The Connection Between Autism and Epilepsy

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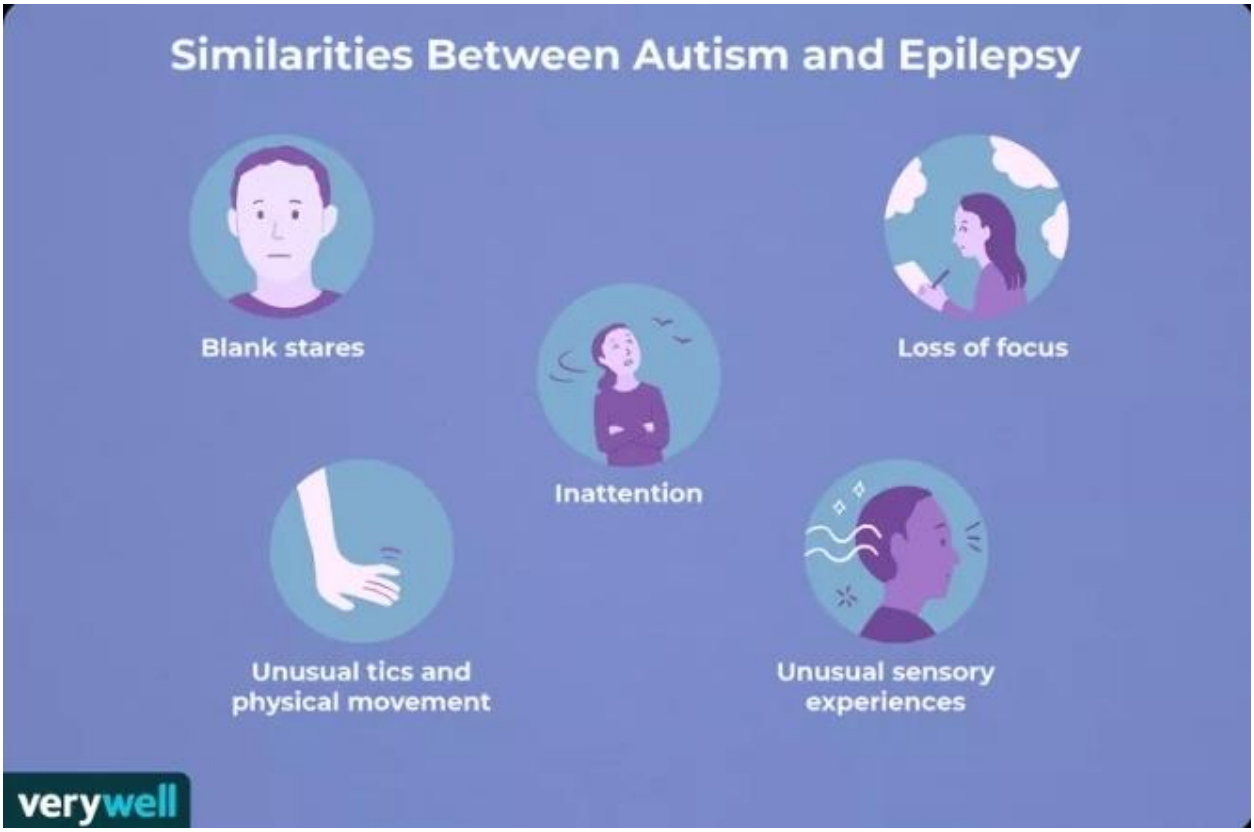
Epilepsy (a seizure disorder) and autism (a spectrum of neurodivergent conditions of varying intensity) are both neurological disturbances that often occur together. Researchers do not yet know why these conditions are linked, though there is increasing evidence of a genetic cause.

A review of studies including 283,549 people found that 12% of autistic people also were diagnosed with epilepsy, while 9% of people with epilepsy were also diagnosed with autism. While autism is more common in assigned males, seizures seem to occur more often in autistic females.[1] Siblings of autistic children are more likely to have epilepsy, too.[2]

This article explores some of these findings about autism and epilepsy. It also offers information about steps to take if you think your autistic child is having seizures.



What Is the Autism-Epilepsy Connection?

Epilepsy is significantly more prevalent in autistic people, but autism is also about 10 times more likely in people with epilepsy when compared with the general population.[3] It can be difficult to determine the prevalence of epilepsy in autistic people because autism traits and seizure disorder symptoms look so similar. Specifically, both autism and epilepsy can present with:

- Unusual tics and physical movement
- Blank stares
- Inattention or loss of focus
- Unusual sensory experiences

Despite these confounding factors, researchers have discovered some interesting facts that may lead to a better understanding and treatment of both autism and epilepsy.

They include a finding that the intensity of symptoms may increase the likelihood of developing epilepsy due to:[4]

- The presence of an intellectual disability (ID)
- Atypical language skills
- Autism-specific intensity

The presence of motor (mobility) challenges also contributes to an increased possibility of seizures.

Risk Factors

There's evidence that epilepsy and autism can be caused (at least in part) by the same genetic anomalies. In addition to genetic factors, possible environmental factors include:

- Air pollution and environmental toxins
- Intrauterine infection during pregnancy
- An epileptic mother taking anti-epilepsy medication (especially valproate) during pregnancy
- Brain damage during delivery
- Neo-natal disorders such as jaundice
- Certain metabolic conditions

Exploring the Autism-Epilepsy Connection

The unusual co-occurrence between autism and epilepsy has led researchers to explore the possible connections between the two disorders, asking questions such as:

- Could epilepsy and autism share a common cause?
- Could epilepsy cause autism (or vice versa)?
- Could treatments for epilepsy be effective for autism traits?

While findings are not conclusive, there are some intriguing research results.

Could Epilepsy and Autism Share a Common Cause?

In some cases, the causes of epilepsy and autism are well known. For example, some cases of epilepsy are the result of brain injury, while some cases of autism are the result of a genetic disorder. Many cases of both disorders, however, are idiopathic—meaning of unknown origin.

Research studies have explored the possibility that, in at least some cases, autism and epilepsy may have the same cause or causes.[1] The outcomes suggest that this may be true and that both genetic and environmental causes could be implicated.

Several conditions caused by genomic copy number variation or mutations in single genes have been associated with both autism and epilepsy. These include tuberous sclerosis, Rett Syndrome, and Fragile X syndrome, among others.

> About one in five people are now diagnosed with a neurodevelopmental disorder based on next-generation gene sequencing (NGS) results.[5] Researchers continue to identify genetic patterns and links between autism and epilepsy.

Could Epilepsy Cause Autism or Vice Versa?

While there is no obvious way that autism could cause epilepsy, there are several studies that suggest that epilepsy could be one cause of autism.[6]

Severe epileptic seizures in infants and very young children (especially those called infantile spasms) can negatively impact the developing brain. If the seizures are treated surgically, the outcome is improved social behavior and higher IQ.

One study is exploring the possibility that treatments to avoid seizures in high-risk infants with tuberous sclerosis could lower the likelihood of developing autism later in life.[6]

> One severe epilepsy disorder called Landau-Kleffner syndrome is known to cause developmental regression and autistic-like traits.

Could Epilepsy Treatments Be Effective for Autism?

One of the most frustrating aspects of autism is that there are no drugs that seem to treat its core traits. As a result, autism is treated with medications to reduce anxiety and improve attention, and with therapies to help build social communication skills.

But if there is a strong correlation between epilepsy and autism, the possibility exists that epilepsy treatments could be effective for autism. For example, one study found that valproate, an anti-seizure medication, seemed to reduce irritability in young autistic children with epilepsy.[7] Another study is looking at the impact of anti-seizure medications on autistic children who do not have obvious symptoms of epilepsy.

What Type of Seizures Can You Have With Autism?

There is no specific type of seizure that occurs more often in autistic people. The seizures can be focal (isolated to one area of the body) or generalized (affecting more or all of the body).

Common seizure types that may be seen in autistic people include:[8]

- Absence seizures (staring off, rapid blinking, but no severe muscle jerking)
- Tonic-clonic (classic "grand mal" seizure, with muscle jerking, falls, mental confusion)

- Atonic (drop seizures—sudden loss of muscle strength that may cause a fall—common in children but more rare overall)

Seizures are not necessarily more severe in autistic people overall, but there is a higher rate of death associated with these seizures.[8]

Are the Symptoms of Autism Similar to the Symptoms of Epilepsy?

It can sometimes be difficult to separate epilepsy symptoms from autistic traits such as stimming (perseverative behaviors that include rocking, tapping, flicking, or pacing), especially if a child is non-verbal.

In some cases, seizures are visually obvious: a child has convulsions, becomes rigid, or loses consciousness. Other symptoms may be more subtle. Be sure to watch for:[9]

- A minute or two of non-responsive staring
- Twitching, shaking, or stiffening muscles and limbs
- Sensory experiences (like taste, or an aura) that are outside the norm
- Feeling hot or cold
- Rapid heart rate

Emotional changes, or changes in thinking and mental status, also can happen with seizures.

How Is Epilepsy Diagnosed if You Have Autism?

If you (or a teacher or therapist) suspect epilepsy, it's important to have your child evaluated and, if necessary, treated for seizures:

1. Start by consulting your pediatrician who will ask questions and screen your child for possible seizures.
2. If your pediatrician believes there is cause for concern, they may recommend that you see a pediatric neurologist. Your pediatrician may also order an EEG and/or an MRI to test for unusual brain activity or brain abnormalities.
3. If testing reveals epilepsy, your child's healthcare provider will probably recommend medication to control the seizures. Discuss possible side effects and be sure that anti-seizure medication will not interact with any other drugs your child is taking or worsen their autism traits.
4. With an autistic child, your healthcare provider may also recommend genetic testing to find out if there is a genetic disorder, such as Fragile X, which is associated with both autism and epilepsy.

> Epilepsy is usually diagnosed if a person has two or more "unprovoked" seizures (seizures that are not caused by a known condition such as low blood sugar or alcohol withdrawal). It is confirmed with the use of an electroencephalogram (an EEG test that measures brain waves) or magnetic resonance imaging (MRI), a test that images the brain.

How Is Epilepsy Treated if You Have Autism?

Epileptic seizures are caused by unusual surges of electrical activity in the brain which are set off by chemical reactions. Many people are able to control their epilepsy through the use of medications. Just a few of the most commonly used include:

- Carbatrol, Tegretol (carbamazepine)
- Dilantin, Phenytek (phenytoin)
- Gralise, Neurontin (gabapentin)
- Topamax (topiramate)
- Valproic acid

These drugs may control the seizures, however, many have significant side effects. It is important to carefully monitor the impact of drugs to be sure that the treatment is not more problematic than the disorder it is treating.

The Epilepsy Foundation notes that managing epilepsy in autistic people is no different than when the seizure disorder occurs in other people. Options beyond anti-seizure drugs include:[8]

- Diet changes (e.g. the ketogenic diet)
- Vagus nerve stimulation (an implant device to help prevent seizures)
- Injury prevention, such as making sure a child does not choke during a seizure

However, with advances in genetic medicine, researchers are learning more about the links between epilepsy and other neurological disorders like autism. They've identified several genes involved in these patterns, and one study estimates a third of all children with epilepsy (including autistic kids) could benefit from precision (personalized) medicine based on genetics.[10]

The Ketogenic Diet and Epilepsy

Living With Epilepsy

While many people with epilepsy can control their seizures through medication, others live with uncontrolled seizures. If your child's seizures are controlled through medication, you'll need ongoing visits with your child's neurologist to adjust medication or address side effects.

If your child's seizures are not controlled, you will need to address the issue and take specific precautions. Specifically, children with epilepsy may:

- Have delays or difficulty with self-care, fine and gross motor coordination, learning, communication, and behavior
- Need extra supervision during potentially dangerous activities such as bathing, showering, swimming, or sports
- Be less active than children without epilepsy
- Have trouble sleeping or concentrating
- Be the victim of bullying or teasing
- Feel ostracized by peers

In addition, you will need to address safety and wellness issues with teachers, aides, and therapists who work with your child.

Summary

Autistic people often are diagnosed with epilepsy, and people with epilepsy may be more likely to have autism. There are similarities in the traits and symptoms, so it can help to know how to identify what a child or loved one is experiencing.

In some cases, there's an underlying genetic condition that contributes to autism and/or epilepsy, and researchers are learning more about these genetic links and potential treatments. Your healthcare provider can ensure you receive an accurate diagnosis and discuss treatment options.

Don't hesitate to ask questions or reach out for support from your healthcare team and the broader community. Your contacts can recommend therapists, school programs, and other resources.

10 Sources