

# Developmental defects of the brain

When we talk about developmental defects (DVD) of the brain, we mean defects that arise in prenatal development, i.e. they arise before the child in question is born. The causes are mainly genetic. However, various offenses on the part of the mother, such as excessive alcohol consumption or drug addiction, are not an exception. Another role is also played by the age of the mother, which is too young or, on the contrary, too old. The reason may also be a febrile illness of the mother during pregnancy or [[diabetes mellitus|diabetes]. Whether the defect is present can be revealed by ultrasound examination or amniotic fluid sampling. If defects are found, the doctor will often recommend an abortion. VVs of the brain can be divided into several categories according to the cause.

## Neural tube failure

We most often encounter a group of defects that are caused by the non-closure of the neural tube, which eventually gives rise to the brain and spinal cord.

### Anencephalus

Anencephalus literally means the almost complete absence or underdevelopment of the brain and cranial bones. A child affected in this way is often stillborn or dies shortly after birth. The condition is also called frog's head for the typically protruding large eyes. There is no cure for anencephaly.

### Encephalocele

Another disease in this group is the so-called encephalocele. The part of the brain with its covers gets out through the skull with an unbroken slit. A soft lump the size of a fist or a tennis ball appears on the child's head, most often in the occipital region. The body is covered with skin. One of the causes of this formation can be insufficient development of the skull, when the skull is too small and cannot cover the entire brain.

### Hydrocephalus

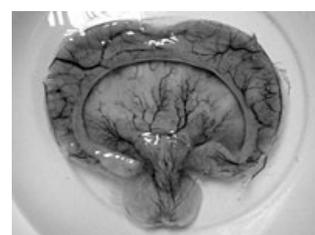
A frequent associated disease of encephalocele is so-called hydrocephalus, which literally means brain on water. This is a disorder associated with insufficient drainage of cerebrospinal fluid, where the brain is oppressed by this excess amount of "water" and often prolapses because there is not enough space for it in the skull. The head of a child affected in this way looks like a soccer ball.



Hydrocephalus

### Holoprosencephaly

Another defect is called holoprosencephaly. It results in underdevelopment or incomplete separation of one hemisphere of the brain. It causes epileptic seizures in more than half of children, and children are often developmentally delayed compared to others.



Holoprosencephaly

## Premature closure of one of the cerebral sutures

### Craniosynostosis

Craniosynostosis is manifested by deformation of the brain stem. Having open seams is very important, especially for children under 6, as they adapt the size of the skull to the growing brain. Any problem is solved operatively, when adhesion is prevented.

## Agenesis of the corpus callosum

Another defect is the so-called agenesis of the corpus callosum. It lies in the mutually limited connection between the cerebral hemispheres. The corpus callosum is the structure that is responsible for connecting the two cerebral hemispheres. However, this is not a serious defect and will not manifest itself in any significant way in everyday life.

(physiotherapist's note on the above information: CC agenesis is very serious VVV with regard to the child's psychomotor development. It can be associated with milder or more severe mental retardation, with other congenital developmental defects of the cardiovascular system or the optical apparatus with varying degrees of suspension disorders. The child lags very significantly in the development of motor skills and its dependence on the other person does not disappear, in fact, it is directly proportional to the expressed disorder. Therefore, I do not agree with the above statement that this is a serious defect and that it will not manifest itself in any significant way in everyday life.)

## Malformation of the CNS

Another group are defects caused by various malformations. This means that a certain structure has evolved differently than normal.

File:Temporal  
Arachnoidalzyste links MRT T2  
axial 003.jpg  
Arachnoid cyst localized  
temporally

## Dand-Walker malformation

This is a malformation where the middle part of the cerebellum, the so-called vermis, is not developed. The consequence is the obstruction of openings important for the circulation of cerebrospinal fluid and hydrocephalus occurs.

## Arnold-Chiari malformation

Similar to Dand-Walker malformation, but not only the cerebellum, but also the medulla oblongata causes obstruction.

## Arachnoid cysts

Another defect are the so-called arachnoid cysts, which develop inside the arachnoid, or spider web. The arachnoid is the middle of the three membranes that surround the brain. Because these cysts often enlarge over time, they are often discovered during examinations of children with headaches and convulsions. In extreme cases, cysts can also cause hydrocephalus.

## Links

### Related Articles

- CNS malformations
- Arachnoid cysts

### External links

- Anencephaly (English Wikipedia)
- Hydrocephalus
- Congenital developmental defects (<http://www.vrozene-vady.cz/vrozene-vady/index.php?co=enkephalokela>)
- Congenital developmental defects (<http://www.genetika-biologie.cz/vrozene-vyvojove-vady>)

### References

- VACEK, Zdenek. *Embryology: a textbook for students of medicine and general nursing and midwifery*. 1st edition. Prague: Grada, 2006. ISBN 80-247-1267-9.