater child; her physical development has always been behind her peers. She has never been so

good at school, was able to read and write in the second period of the first grade. The first complaints began in the third grade, after then her academic success has gone downhill. She has been spoiled especially by the father; has not got along with the little sister and was very jealous when the father took care of the sister. She has been good with her elder brother. She has been peevish and angry with her mother because the mom has not gone all the way with her. Her harshness and anger has increased in the past year and has also begun to negatively affect peer relations at school.

The brother is the only male child, has no medical problems, is 9<sup>th</sup> grader at a science high school in another province, he is good at school, a valued child in the eyes of the mother. The sister is a 5 year-old healthy child, at kindergarten. Mother is a house-wife. She is anxious and tense. She is very much concerned and upset about her daughter. The father is a merchant, a high school graduate. He is also upset about S’s problem and is angry that no resolution is reached. The patient was described by the father as “academically poor, bad in peer relationship and having a “special” place in the family; she got peevish when not gone all the way with her. When family relations were examined, it was revealed that there were parental conflicts. The child’s problem served a “balancing” function within the family and decreased conflicts.

Her examination revealed that her physical development was behind from her peers. Her clothing and self-care were consistent with the socioeconomic status. She had quite glittering eyes and a low voice. The general attitude was negativist and sarcastic. Her mood was euthymic and her affect was inappropriate. Despite knowing her current problem and seeing her family’s worry, she was quite relaxed. In terms of thought content, she was happy that she had a “disease”, and was pleased with the interest she received. Thought structure and perception were usual. Her psychomotor activity was decreased.

The facts that; the family was always worried about the child’s condition and repeated the diagnostic tests at various centers; they went all the way with her; they were not much cared about her dropping out from school and neglecting her responsibilities; they

constantly emphasized that she was “ill” and she used this as a secondary gain; the patient had a borderline mental capacity (her score in Wechsler Intelligence Scale for Children [WISC-R] was IQ: 72); and the lack of any positive findings in organic and metabolic examinations that had been repeated many times led us to the diagnosis of CD.

The case was followed for about 10 months by us. During the 10-month period, we worked with the family on namely “patient management” by instructing them to keep records of fluctuations in consciousness or fainting-like presentations, to reduce hospital or emergency admissions, to ensure regular school attendance, to avoid backing up her secondary gains, and to be followed up at single center rather than various centers. Meanwhile, the presentation of clouding of consciousness continued over time at variable intervals. It was tried to reduce emergency services admissions and to ensure school attendance. Since the family was not successful in patient management and the frequency of the episodes increased, the patient was medicated with 0.5 mg/day of risperidone and 20mg/day of fluoxetine and continued for 6 months. Partial response was achieved with medical treatment. Her rapid aggressions, problems in relations with peers and her brother decreased. Despite the partial response observed by us, the parents—especially the father—stated that the psychiatry referral and follow-up in our department was of no use.

When it was noticed that the patient got worse after having proteinaceous food, especially after meat dishes, she was once again consulted with pediatric metabolism clinic. Metabolic screening was re-ordered. However, the father was angry that the diagnosis has not been made up to that time, so he preferred that the metabolic scan to be performed at another university hospital. The result of metabolic scan performed at another center was compatible with type II citrullinemia. It was determined that the patient’s episodes were associated with post-prandial hyperammonemia. It was observed that when the diagnosis was set, the family and the patient got relaxed; because in their mind, having a “real” illness was better than having a psychiatric illness. Although an organic disorder was detected, because of both the

negative dynamics of the family and inadequacy in patient management and anxiety coping skills, it was decided to continue follow up. However, the family terminated the medical treatment of their own accord and discontinued follow up.

## DISCUSSION

CD is a psychiatric disorder accompanied by one or more symptoms that suggest a neurological or another general medical condition affecting sensory or motor functions (1). CD can be confused with many organic diseases in terms of symptoms and may mimic these diseases. Particularly epilepsy, and also other neurological disorders (paralysis, multiple sclerosis, gullian barre syndrome, myopathy, etc.) should be considered in the differential diagnosis of CD. Medical disorders such as hypoglycemia, hyperthyroidism, and hyperparathyroidism and psychiatric disorders (catatonic schizophrenia, dissociative disorder, factitious disorder, simulation, hypochondriasis, etc.) should be considered in the differential diagnosis as well. For this reason, patients should be carefully evaluated, all organic tests should be done and all other possible diagnoses should be excluded before referring the patient to the psychiatric outpatient clinic.

Type II citrullinemia is an autosomal recessive urea cycle deficiency, originating from the mutation in the SLC25A13 gene that encodes the liver-specific mitochondrial aspartate-glutamate transporting protein, which may result fatally due to severe encephalopathy presenting with hyperammonemia. The argininosuccinate synthetase enzyme is deficient and this type is known as the adult onset form. Symptoms of encephalopathy—resulting from hyperammonemia—such as clouding in consciousness, dizziness, sleepiness, epileptic seizures, etc. prevail in the clinical presentation. It is known that symptoms improve by diet therapy in cases without severe encephalopathy (5,8). In the literature, there are some cases similar to our case, those are with late-onset. These cases were initially diagnosed with epilepsy and followed by neurology. In the literature, we have not found another case which was at young ages and

was followed up for conversion disorder, and subsequently diagnosed with a metabolic disease, such as type II citrullinemia. Only one case of type II citrullinemia is known to have been misdiagnosed with schizophrenia and has taken antipsychotic treatment for many years (9).

Organic etiology should be considered and patients should be referred to pediatrics clinic for reevaluation in cases with atypical symptoms and/or when we can not completely exclude the organic causes; in cases compatible with CD but occasionally having diverse presentation; and in resistant cases with no improvement in symptoms despite appropriate treatment and therapeutic approach. As child-adolescent psychiatrists, having good level of clinical knowledge in addition to psychiatry is important in terms of recognizing the organic problems and referring to the related clinician. Considering the fact that, recently it has been popular to consider a psychiatric illness for any symptom, or to make a psychiatric referral for every patient with normal examination, there's a whole lot more work to be done for other clinicians in clinical information gathering, observation and evaluation steps. Therefore, in order to set the correct diagnosis, determine the treatment and, most

importantly, reduce the suffering of the patient, we, as clinicians, should have a good collaboration and information sharing in the follow-up of our patients. Our case is noteworthy in that, although metabolic diseases are rarely seen, they can be confused with CD and should be considered in differential diagnosis. Although metabolic disorders presenting with hyperammonemia are not the ones to consider in the first step, they should be considered as well in resistant CD cases. In addition, our case is a good example that it would be possible to minimize the difficulties in diagnosis and treatment of CD, and to improve the prognosis with early intervention by multidisciplinary work of pediatric, child psychiatry, child neurology, child nutrition and metabolism departments.

Contribution Categories	Name of Author
Follow up of the case	S.A.S.
Literature review	S.A.S., E.O.
Manuscript writing	S.A.S., E.O.
Manuscript review and revision	S.A.S., E.O.

**Conflict of Interest:** Authors declared no conflict of interest.

**Financial Disclosure:** Authors declared no financial support.

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