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Case Report

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Alice in wonderland syndrome and epstein-barr virus infection

Abstract

Infection with Epstein-Barr virus (EBV) is common and usually occurs in childhood or early adulthood. EBV is the cause of infectious mononucleosis, usually associated with fever, sore throat, swollen lymph nodes in the neck, and sometimes an enlarged spleen. Alice in Wonderland Syndrome (AWS), also called Todd's syndrome, is a rare condition, principally involving visual and somesthetic integration. AWS remains a poorly known and probably misdiagnosed syndrome, can occur at any age but mostly in children is mostly associated with migraine and EBV infection. We present a 10-year-old patient who went to the emergency department with visual distortion of corporal form and bizarre behaviour, initially suspected as a psychiatric pathology but subsequently diagnosed with infectious mononucleosis and serologically confirmed Epstein-Barr virus (EBV) infection. This case reflects the importance of recognizing this syndrome by emergency physicians in order to avoid inadequate referrals to the psychiatric service.

Keywords: alice in wonderland síndrome, epstein-barr virus, infectious mononucleosis, perceptional disorder

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Case report

A 10 year old female patient presents to the emergency department with suspected hallucinations. The patient has no previous medical admissions, except for an appendicetomy at the age of 8 years and is currently on treatment with amoxicillin for suspected tonsillitis prescribed by her local paediatrician.

The patient is brought by mother as she is very concerned she as her daughter has been going around the house all day "as crazy". When questioned the patient describes that her hands are bigger than her arm, describes her feet as huge, she is not able to take an object from the table because she thinks it is tiny and sometimes she feels as though she is a dwarf in the room. She mentions the episodes are intermittent, occured three times since she woke up, lasting for about five minutes. The mother denies consumption of toxic substances, as well as any psychosocial problems.

On physical examination, there is an erythematous pharynx, with bilateral grayish exudate, as well as large occipital adenopathies, tender to palpation.

Initially impression was psychiatric pathology triggered by the stressful factor of parental divorce. Blood test in the emergency department showed a mildly raised white blood cell count and elevated liver function tests.

Given these laboratory data and the clinical picture of the patient, with a suspected diagnosis of infectious mononucleosis Alice in Wonderland syndrome was suspected. The treatment with amoxicillin was stopped and symptomatic treatment was prescribed, as well as adequate fluid intake and home rest. Serological studies (IgM antibodies against the viral capsid antigen) confirmed the diagnosis of EBV infection. The clinical course resolved at 48 hours; the patient is asymptomatic without any sequelae.

Discussion

Lippman described for the first time in 1952 seven cases of patients with migraine who were suffering from alteration of body perception;[1] however, it was not until 1955 when Todd[2] assigned the name of Alice in Wonderland syndrome (AWS). AWS is a perceptual disorder characterized by distortions of visual perception (metamorphopsies). The name refers to Lewis Carroll's well-known children's book The Adventures of Alice in Wonderland,[3] in which Alicia feels (among other things) that her body grows and decreases in size (Figure 1). After 60 years of relative obscurity, AWS started to receive scientific attention; however, it remains poorly understood and probably misdiagnosed. This variability in the diagnostic process is due to the fact that there are no accepted diagnostic criteria for this disease. AWS can occur at any age, but mainly in children. There is no epidemiological data on AWM in the general population, but it is assumed to be rare; Clinical studies among migraine patients indicate that the prevalence rate in this group can be around 15%.[4] In the last 60 years, the symptoms of AWS have come to include 42 visual symptoms and 16 somatic symptoms, as well as other non-visual symptoms, which are common among themselves that constitute distortions of sensory perception rather than hallucinations or illusions.[5]

In the case of illusions, they have a source in the outside world. For example, music can be heard in the hum of traffic and a curtain that moves in the wind can be confused with an intruder.[6] Among the visual alterations that occur, are the inversion of the visual field, palynopsia (repeated perception of images by an individual after the disappearance of the visual stimulus that originated them), prosopagnosia (inability to recognize familiar faces), teleopsy (the images seem to move away), the micropsy (the objects are smaller than they really are, also called liliputian hallucination or liliputianism), the peliopsy (the images seem to get closer), the optical anesthesia (loss of stereoscopic vision), poliopia (perception of multiple images),

zoopsia (perception of animals), achromatopsia (inability to perceive colors), visual agnosia (inability to recognize objects) and akinetopsia (loss of perception of movement of objects).[6,7] The mandatory central symptom of AWS is a distortion of the body scheme (macro- and microsomatognosia).[8] It is important to remember the fact that patients are aware of the illusory nature of their perceptions so that in this age group it can cause difficulties in the diagnosis with secondary anxiety symptoms or other psychiatric alterations that involve hallucinatory psychotic symptoms.

Figure 1 Alice experiences macrosomatognosia and microsomatognosia of her entire body, similar to the symptoms described by our patient upon arrival at the emergency room.

Regarding the aetiology according to a recent systematic review, 170 cases have been described,[9] which have been grouped into eight groups (Table 1). It should be noted that in infectious pathology, infectious mononucleosis represents the highest percentage, with 26 cases (15.7%).

Table 1 Aetiology of Alice's syndrome in wonderland and reported cases

Aetiology	Number of cases reported in the literature
Infectious pathology	38 (22.9%)
Central nervous system patholoy	13 (7.8%)
Peripheral nervous system pathology	2 (1.2%)
Paroxystical nervous system pathology (including epilepsy)	51 (30.7%)
Psychiatry pathology	6 (3.6%)
Treatment induced	10 (6.0%)
Drugs or substance induced	10 (6.0%)
Miscellaneous	5 (3.0%)

The differential diagnosis would be focused on the basic aetiology, which, as shown in the Table 1, is very extensive. Regarding prognosis and treatment, the majority of non-clinical and clinical cases of AWS are considered benign, in the sense that complete remission of symptoms can often be obtained, sometimes spontaneously and in other cases after treatment. However, in clinical cases with an underlying chronic disease (such as migraine and epilepsy), the symptoms tend to reappear in accordance with the active phases of the disease, and in cases of encephalitis, the prognosis may also vary.

Our case focused on the most common aetiology of AWS and associated clinical data in the patient, confirming the diagnosis of infectious mononucleosis as an aetiology of AWS, with symptomatic treatment the symptoms completely resolved.

Acknowledgement

None.

Conflicts of interest

The authors declare there are no conflicts of interest.

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