



DIAGNOSING THE CAUSE OF STATUS EPILEPTICUS IN CHILDREN

This summary will provide you with information about tests that help doctors identify the cause of *status epilepticus* in children.

What is a seizure?

A *seizure* is caused by a sudden, temporary change in the normal electrical activity of the brain. It usually results in body movements or behaviors that are abnormal and beyond a person's control. A seizure also changes how a person feels or senses things. Some people may even lose consciousness during a seizure.

What is status epilepticus (SE)?

Status epilepticus (SE) is a seizure, or series of seizures, that lasts more than 30 minutes. SE is a life-threatening emergency. It needs to be evaluated and treated in a hospital. In the United States, SE affects more than 30,000 children under age 18 each year. It is most common in infants and toddlers. Many children who experience SE have *epilepsy*. Epilepsy is a brain disorder in which seizures recur.

Diagnosing the cause of SE

Neurologists from the American Academy of Neurology and the Child Neurology Society are doctors who treat diseases of the brain and nervous system. Experts in neurology carefully reviewed all of the available scientific studies about tests for children with SE.

Laboratory tests

Your child's doctor may perform laboratory tests. These include checking anti-epileptic drug (AED) levels and performing *toxicology studies*, *blood cultures*, and *lumbar puncture*.

AEDs are drugs used to treat epilepsy. There is good evidence* that doctors should check AED levels when a child with epilepsy develops SE, if the child is currently taking AEDs.

A toxicology test looks at blood, urine, or hair for the presence of drugs. There is weak evidence* that doctors should perform a toxicology test in children with SE when the cause of SE is not known.

Unless the doctor suspects an infection, there is not enough evidence* for or against doing the following tests on a routine basis:

- *Blood culture*, a test to determine if bacteria or fungus are present in the blood

- *Lumbar puncture* (spinal tap), a test to evaluate the fluid surrounding the brain and spinal cord

When the doctor suspects an infection, blood cultures and lumbar puncture are part of the evaluation.

Metabolic and genetic testing

Inborn errors of metabolism and genetic disorders may cause epilepsy and brain disorders.

Inborn errors of metabolism are rare genetic disorders. They cause the body to be unable to *metabolize*, or turn nutrients into energy, normally.

There is weak evidence* that doctors should check for inborn errors of metabolism when the cause of SE is not known. This is especially true if the child's medical history suggests a disorder of metabolism.

Genetic tests can be done on children to determine if a condition or disease is causing the SE. There is not enough evidence* that genetic testing (chromosomal or molecular studies) should be done routinely in children with SE.

Electroencephalography (EEG)

An *EEG* is a test that records the electrical activity produced by the brain. An EEG may provide more information about areas of the brain that are abnormal. This information may affect decisions about diagnosis and treatment.

There is weak evidence* that doctors should obtain an EEG for a child with newly developed SE.

Pseudostatus epilepticus is an event that looks like SE. It may also occur in children. There is weak evidence* that doctors should obtain an EEG for a child who presents with SE and if the doctor suspects pseudostatus epilepticus.

Nonconvulsive status epilepticus (NCSE) is another form of SE. NCSE occurs in children who also have SE. There is not enough evidence* for or against obtaining an EEG to help the doctor make a diagnosis of NCSE.

Brain imaging studies

Doctors use different methods to take pictures of brain structure and function. Some common imaging techniques include *computed tomography* (CT) and *magnetic resonance imaging* (MRI).

There is weak evidence* that doctors should obtain brain imaging studies if there are clinical signs of SE, or if the cause is unknown. Brain imaging studies should be done only after the child is stable and the seizures are controlled.

There is not enough evidence* for or against doing brain imaging studies on a regular basis.

Talk to your neurologist

Family members and caretakers of a child with status epilepticus should talk with a neurologist. Neurologists can provide correct information about diagnosis and assessment. Ask your neurologist for more information and available services.

This is an evidence-based educational service of the American Academy of Neurology. It is designed to provide members and patients with evidence-based guideline recommendations to assist with decision-making in patient care. It is based on an assessment of current scientific and clinical information, and is not intended to exclude any reasonable alternative methodologies. The AAN recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on the circumstances involved.

* After the experts review all of the published research studies they describe the strength of the evidence supporting each recommendation:

Strong evidence = More than one high-quality scientific study

Good evidence = At least one high-quality scientific study or two or more studies of a lesser quality

Weak evidence = The studies, while supportive, are weak in design or strength of the findings

Not enough evidence = Either different studies have come to conflicting results or there are no studies of reasonable quality



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