Schweizerische Epilepsie-Liga
Swiss League Against Epilepsy

Info Epilepsy

Epilepsy in children

EPILEPSY IN CHILDREN

An epileptic seizure is a transient occurrence of signs and/or symptoms due to abnormal excessive or synchronous neuronal activity in the brain. Epilepsy is the ongoing predisposition to generate epileptic seizures; this predisposition often begins in childhood. For every 140 children, about one child will be affected by epilepsy (0.7%); more than a third of epilepsies start in childhood. The causes, types and progression of epilepsies can vary considerably.

As a family, it is important to be **open about epilepsy**. Even children as young as 2 or 3 can understand their disease if it is explained to them appropriately. Relatives, friends and carers should also be informed about the child having epilepsy.

IMPORTANT SEIZURE TYPES IN CHILDREN

Epileptic seizures are divided into two main seizure types, generalized onset and focal onset seizures. In a generalized seizure there are electrical discharges from nerve cells on both sides of the brain from the very start.

Neonatal seizures

Seizures in the neonatal period are a little more common than in later childhood. They are most common in newborns deprived of oxygen during birth who develop hypoxic-ischaemic encephalopathy. Only around 15% of newborns with seizures due to this will later develop an epilepsy that requires longer term treatment. Nevertheless, seizures in the acute phase must be treated correctly as they can otherwise exacerbate the damage to the brain. Neonatal seizures can also have other causes. Moreover, there are types of epilepsy which have genetic causes and which begin in the neonatal period.

Infantile spasms

These seizures usually occur in infants aged 3 to 8 months and are difficult to recognize: they are more common in boys than girls, and typically the child suddenly moves their arms upward with elbows bent and curls their head and torso forward – looking very much as though they have just been startled. Spasms often occur in clusters but can also manifest themselves much less obviously as twitches. Many children who have infantile spasms not only exhibit a distinct EEG pattern but also have developmental problems (**West syndrome**).

Febrile seizures

A febrile seizure is a seizure provoked by a fever (usually a tonic-clonic seizure, see below). Rarely do they signify the start of an epilepsy – children who have them are usually otherwise healthy with normal development. They occur in around 3-5% of children aged between 6 months and 5 years. Febrile seizures can run in families. They usually occur when there is a rapid rise in temperature above 38.5° Celsius. A simple febrile seizure lasts only a few minutes and does not damage the brain; the child generally recovers quickly. After the seizure has ended the parents should seek medical advice. Children almost always grow out of the tendency to have febrile seizures by school age at the latest.

Absence seizures

These are by far the most common type of generalized epilepsy in children and are easily overlooked: the child is "absent" for a short time – usually between 5 and 10 seconds – without falling or convulsing; their eyes stay open or their eyelids flutter, and they have a blank stare. Children who have these seizures are often classed as daydreamers because they don't take anything on board during a seizure. They themselves often don't notice that they have had a seizure.

Tonic-clonic seizures

Major epileptic seizures (previously known as "grand mal" seizures) can occur at any age: the person having the seizure loses consciousness, their body stiffens (tonic phase) and they usually fall to the ground; they may also stop breathing briefly. Then their muscles convulse (clonic phase). The seizure usually stops after two to three minutes.

Seizures rarely last longer than 3 minutes. If they do and there is no emergency medication available, a doctor or an ambulance should be called (tel. 144 in Switzerland).

DIAGNOSIS

After a first seizure in a child who doesn't have a high temperature, the parents should consult a specialist neuropaediatrician. If they are able to it is important for them to watch the seizure closely and make notes or even film it. The previous health history of the child and their relatives may also be relevant. An electroencephalogram (EEG) measures brainwaves and gives important information about epileptic activity in the brain. A standard EEG records brainwave activity for 25 minutes. People with some types of epilepsy, however, will have "normal" EEG results in between seizures.

In many cases, especially with focal seizures, magnetic resonance imaging (MRI) is needed to rule out any changes to the structure of the brain that could lead to an epilepsy. Children who are young or find it difficult to lie still will need to be sedated. It's best to have the MRI done at a specialist hospital with modern equipment and specialist staff.

Early neuropsychological investigation helps recognize and, where necessary, manage any subsequent difficulties in learning, concentration or daily life that are linked to the epilepsy or its treatment.

Genetic testing

Childhood epilepsies often have a genetic basis. This does not necessarily mean that the disease is hereditary, as gene mutations are often "de novo" meaning new. There is no specific "epilepsy gene", but lots of possible different genetic changes, each of them rare.

If the results of genetic testing are conclusive, it is easier to forecast how the disease may progress. The child is spared further investigation and sometimes doctors will also know which medication or treatment methods will help and which will not.

IMPORTANT EPILEPSY SYNDROMES

Rolandic epilepsy

Rolandic epilepsy is the most common focal epilepsy in childhood. It has a genetic basis and can be inherited, although the genes responsible for it are still largely unidentified. Focal aware seizures usually occur between the ages of 3 and 11 years, often at night, and are characterized by loud noises from the throat and rhythmic twitching of the corner of the mouth. Most of these seizures are brief and stop again on their own. The symptoms almost always resolve of their own accord in puberty or adolescence. These types of epilepsy used to be called "benign" but are now known as "self-limiting" epilepsies.

Landau-Kleffner syndrome

This is a much rarer epilepsy syndrome and affects the temporal lobes, which are involved in controlling language. It usually occurs in children between the ages of 3 and 7 years and is characterized by increasing problems with understanding language and recognizing what has been said (verbal agnosia). In some cases it may lead to complete loss of speech (aphasia).

Around 70% of children with this syndrome will have some type of epileptic seizure, usually in their sleep. These tend to be overshadowed by the language difficulties, which are caused by continuous focal discharges during sleep that can only be identified by means of a sleep EEG. Although this type of epilepsy often remits when puberty and adolescence are reached, correct anti-epileptic treatment is essential and language difficulties often persist.

Absence epilepsy

This is the most common generalized childhood epilepsy and a child could have far more than 100 absences in a day. In children the disease usually starts between the ages of 5 and 8 years, although infant and juvenile absence epilepsies also exist. The cause is usually genetic, sometimes hereditary. In general, classic childhood absence epilepsy responds well to treatment.

Doose syndrome

Doose syndrome affects children between the ages of 1½ and 5 years and is characterized by seizures with muscle convulsions that involve a high risk of the child falling due to an abrupt loss of muscle control. In some children the seizures can be treated successfully and they can go on to develop normally, but in others the seizures are more difficult to control, the children have developmental difficulties and often require several different medications.

Dravet syndrome

A rare syndrome; seizures begin between the ages of 3 and 9 months and are often associated with a high temperature. In most cases this syndrome is caused by a genetic mutation and is often difficult to control fully with medication. However there are medications that can usually help the child and stabilize the situation; these often need to be prescribed in combination. Nevertheless the child will almost always have developmental problems.

Lennox-Gastaut syndrome

With this syndrome the seizures first occur between the ages of 1 and 6 years and the types of seizure vary considerably. They can only rarely be successfully treated and are often associated with developmental problems in all areas. This form of epilepsy is rare and can mostly be traced back to brain malformations or gene mutations.

TREATMENT

The objective of epilepsy treatment is always to control seizures as well as possible, ideally achieving seizure freedom with no EEG abnormalities and no undesired side effects. This is possible in a good two thirds of cases, although it can take a long time. It is dependent on good collaboration between the neuropaediatrician responsible for treatment and the parents, because the medication is only effective if it is taken regularly. Side effects of medication should be discussed with the responsible neuropaediatrician. There are only few cases in which it is sensible not to take medication. In certain situations other non-pharmacological treatments can help (ketogenic diet, vagus nerve stimulator). Adjuvant treatments with active ingredients (e.g. cannabidiol derived from hemp) that are not yet approved for therapeutic use in Switzerland should only be undertaken in close consultation with the doctors.

With focal epilepsies, if the first two medications tried do not stop the seizures, it is recommended that the possibility and benefit of epilepsy surgery at a specialist centre be explored early. Although the thought of an operation on a child's brain may seem frightening at first, experience shows that in children's brains the benefits of removing the epilepsy focus are greater the sooner it is done.

If further seizures are to be expected, **emergency medication** should always be kept close. Carers and teaching staff should be instructed in its use. A form in German and French has been created specifically to assist communication between the neuropaediatrician, parents and teaching staff: www.epi.ch/schule

Vaccinations

In general, children with epilepsy should be given the same vaccinations as other children. Some vaccinations cause a high temperature, so an existing predisposition to epileptic seizures may first become evident after a vaccination. If a child has a predisposition to seizures triggered by a high temperature, parents should consult the paediatrician to see if they recommend the child is given anti-sickness medication before certain vaccinations (e.g. whooping cough). Vaccinations are not, however, a cause of epilepsy.

Advice on social issues

The patient organization Epi-Suisse gives advice on social issues and offers a networking platform for families affected by epilepsy. For more information in German or French visit www.epi-suisse.ch.

Epilepsy can affect us all

Five to ten percent of people will have an epileptic seizure at some point in their lives. Almost one percent of the world's population will develop epilepsy. In Switzerland, approximately 80,000 people live with epilepsy, of whom some 15,000 are children and adolescents.

Epilepsy League – Diverse activities

The Epilepsy League has been researching epilepsy and helping and informing people since 1931. Its goal is to sustainably improve the daily lives and standing in society of those affected by epilepsy.

Research

It promotes knowledge gathering in all areas of epilepsy.

Help

Information and advice in German, English and French:
- For people with epilepsy and their relatives
- For professionals from a multitude of different areas

Information

The Epilepsy League provides information to the public, raising awareness and thus aiding the social integration of people affected by epilepsy.

Editor: Julia Franke
Medical advisor: PD Dr. Alexandre Datta

More flyers in English:

www.epi.ch/en

Further information

In German, French, English and some in Italian:

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