Barw Medical Journal | 2025;3(4):66-70
Journal home page: https://barw.krd/index.php/BMJ

Case Report

Unusual Presentation of Alice in Wonderland Syndrome: A Case Report and Literature Review

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Keywords:
Alice in Wonderland Syndrome
Migraine
Perceptual distortion
Visual distortions

Received: July 22, 2025
Revised: August 19, 2025
Accepted: August 26, 2025
First Published: September 21, 2025

Citation: Abbas YN, Abdulkareem MM, Mustafa MQ, Omar DA, Najar KA, Mohammed KK et al. Unusual Presentation of Alice in Wonderland Syndrome: A Case Report and Literature Review. Barw Medical Journal. 2025;3(4):66-70.
https://doi.org/10.58742/bmj.vi.205

Abstract

Introduction

Alice in Wonderland Syndrome (AIWS) is an uncommon and frequently overlooked neuropsychiatric condition, marked by brief episodes of altered visual and somatosensory perception. This report presents a case of AIWS, highlighting the disorder's unusual nature.

Case presentation

A 21-year-old female sought evaluation due to episodic visual distortions and altered body perceptions lasting for six months, often accompanied by migraines. These episodes, including micropsia, macropsia, and derealization, typically occurred multiple times a week and lasted several minutes, with no clear triggers but worsening with stress or irregular sleep. She had a history of similar, less intense episodes in childhood. Neurological examination, MRI, EEG, and blood tests were all normal. She was diagnosed with AIWS related to her migraines and was prescribed propranolol, a stress management strategy, regular sleep, and cognitive behavioral therapy.

Literature review

Sixteen cases of AWIS were reviewed, of which only one had a family history of the condition. All of them experienced perceptual distortions, with macropsia and micropsia together appearing in eight cases, and hallucinations were present in four. Duration of symptoms ranged from one minute to one day. The triggering factors included Isolated cortical venous thrombosis and brucellosis. Treatments included lacosamide and paroxetine. Recurrence of symptoms was recorded in two patients.

Conclusion

Alice in Wonderland Syndrome is mostly a benign condition that can be resolved spontaneously or treated according to its associated cause; propranolol, improved sleep schedule, and cognitive behavioral therapy might yield good outcomes.

1. Introduction

Alice in Wonderland Syndrome (AIWS), first identified in 1955, is a rare perceptual disorder that causes significant distortions in how individuals perceive visual stimuli (metamorphopsias), their body image, and even the passage of time. Those affected may experience sensations such as seeing objects appear much larger or smaller than they are or feeling that their body is changing size [1]. The name of the syndrome is derived from Lewis Carroll's famous 19th-century novel *Alice's Adventures in Wonderland*, where the protagonist, Alice, experiences similar surreal phenomena, such as her body growing and shrinking, as

well as other bizarre and disorienting occurrences. This condition is often described as a disruption in the brain's ability to process sensory input, leading to a distorted reality that can be confusing and disconcerting for the person experiencing it [2]. Although AIWS is rarely diagnosed, its actual prevalence may be underestimated, largely because clinicians often lack awareness of the condition, and patients, especially children, may struggle to describe their symptoms [3]. This condition is more commonly observed in younger individuals than in older adults [4]. After remaining relatively unnoticed for several decades, AIWS has recently started to gain scientific attention. This renewed focus is partly due to the advancement of functional imaging techniques, which now allow researchers to explore the brain's networks that mediate the disorder's symptoms [2,4]. Initially, AIWS was described in patients suffering from migraines and/or epilepsy and later found to be associated with temporoparietal lesions. It was also linked to psychiatric conditions such as depression and schizophrenia, as well as hypnagogic states and the use of various drugs, including hallucinogens and anticonvulsants [2]. Studies suggest that AIWS is usually a benign, self-limiting condition that resolves without the need for treatment [5].

This study aims to present a case of AIWS in a young adult with a history of migraines, emphasizing the outlandish and unusual nature of this disorder. The report was written following the CaReL guidelines, and only reliable, peer-reviewed sources were included while excluding any unreliable references or data [6,7].

2. Case Presentation

2.1. Patient information

A 21-year-old female presented herself for evaluation at the suggestion of her family. She had experienced episodic visual distortions and disturbances in her perception of her body for six months. During these episodes, she said, her hands and feet appeared too large or too small, and the size and distance of everything around her seemed distorted. These episodes typically lasted several minutes and occurred multiple times a week, often coinciding with migraines. She was single and had sought help due to the frequency and disruption caused by these unusual perceptions.

The patient’s symptoms began approximately six months prior, without a clear trigger, involving visual distortions such as micropsia and macropsia, somesthetic distortions, and derealization. These episodes often coincided with migraines, characterized by unilateral headaches, photophobia, phonophobia, and nausea, resolving after several hours. The patient had no known triggers, though episodes were more frequent during stress or irregular sleep. Similar, less intense episodes occurred in childhood but were resolved by adolescence. The recent resurgence caused significant distress, prompting the patient to seek help.

The patient had no history of psychiatric illness, hospitalizations, or treatment, and had never used psychiatric medications. She was born at term with an unremarkable birth and past medical history, achieving all developmental milestones on time, with no early childhood illnesses or delays. She had a history of mild asthma treated with as-needed inhalers. There was no past head trauma, seizures, or infections, and the patient was healthy with no prior surgeries, and she also denied using alcohol, tobacco, or recreational drugs.

2.2. Mental state examination (MSE)

She was well-groomed and appropriately dressed. During the interview, she was cooperative and engaged, with no evidence of agitation or retardation. She was clear and coherent in her speech. With an anxious but congruent affect, she described feeling anxious due to the unpredictability of her symptoms. Her thought process was organized, goal-directed, and there was no evidence of thought disorder, delusions, or hallucinations. She described visual and somesthetic distortions consistent with Alice in Wonderland Syndrome, with no auditory hallucinations. Abounded with anxiety, but was eventually able to attend this socialization event. She exhibited good insight into her condition and preserved judgment.

2.3. Diagnostic investigation

The tests included MRI, EEG, and blood tests, all showing no abnormalities. Visual field testing was also normal, ruling out ocular causes for her symptoms. Given the normal test results, the diagnosis of AIWS was made based on the patient's reported symptoms and history of migraines.

2.4. Management

She was placed on prophylactic treatment with propranolol, a beta-blocker, to control her migraines. She was also advised to manage stress and maintain a consistent sleep schedule to reduce the likelihood of migraines. In addition, cognitive behavioral therapy was implemented to help combat the distress associated with her episodes.

2.5. Follow-up

After several months, both the frequency and intensity of her migraines diminished, and the severity of her AIWS episodes also lessened. Nonetheless, she continued to experience occasional perceptual distortions.

3. Discussion

In the existing literature, AIWS is typically described as a consequence of conditions like migraines, without leading to irreversible brain damage. However, infections have become the most commonly reported cause linked to AIWS cases, especially in children, surpassing migraines and epilepsy. Because of this, the exact nature of the lesions and the underlying pathology of AIWS remain difficult to identify and poorly understood [2,8].

AIWS symptoms have expanded to include 42 visual symptoms and 16 somesthetic and other nonvisual symptoms [1]. Individuals with AIWS experience changes in visual perception, such as micropsia (where objects appear smaller), macropsia (where objects appear larger), teleopsia (where objects seem farther away), and pelopsia (where objects seem closer). Similar

to the reported case, all reviewed patients experienced perceptual distortions. Macropsia and micropsia occurred concurrently in nine cases, while hallucinations were reported in five. Incoherent speech, anxiety, and derealization were also noted as accompanying features of the visual distortions (Table 1) [3,4, 8-12].

Additionally, some patients with AIWS report abnormal changes in their perception of time, experiencing it as either speeding up or slowing down [2]. Distortions in the perception of time were present in the form of tachyopsia (environment moving or changing at an abnormally fast rate) in one of the reviewed cases [10]. Notably, a patient with AIWS is always aware that these distorted perceptions are not real, which distinguishes AIWS from conditions like psychosis, where the patient may perceive such distortions as part of their reality [2]. In AIWS, symptom duration is usually quite short, with each episode varying from less than 5 min to at most 30 min; however, 2 of the reviewed cases had episodes lasting up to 6 and 24 hours, adding another angle of uncertainty to this condition [8].

Kobayashi et al. reported 2 cases of AWIS, with lesions located in the right occipital lobe. To date, there have been about 10 cases of AWIS with bilateral or unilateral occipital lobe lesions [8]. While this finding suggests that occipital lesions may play a role in the development of AIWS, the majority of the cases do not involve brain damage. Similar to the reported case, 12 of the reviewed cases had no brain damage [3, 9-12]. Although several brain networks related to visual perception have been proposed as contributors to AIWS symptoms, imaging studies have not determined a clear cause, and some reports present conflicting results. However, the high number of reports linking migraine and epilepsy with AIWS suggests that an incomplete or

Table 1. Review of recent AIWS cases.

Author/ year	No. of cases	Age/ Sex	Medical history	Family medical history	Metamor phopsia	Duration of each episode (minutes)	Other symptoms	Trigg ering factor	Treatment	Outcome	Follow-up (years)
Alexis Demas/ 2025 [12]	1	68/ M	Hypertens ion	Unrema rkable	Micropsia	N/A	Incoherent speech, akinetic-rigid Parkinsonia n syndrome, apathy, anxiety, and delusional thoughts	N/A	Levetiraceta m	Death	0.16
Ansari et al./2025 [3]	1	10/F	Unremark able	Unrema rkable	Macrosom atognosia & Micropsia	10-20	Time distortion & derealizatio n	N/A	Supportive care & reassurance	Resolved	0.5
Ahmed et al./2025 [4]	1	94/F	Type 2 diabetes, hypertensi on, hypothyro idism, GERD & anxiety	Unrema rkable	Macropsia	N/A	Visual & auditory hallucinatio ns	Ische mic stroke	Risperidone, olanzapine & Quetiapine	Improvem ent in symptoms	N/A
Mbizvo et al./2025 [11]	1	69/ M	Ischemic stroke, caecal cancer, hypertensi on & type 2 diabetes	Unrema rkable	Macropsia & Micropsia	N/A	Difficulties with color perception	Ische mic stroke	phenytoin	Death	N/A
Kobayas hi et al./ 2024 [8]	2	72/F	Primary biliary cholangiti s	Unrema rkable	Macropsia & Micropsia	360	Kinetopsia & auditory hallucinatio ns	ICVT	Lacosamide	Resolved	1
		73/ M	Hypertens ion	Unrema rkable	Macropsia & Micropsia	1440	Pelopsia & auditory hallucinatio ns	ICVT	N/A	Resolved	N/A

Table 1. Continued…

Chirchiglia et al./2019 [9]	1	16/M	Brucellosis	N/A	Macropsia & Micropsia	N/A	Migraine	Brucellosis	Oral paroxetine	Resolved	N/A
Weidenfeld et al./2011 [10]	9	10/M	Unremarkable	Unremarkable	Micropsia	0.1 6-1	Dizziness	N/A	Unspecified	Resolved	*
		8/M	Unremarkable	Unremarkable	Macropsia & Micropsia	N/A	Dizziness	N/A	Unspecified	Resolved	*
		10/M	Unremarkable	Unremarkable	Unspecified	1-2	Loss of orientation & unresponsiveness	N/A	Unspecified	Resolved	*
		7/M	Unremarkable	Epilepsy	Macropsia	2	Panic & headache	Fever	Unspecified	Recurrence of symptoms	3
		6/M	Unremarkable	Migraine	Macropsia & Micropsia	2-3	Visual impairment	N/A	Unspecified	Resolved	*
		7/M	Unremarkable	Alice In Wonderland symptoms	Macropsia & Micropsia	5	Hallucinations	N/A	Unspecified	Resolved	6
		9/M	Unremarkable	Migraine	Unspecified	5-10	Tachyopsia	N/A	Unspecified	Resolved	*
		11/M	Unremarkable	Epilepsy	Macropsia & Micropsia	N/A	Hallucinations	N/A	Unspecified	Resolved	*
		11/M	Unremarkable	Epilepsy & Migraine	Macropsia & Micropsia	2-3	Panic & agitation	N/A	Unspecified	Recurrence of symptoms	*

**All the follow-up periods in Weidenfeld et al. are more than a year, but not specified in 7 cases.*

M: male, F: female, N/A: Not applicable, ICVT: Isolated cortical venous thrombosis, GERD: Gastroesophageal reflux disease.

widespread brain dysfunction may play a role in the development of the disorder [6].

Recent reports suggest that infectious diseases, particularly among children, are a leading cause of this Syndrome. These include Epstein-Barr virus, cytomegalovirus, Coxsackie virus B1, and varicella-zoster virus. The syndrome has also been linked to bacterial infections like *Mycoplasma pneumoniae, Borrelia burgdorferi, and Streptococcus pyogenes*, as well as protozoan and prion infections [2]. A case of AWIS associated with brucellosis was among the reviewed cases, adding to the increased infection-related cases [9].

Since 1955, fewer than 200 cases of AIWS have been recorded. However, the literature indicates that this may only represent a small fraction, as up to 30% of adolescents in the general population experience some of the individual symptoms of AIWS, albeit occasionally and briefly. [1]. Since it is not included in major classifications such as the ICD-10 or DSM-5, diagnosing AIWS depends on careful history-taking, a comprehensive physical examination (including neurologic and often otologic or ophthalmic assessments), and a good understanding of its diverse symptoms and possible causes. If a central origin is suspected, further tests like blood tests, EEG, and brain MRI are recommended, though the likelihood of identifying any observable lesions is generally considered low, as seen in the present case [1].

No specific treatment exists for AIWS; management generally focuses on addressing the underlying cause. Among the reviewed cases, interventions included beta-blockers, antipsychotics, antiepileptics, SSRIs, and supportive care, with symptoms resolving in 12 patients and recurrence noted in two [3,4,8-12]. Research indicates that antipsychotics are infrequently used in AIWS, and their effectiveness is generally considered limited. Moreover, when perceptual distortions occur alongside psychotic symptoms, it is important to note that antipsychotics, such as risperidone, may occasionally precipitate or exacerbate these distortions by lowering the threshold for epileptic activity [4].

4. Conclusion

AIWS is mostly a benign condition that can be resolved spontaneously or treated according to its associated cause;

propranolol, improved sleep schedule, and cognitive behavioral therapy might yield good outcomes.

Declarations

Conflicts of interest: The authors have no conflicts of interest to disclose.

Ethical approval: Not applicable.

Patient consent (participation and publication)**:** Written informed consent was obtained from the patient for publication.

Funding: The present study received no financial support.

Acknowledgements: None to be declared.

Authors' contributions: YNA was a significant contributor to the conception of the study and the literature search for related studies. MMA was involved in the literature review, study design, and manuscript writing. MQM, DAO, KAN, KKM, and SSA were involved in the literature review, the study's design, and the critical revision of the manuscript, and they participated in data collection. YNA and MMA confirm the authenticity of all the raw data. All authors approved the final version of the manuscript.

Use of AI: ChatGPT-3.5 was used to assist in language editing and improving the clarity of the manuscript. All content was reviewed and verified by the authors. Authors are fully responsible for the entire content of their manuscript.

Data availability statement: Not applicable.

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