



The Mental Health Syndrome Known as Alice in Wonderland - A Case Report

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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Case Study

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ABSTRACT

The Alice in Wonderland Syndrome (AIWS) is a rare neurological and psychiatric condition, represented as the appearance of disorienting perceptual disorder with occasional episodes of bizarre visual illusions and spatial distortions. It was first introduced by John Todd in 1955, based on the literary chronicles of the strange encounters described by Lewis Carroll in Alice in Wonderland books. A 30-year-old healthy male presented to the doctor's office with left-sided headaches lasting 24 hours and preceded by an aura. During these auras, the patient was experiencing erratic behaviors consistent with the phenomena experienced by Alice, the main character in the world-famous story. He reported objects being larger and further away than they really were and his hands appearing smaller than they really were. Symptoms lasted up to 45 minutes. All clinical and diagnostic workups and evaluations were unremarkable, and the patient was treated for migraines with auras using Valproic Acid. During his follow-up at 3 months intervals, the patient continued with symptoms, and his medication dosage was increased. In his next follow-up three months later, he described having no more symptoms. AIWS has been found to be related to migraines with preceding auras. It is both common in pediatrics as well as in adults. I present an AIWS case co-existent with aura migraines.

Keywords: Alice in wonderland syndrome; metamorphopsias; Todd's Syndrome; lilliputian hallucinations; macropsia; micropsia; teleopsia; pelopsia; aschematia; dysmetropsia; migraines; aura.

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1. INTRODUCTION

Alice in Wonderland Syndrome (AIWS) is a unique and unusual perceptual phenomenon that leads to transitory occurrences of distorted perception and disorientation (metamorphopsias). People who experience this rare condition may undergo brief sensations of feeling larger or smaller than they really are or that the room they are in is much larger or smaller than what it really is. The furniture around these individuals may be presumed to be distorted and feel closer or farther away than they really are. This condition, also known as Todd's Syndrome or Lilliputian hallucinations, is a condition that affects all the senses and perception.

Vision, touch, and hearing are all equally affected, and these senses are not the result of issues with the eyes or ears or hallucinations but rather alterations in how the brain perceives the environment you're in as well as how the individual's body looks. John Todd, in 1955 applied the term "The Alice-in-Wonderland Syndrome" (AIWS) to altered, bizarre perceptions of the size and shapes of patients' bodies and illusions of changes in forms, dimensions, and motions of objects that patients with migraine headaches or epilepsy experienced. He suggested these paramnesias and hallucinations coincide with the body alterations the character Alice displayed in Lewis Carroll's earliest *Alice's Adventures in Wonderland* [1]. These distortions experienced by these patients include metamorphopsia (visual disturbances), macropsia (visualizing objects and body parts larger than normal), micropsia (visualizing objects and body parts smaller than normal), teleopsia (visualizing objects or people to be further than they really are), and pelopsia (visualizing objects or people to be closer than really are). These incidents are perceived as a group of cognitive impairments referred to as aschematia and dysmetropsia.

Mastria et al. (2016) state that "this syndrome has many different etiologies; however, EBV infection is the most common cause in children, while migraine affects more commonly adults. Many data support a strict relationship between migraine and AIWS, which could be considered in many patients as an aura or a migraine equivalent, particularly in children" [2]. "Diagnosis is made on presenting signs and symptoms and ruling out other psychiatric disorders, viral

infections, and central nervous lesions. Previously published etiologies implicated in Alice in Wonderland syndrome include viral infections, migraine, epilepsy, central nervous system lesions, and hallucinogenic substances. One pediatric study of Alice in Wonderland syndrome found a family history of migraine or Alice in Wonderland syndrome in nearly 50% of patients, suggesting a possible genetic predisposition to this fascinating syndrome" [3].

2. CASE PRESENTATION

A 30-year-old male, neurodevelopmentally normal presented to his doctor's office with a chief complaint of pulsating headaches on the left side of his head lasting 24 hours and re-occurring every week for a period of few months. Preceding the headaches, he experienced nausea, photophobia, and phonophobia. During his episodic headaches, he reported objects around him being larger and further away than they really were. He described his fingers on his right hand to be much smaller when compared to his fingers on his left hand. Objects around him were deformed and distorted. He stated that his headaches started 30 minutes after he began experiencing the auras and the symptoms described. He mentioned that these visual disturbances had been occurring for over 1 year. The symptoms and distortions would last for 30-45 minutes.

Past medical history was unremarkable. His mother and sister had a history of migraines. His physical exam was unremarkable, and his psychiatric exam yielded no apparent findings. Using psychometric tests (aptitude, skills, and personality tests) were implemented to rule out any condition. Any prior psychiatric disorder was ruled out using a psychiatric exam where thoughts, feelings, and behaviors are explored. According to the psychiatric examination, he was well oriented to time, place, person, and situation. A comprehensive physical exam including a mental status exam was performed. Neurological exams were unremarkable, and no pathologies were noted on brain magnetic resonance imaging (MRI) and electroencephalography (EEG). A complete blood test panel was performed, and all results were within normal limits. The psychiatrist focused on glucose and lipid levels in case they needed to start the patient on psychotic medications and to monitor levels of lithium toxicity. He was treated with 500 mg/day of valproic acid, which is a common drug for

migraine headaches. During follow-up, his daily dose of valproic acid was increased to 1000 mg/day, and the complaints were completely eliminated by month 6 of being on the medication [4]. The patient was diagnosed with AIWS due to migraine and cluster headaches. He was seen by his psychiatrist for 6 months and is scheduled to return for re-evaluation in 3 months.

3. DISCUSSION

“This case illustrates a unique case of a 30-year-old normal male displaying clinical features consistent with Alice in Wonderland Syndrome. Since 1955, about 170 cases of AIWS have been reported in literature, with most subjects being less than 18 years old. In a study carried out with 3224 subjects between 13 to 18 years old, the occurrence of micropsia and macropsia was 6.5% and 7.3% in males and females. This suggests that visual illusions in AIWS are not as infrequent as usually believed” [5]. Most professionals speculate that the actual prevalence of the syndrome is much more popular. Factors such as lack of reliable epidemiological data and inconsistent international parameters account for the nominal number of cases.

“Migraine is one of the most common headache disorders affecting approximately 12% of the general population. Migraine auras are the sensory symptoms that can occur before or during a migraine episode. These symptoms can include flashes of light, blind spots, or tingling in the hands or face” [6]. About 10% of all migraine sufferers do not experience auras. “Specific clinical features of common migraine seem to be determined by genetic factors. A stronger family history of migraine is associated with lower age-at-onset, higher frequency, the number of medication days, and the migraine with aura subtype” [7]. The type of migraine that results from auras usually co-exist with sensitivity to movement, visual, sensory, auditory, motor, and speech disorder [8].

This patient suffered from metamorphopsia, macropsia, micropsia, teleopsia, and pelopsia preceding the migraine with auras. These symptoms and headaches lasted 30-45 minutes. The physician treating the patient was intrigued by the presenting symptoms of macropsia, micropsia, and metamorphopsia. “AIWS symptoms have both diagnostic and therapeutic consequences that differ substantially from those

in schizophrenia spectrum disorders and other hallucinatory syndromes” [9]. No substances (prescription medication, EtOH, or recreational drugs) were found in the lab work. No history of psychiatric disorders was noted, and no pathologies in the MRI or EEG were found.

AIWS can be seen in temporo-occipital or temporo-partial-occipital lesions [10]. A peculiar study on migraines found that verapamil was reported to be 55% effective for the treatment of migraines, while valproic acid was determined to be 18% effective [11]. The patient received an initial dose of 500 mg/day of valproic acid, raising the dose to 1000 mg/day during the follow-up visit. Studies have found that valproic acid is favorable in the case of migraine-induced AIWS [11]. The patient was followed for six months, and his signs/symptoms resolved. Definitive diagnostic exams (MRI, EEG, and Blood tests) aid practitioners in diagnose AIWS. “The diagnosis of AIWS is made by complete history taking, physical examination, and being aware of various symptoms typical of AIWS. Throughout the episode of micropsia, the patient’s functional MRI indicated hypoactivation of the primary and extrastriate regions of visual cortical areas. The functional MRI of metamorphopsia patients interestingly reveals activation of the visual cortex and posterior cerebral regions involving the primary visual cortex and occipital fusiform gyrus” [12]. To date, migraines in adults, and infection in children remain the main culprit of AIWS.

4. PROGNOSIS

It is imperative that physicians and practitioners are educated on the relevance of this condition. Adults. The pathophysiology of AIWS is a definite illustration of the range of manifestations that transcends from pathologies of the nervous system and the surreal sensory-perceptive experiences of people afflicted by this syndrome. An example can be found in complex types of prosopometamorphopsia, in which human faces may be perceived consistently as animal faces which were found in an MRI.

5. CONCLUSION AND FUTURE RECOMMENDATIONS

While there is a diagnosis for migraine-related AIWS, much research is still needed. The exact pathways of the syndrome depend on the underlying disorder each individual AIWS case is

associated with. Based on the individual's particular case, physicians may prescribe migraine preventive medication, antibiotics, or antivirals based on the presenting symptoms. There is a heightened interest in exploring the brain network and neuroimaging diagnostic advances in the field of neuroscience, psychiatry, and neurology. The hope for the future is that more light is shed on this syndrome and it gets a proper classification in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Author has declared that no competing interests exist.

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