Disorders of consciousness (pediatrics)

Consciousness is the sum of the basic function of the brain; the ability to be aware of your surroundings, yourself, to learn and remember. Furthermore, perceive external and internal stimuli, evaluate them and react to them. Disorders of consciousness is accompanied by anatomical impairments or dysfunction of the ascending reticular formation. Violation of association areas of the cortex, reticulocortical pathways and injury in the thalamus region. It can also be caused by neurotransmitter disorders and metabolic imbalances.

Disorders of consciousness

- **Qualitative** (impairment of cognitive and effective functions without impairment of vigilance)
- **Quantitative** (vigilance and motility disorder, somnolence, stupor, coma), or their combination. Qualitative disorders are less common in children.[1]

Qualitative

These disorders do not affect the level of alertness, but **the content of consciousness** (the level of alertness is often preserved in these disorders). Qualitative disorders are characterised by disorders of orientation , thinking and behaviour. We divide them into three groups:

- Deranged consciousness

It is typical for delusional consciousness that the sufferer perceives external reality as **distorted** both in form and meaning. Such a person may be disoriented, have distorted information about himself. **Hallucinations** are often present. This includes confusion , or a more severe disorder called delirium. Delirium is charecterised by increased restlessness, activity and hallucinations.

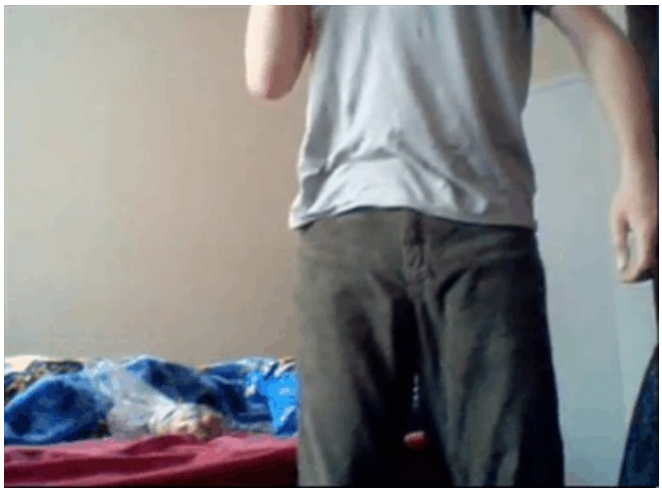
- *Clouded state* (obnubilation)

Gloomy states usually have a sudden beginning and end. They start from clear consciousness and return to it again. The sufferer has **no memories** of this condition (so called amnesia). Although the external behaviour may not be noticeable to the observer, the basic intentions and the tendencies of the affected person are significantly changed. They occur in epilepsy, head trauma, burns, starvation, some psychoses and personality disorders.

- *Sleep Disorders*

There are many sleep disorders. Their exact determination usually requires consultation with an expert.

Causes of qualitative disorders of consciousness



A young man inducing Orthostatic Hypotension on himself and passing out briefly on his bed.

CNS involvement

- trauma (coma);
- tumors;
- infections (encephalitis, meningitis);
- hypoxia (hypoxic-ischemic encephalopathy).

Metabolic imbalance

- ionic disorders (Na, Ca, Mg);
- Liver disorders (hereditary metabolic disorders, hyperammonemia, liver failure);
- Kidney disorders (acute kidney failure with uremia);
- disorders of glucose metabolism (hypoglycemia, hyperglycemia, diabetic ketoacidosis).

Endocrinopathy

- thyropathy;
- disorder of the pituitary land (Cushing's syndrome).

Intoxication

- carbon monoxide;
- drugs (benzodiazepines, barbiturates, antihistamines, tricyclic antidepressants, neuroleptics, hypnotics, digoxin, beta-blockers;
- addictive substances (alcohol, cocaine).

Critical states

- sepsis, polytrauma (organic psychosyndrome).[1]

Quantitative

These disorders affect alertness. In term of intensity, we distinguish between:

- *syncope* (fainting)

This is a short-term, sudden unconsciousness that occurs as a result of a **lack of oxygenated blood in the brain**.It can arise from both biological and psychogenitic causes (eg. exhaustion, pain fright, but also the sight of blood).

- *somnolence*

Somnolence resembles a state of **increased sleepiness**. However, the affected person responds to external stimuli and can be "awakened" (if they are left alone, they fall asleep). Typical manifestations include slowed thinking, aimless behaviour, lack of interest, slow reactions. Can occur during intoxication, in the early stages of narcosis, or after head injuries.

- *stupor*

Stupor is slightly stronger than somnolence. The disabled person is unable to communicate. He is unable to answer questions intelligibly. Breath and pulse have a slowed frequency, blood pressure decreases. It occurs in some intoxications and after head injuries.

- *coma*

It is a condition that occurs during anaesthesia. **Physiological reflexes** die out, the pulse, breathing rate and blood pressure decrease. The affected person cannot be brought to **consciousness** in any way (does not respond to pain, pupils do not respond to light). In addition to necrosis, it occurs after head injuries, cerebrovascular accidents, electric shock and in some somatic diseases (diabetic coma, uremic coma).

Causes of quantitative disorders of consciousness

Supra- and infratentorial lesions

- bleeding (subdural, epidural, subarachnoid);
- trauma (concussion, contusion, bleeding);
- vascular (thrombosis, embolism, vasospasm, AV malformation);
- expansive processes (tumor, hydrocephalus);
- infection (meningitis, encephalitis, brain abscess);
- convulsions (epilepsy).

Diffuse cortical lesions

- hypoglycemia (hypermetabolic states - hyperpyrexia, prolonged convulsions, lack of energy substrate);
- hypoxia (suffocation, cardiopulmonary resuscitation, carbon monoxide poisoning, circulatory causes);
- disruption of the internal environment (ion imbalance, acid-base balance disorders, diabetes mellitus, uremia);
- metabolic causes (hereditary disorder of amino acid, carbohydrate, fat metabolism, mitochondrial encephalopathy);
- endocrine causes (thyreopathy, adrenal insufficiency, hypoparathyoidism);
- intoxication (alcohol, drugs, plants, chamicals);
- multiorgan failure (sepsis, shock states, post-asphyxia states).

Psychogenic causes

- hysteria, vagotonia, panic disorder.[1]

Links

Related articles

- Consciousness and its disorder
- Impaired consciousness seizures (pediatrics)

References

1. LEBL, J – JANDA, J – POHUNEK, P. *Klinická pediatrie.* 1. edition. Galén, 2012. 698 pp. pp. 111-113. ISBN 978-80-7262-772-1.