**Alice in Wonderland syndrome**: A syndrome of distorted space, time and body image. The patient with the Alice in Wonderland syndrome has a feeling that their entire body or parts of it have been altered in shape and size. The syndrome is usually associated with visual hallucinations. The majority of patients with the syndrome have a family history of migraine headache or have overt migraine themselves.

The syndrome was first described in 1955 by the English psychiatrist **John Todd** (1914-1987). Todd named it, of course, for Alice's Adventures in Wonderland by Lewis Carroll. Perhaps not coincidentally, Lewis Carroll suffered from severe migraine. Also known as a Lilliputian hallucination.

Alice in Wonderland syndrome (AIWS, named after the novel written by Lewis Carroll), also known as Todd's syndrome[1], is a disorienting neurological condition which affects human perception. Sufferers may experience micropsia, macropsia, or size distortion of other sensory modalities. A temporary condition, it is often associated with migraines, brain tumors, and the use of psychoactive drugs.[citation needed] It can also present as the initial sign of the Epstein-Barr Virus (see mononucleosis). Anecdotal reports suggests that the symptoms of AIWS are fairly common in childhood[citation needed], with many people growing out of them in their teens. It appears that AIWS is also a common experience at sleep onset.

Eye components are entirely normal. The AIWS is a result of change in perception as opposed to the eyes themselves malfunctioning. The hallmark sign of AIWS is a migraine (AIWS may in part be caused by the migraine).[citation needed] AIWS affects the sufferer's sense of vision, sensation, touch and hearing, as well as one's own body image. The most prominent and often most disturbing symptom is that of altered body image: the sufferer will find that they are confused as to the size and shape of parts of (or all of) their body. The eyes themselves are normal, but the sufferer 'sees' objects with the wrong size or shape and/or finds that perspective is incorrect. This can mean that people, cars, buildings, etc. look smaller or larger than they should be, or that distances look incorrect; for example a corridor may appear to be very long, or the ground may appear too close. Similar to the lack of spatial perspective, the sufferer also loses a sense of time. That is, time seems to pass very slowly, akin to an LSD experience. The lack of time, and space, perspective thus leads to a distorted sense of velocity, since one is missing the two most important parts of the equation. For example, one could be inching along ever so slowly in reality, yet it would seem as if one were sprinting uncontrollably along a moving walkway, leading to severe, overwhelming disorientation. This can then cause the sufferer to feel as if movement, even within their own home, is futile. In addition, some people may experience more intense and overt hallucinations, seeing things that are not there and misinterpreting events and situations in conjunction with a high fever.

**Diagnosis**: AIWS is a disturbance of perception rather than a specific physiological change to the body's systems. The diagnosis can be presumed when other physical causes have been ruled out and if the patient presents symptoms along with migraines and complains of onset during the day (although it can occur at night).

**Prognosis**: Whatever the cause, the distortions can recur several times a day and may take some time to abate. Understandably, the sufferer can become alarmed, frightened, and even panic-stricken. The symptoms of the syndrome themselves are not harmful and likely to disappear with time. It is not contagious and rest is the best treatment.

**Epidemiology**: No studies are available that display any correlation between age, gender or race. AIWS is thought to be relatively common among migraine sufferers and young children.

When the world looks like a real-life Wonderland
Jasmin Aline Persch writes:
Like Alice down the rabbit hole, 6-year-old Olivia Watts sometimes sees the world through a distorted lens. Real people look as if they have magnified, telescoped heads or bodies. Sometimes it sounds like the TV's volume was suddenly turned up. When she has these experiences — sometimes even at school — the kindergartener from Pipersville, Pa., looks as if she's waking from a nightmare, says her mother Danielle Watts.
Diagnosed with a neurological condition known as Alice in Wonderland Syndrome, Olivia usually keeps her dreamlike visions to herself. She first complained of people and objects getting bigger last year. Her symptoms occur in spurts lasting from seconds to 15 minutes and persist for up to two weeks, and then, they can vanish for months just as mysteriously as they occurred. These occurrences are "mini migraines exploding in [her] brain," a neurologist explained to Olivia's mother, who suffers from standard migraines herself.
A rare form of migraine, Alice in Wonderland Syndrome causes people to see their own bodies or those of others or everyday objects askew. It typically occurs without a headache, but is usually associated with personal or family history of standard migraines. It can impact vision (size or depth), hearing, touch and sense of time, causing it either to seem accelerated or or slowed down. "It's not dangerous," says headache expert Dr. William Young. "I've never met anybody who has so many that it affects their life in a severe way, once they're reassured that it doesn't indicate a dangerous or ominous thing."
Young, a neurologist from the Jefferson Headache Center at the Thomas Jefferson University in Philadelphia, says millions of Americans have typical migraine aura. "We know their brains are normal, superficially." But, "periodically, they misbehave," he says.
Alice in Wonderland Syndrome is similar, doctors believe, and may involve the brain's occipital lobe, which controls our vision and where migraine auras originate. Other regions in the brain may also play a part, but the exact entrance to the mind's rabbit hole remains a mystery.
Auras, visual sensations which precede a migraine, can be triggered by stress, certain foods and wine and typically last from five to 60 minutes. The triggers of Alice in Wonderland Syndrome are lesser understood, but certain prescribed medications including migraine-preventing topiramate or a hard blow to the head can set it off.
English psychiatrist John Todd, who coined the syndrome's name in Canadian Medical Association Journal in 1955, compared the visions to those in "the parabolic mirrors of a fun-fair." Patients reported perceiving the body as too big or too little and that the world seemed unreal, Todd wrote. He and other scholars speculated that Lewis Carroll, the author of "Alice's Adventures in Wonderland" and its sequel "Through the Looking-Glass, and, What Alice Found There," suffered from AIWS. Carroll's diary only reveals that he had classic migraines. But that fact "arouses the suspicion that Alice trod the paths and byways of a Wonderland well known to her creator," Todd wrote.
Sue Miller, 41, has never seen a doctor about her symptoms, but she believes she has suffered from Alice in Wonderland Syndrome since she was a child. She remembers experiencing the "little people thing" as early as age 5, often as she lay in bed at night.
"When I would look at my windows across the room, they would get tiny and look a mile away," Miller of Wakefield, Ohio, says. "I would get scared."
Not until she became a concerned parent of a 5-year-old son who had similar symptoms did she understand what was happening. Miller found out about Alice in Wonderland Syndrome and related support groups online.
As an adult, she doesn't usually talk about the condition because it seems so unbelievable. "It sounds bizarre," Miller says. While her altered perceptions have mostly subsided, she sometimes sees patterns pop out at her like they're in 3-D.

Experts believe Alice in Wonderland Syndrome is probably underreported because patients like Miller are reluctant to talk about their odd experiences. About 300 in the U.S. have the condition, Young estimates. It mostly occurs in children. Among the thousands of headache patients Young has seen, only four have the syndrome. "My [Alice in Wonderland] patients have the perception of things being wrong," Young says. "The original descriptions were their own bodies being out of whack."

Dr. Kathy Lee, a pediatric ophthalmologist from Boise, Idaho, says her young patients with the condition often complain about the chalkboard at school being too far away (teleopsia), which may lead to a wasted trip to the eye doctor. "It's not an eye problem, per se. It's a brain interpretation of vision," says Lee, who often just assures parents that their kids will be fine. "These (images) are generated by the brain, not the eyes."

Treating an episode of Alice in Wonderland syndrome may be like trying to catch a harried rabbit. But medications used to prevent migraines may provide help for those with frequent episodes, Young says.

While children with Alice in Wonderland syndrome may grow out of it into regular migraines, Young says symptoms may warrant a check up for less common but more serious conditions, including epilepsy, brain tumors and encephalitis (brain infection). "Most people should get an MRI of the brain to make sure there are no structural problems, but it's rather unexpected that there would be," Young says.

Olivia's mother is relieved that her daughter's MRI was normal and that Alice in Wonderland syndrome is non-life threatening. In fact, the whole family plans to see Tim Burton's "Alice in Wonderland." However, Olivia doesn't particularly care to see Alice grow big or small, says Danielle Watts. She has a different reason for watching the fantasy movie: "Because I want to see the white queen."

BY KLAUS PODOLL

Alice in Wonderland syndrome (AIWS, named after the novel written by Lewis Carroll), also known as Todd's syndrome[1], is a disorienting neurological condition which affects human perception. Sufferers may experience micropsia, macropsia, or size distortion of other sensory modalities. A temporary condition, it is often associated with migraines, brain tumors, and the use of psychoactive drugs.[citation needed] It can also present as the initial sign of the Epstein-Barr Virus (see mononucleosis). Anecdotal reports suggests that the symptoms of AIWS are fairly common in childhood[citation needed], with many people growing out of them in their teens. It appears that AIWS is also a common experience at sleep onset.

**Signs and symptoms** - Eye components are entirely normal. The AIWS is a result of change in perception as opposed to the eyes themselves malfunctioning. The hallmark sign of AIWS is a migraine (AIWS may in part be caused by the migraine).[citation needed] AIWS affects the sufferer's sense of vision, sensation, touch and hearing, as well as one's own body image. The most prominent and often most disturbing symptom is that of altered body image: the sufferer will find that they are confused as to the size and shape of parts of (or all of) their body. The eyes themselves are normal, but the sufferer 'sees' objects with the wrong size or shape and/or finds that perspective is incorrect. This can mean that people, cars, buildings, etc. look smaller or
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**Prognosis:** Whatever the cause, the distortions can recur several times a day and may take some time to abate. Understandably, the sufferer can become alarmed, frightened, and even panic-stricken. The symptoms of the syndrome themselves are not harmful and likely to disappear with time. It is not contagious and rest is the best treatment.

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**Body image disturbances (Alice in Wonderland syndrome)**

The Alice in Wonderland syndrome (AIWS), as described by Todd in 1955, denotes a variety of self-experienced paroxysmal body image disturbances affecting the experience of the size, mass, shape of the body or its position in space (obligatory core symptoms of the AIWS, e.g. macro- and microsomatognosia, out-of-body experiences) which may co-occur with depersonalization, derealization, visual illusions and disorders of the time perception (facultative symptoms of the AIWS).

The name comes, of course, from Lewis Carroll's 1865 novel "Alice's Adventures in Wonderland", which is believed to have been inspired by Carroll's own migraine experiences documented as early as 1856.

Recent studies of the AIWS occurring as migraine aura indicated that the body schema disturbance of
macrosomatognosia most frequently affects the head and upper extremities, paralleling the extension of their representation in the human brain (Podoll and Robinson, 1999).

Illustration of macrosomatognosia with sensation of enlargement of the eye in Superman.

A migraine sufferer's report of the Alice in Wonderland syndrome

"Throughout my early childhood I suffered from migraine headaches. My mom got migraines too so she just gave me children's Tylenol and told me to tough it out. When I was 10 years old, I woke up one morning and I almost felt like I was still asleep and dreaming. I was still laying down in my bed and I held out my hands in front of me and they didn't feel like my hands, they felt like long skinny dry twigs. If I concentrate hard enough I can 'remember' the feeling and my hands start to feel that way again. After a few minutes it all went away and I didn't say anything to my parents about it. But for the next couple of weeks it happened more and more often, usually in the evening. Most of the time it was when I was sitting still, I would feel so incredibly heavy that I was sure I couldn't move any part of my body and my depth perception felt like it was completely off. One time while I was walking down the hall I felt like the walls were rushing past me at 50 mph. One afternoon after school I was sitting on my bed, which was a day bed with a spiraly-cast iron design on the headboard and while I was looking at it it started to move and rotate, like it was turning like a wheel. When I tried to explain this to my parents I got frustrated because my eyes were telling me that my bed wasn't moving, but my brain was telling me that it was moving. Every episode was accompanied with a strange feeling that at the time I didn't understand, but in retrospect I would call it an extreme-version of light-headedness, kind of like you're on laughing gas but highly uncomfortable and very scary. And every episode was followed by a killer migraine headache... An EKG, an MRI, and a couple of months later the diagnosis was I had an 'abnormal brainwave' which was 'triggered' when I had a migraine, causing hallucinatory side effects to my migraine. The doctor actually called it 'Alice In Wonderland Syndrome' saying that it was compared to how Alice felt while tumbling down the rabbit hole. At the time, we thought this could possibly be the delusions of a Southern California doctor who had spent a little too much time trying out 'herbal' remedies. But he had newspaper clippings and journal clippings to back up his theory."

(Jen Smith, Alice In Wonderland Syndrome forum, March 12, 2005)
As a misapprehension commonly encountered in the medical literature, it has been suggested to define the AIWS by the presence of visual rather than somesthetic perceptual disturbances, i.e., metamorphopsia and/or visual hallucinations, but this change and broadening of Todd's definition of the AIWS renders it to a both scientifically and clinically useless concept (Podoll et al., 2002).

Obligatory and facultative symptoms of the Alice in Wonderland syndrome

"I am a female aged 57 and began having migraines with aura late last year. I have not had a painful migraine headache. Above are two photos, #1 an actual view, #2 my attempt to recreate what I experienced earlier this month. I had previously experienced the bright, flashing zigzag effects of migraine aura perhaps six or seven times during the period from November 2004 to April 2005. I saw a neurologist. I was unaware of any other types of aura until May 7.

The recreation (#2) represents my experience on May 7, 2005. It seemed as if my right eye saw the landscape realistically, but my left eye perceived a distorted view that seemed to be surging rapidly toward me [i.e. metamorphopsia in left half-field of vision]. There was a sensation of pressure on the eye from within. Then the left eyeball seemed to be on a stalk protruding from my face, turning to the left and right of its own accord [i.e. body image disturbance]. When I tried to describe what was happening to me, I told the people I was with ‘Something isn't right and I’m going somewhere else.’ I repeated that again to another friend by way of explanation as I left. I had trouble keeping my balance as I walked [i.e. ataxia], with the feeling that the landscape was out of synch with reality and the sensation of motion. This was accompanied by a feeling of fear that I was experiencing a stroke. Nausea followed, then later extreme exhaustion.

After a day in the local hospital’s emergency room I was assured that this was another form of migraine aura. I began to learn more through research on the internet. This website, Migraine-Aura, has been most helpful. Through this search in the last week I formed the impression (which you describe as a misapprehension) that
the 'Alice in Wonderland Syndrome' would apply to the sort of visual distortion or hallucination that I experienced. I had come to believe it was synonymous with metamorphopsia. However, perhaps the latter portion of the experience (protruding eye) could be labeled AIWS? [Yes, the latter portion of the experiences features a variety of body image disturbance as obligatory core symptom of the AIWS, occurring in succession with metamorphopsia as a facultative symptom of AIWS.] In any case, thank you for the extensive information presented on the website. I would have liked to read accounts [pending] from people who have had the type of visual distortion that I did."

(E., Emails to Klaus Podoll, May 15-16, 2005; additions in square brackets by Klaus Podoll)

References


March 18, 2010 (WPVI) -- The movie Alice in Wonderland isn't just a box office hit. It may give us all a better look at a rare phenomenon linked to migraines.

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Think Alice's world is all fantasy? Not according to Angela Tait. Sometimes, similar strange things happen to her before she gets a migraine headache.
She described one incident that happened to her when she was walking down a hallway.

"I knew the floor was solid, but it felt like it rocked, and swayed, and got longer and longer, and tiny, tiny, tiny," Angela told Action News.

But that's not all; she also described what happened to her during a conversation: "I thought I was making perfect sense, but I was told I was speaking gibberish."

Angela says even her vision has been known to change; sometimes her reading glasses would only work for long distances.

Dr. William Young of the Jefferson Headache Center says she has "Alice in Wonderland Syndrome." It's a rare type of migraine aura which refers to symptoms before a migraine starts.

Some patients such as Angela see a distorted world, but others described something different.

"Usually, it's your own body self, whether it's too big or too small, or distorted, like an elongated neck," said Dr. Young.

The syndrome was named in honor of "Alice in Wonderland" author Lewis Carroll, who also suffered from migraines. It's believed that much of Alice's experience came from Carroll's own migraine auras.
Young says the syndrome is most commonly seen in childhood but then goes away.

Angela says there's no pattern to the timing of her episodes.

Most doctors say it's extremely rare, though a comment made by one patient made Dr. Young wonder.

"She said 'oh, I had some of them when I was a child, but I didn't want to tell anyone, because it would be embarrassing or I would look crazy or I would look bad in their eyes','" Dr. Young said.

Dr. Young says the symptoms of the syndrome only last about 20 minutes but they can also be a sign of a much more serious problem such as an infection in the brain. So the first time symptoms occur, it's important to get checked out by a doctor.