



Neuronal migration disorder

This information sheet from Great Ormond Street Hospital (GOSH) explains the causes, symptoms and treatment of neuronal migration disorders and where to get help.

Neuronal migration disorder is an umbrella term given to several conditions including lissencephaly, agenesis of the corpus callosum and microgyria. They all arise while the baby is developing in the womb. Very early in pregnancy, while the brain is forming, the neurons (nerve cells) move to form 'neural circuits', which are responsible for transmitting messages around the body. If the genetic instructions to move the neurons are not working properly, the neural circuits do not form and areas of the brain are abnormal or absent.

What causes a neuronal migration disorder?

Doctors think that neuronal migration disorders are genetic in that a faulty gene stops the neural circuits forming properly. Some neuronal migration disorders are passed on from parent to child, but most develop as a sporadic genetic fault that just happens.

What are the signs and symptoms of a neuronal migration disorder?

The signs and symptoms of a neuronal migration disorder vary depending on the area of the brain affected and the severity of abnormality or absence. At birth, there may be little sign that a child has a neuronal migration disorder – symptoms tend to become more obvious as the child does not grow and develop as expected. These symptoms can include developmental delay (failing to reach milestones at the expected age), movement and muscle tone problems, seizures (fits), failure to thrive and learning disabilities.

How is a neuronal migration disorder diagnosed?

Most neuronal migration disorders are diagnosed with an MRI scan, which shows a characteristic appearance of absent or abnormal areas of brain tissue. Other tests may be used to gain additional information, including electroencephalograms (EEG) to measure seizure activity and electromyograms (EMG) to measure muscle tone.

How is a neuronal migration disorder treated?

The neuronal migration disorder itself cannot be treated – there is no way to restore abnormal or absent areas of brain tissue – but there is much that can be done to improve the symptoms. Many children will need input from a range of specialists, including physiotherapists, occupational therapists, speech/language therapists and so on. If a child has seizures, these may be controlled with medication. In some cases, epilepsy surgery, ketogenic diet or vagus nerve stimulation may be discussed. Many children will need support at school but the level of support needed will vary depending on the child's specific needs.

What happens next?

The outlook for children with a neuronal migration disorder is very variable, as it depends on the area of the brain that is abnormal or absent and its severity. Some children may have minor impairments but others will need more intensive support.

Further information and support

No support group for neuronal migration disorders exists in the UK but the umbrella organisation Contact a Family may be able to put you in touch with another family affected by a neuronal migration disorder. Call them on 0808 808 3555 or visit their website at www.cafamily.org.uk.