Illnesses of the nervous system.
Cerebro-vascular illness

Cerebro-vascular disease
• is illnesses of cerebrum, which arise up on soil of violation of circulation of blood. In case of their large frequency of morbidity and death rate they are selected in the independent group of diseases with the proper code in international classification of diseases.

• A background for them is:
  • atherosclerosis and
  • hypertensive illness,
  • born anomalies of development of vessels of brain,
  • arteritis, and
  • hemorrhagic diathesis.

• Risk factors can be saccharine diabetes,
  • atherosclerosis of coronal arteries,
  • cardiac insufficiency,
  • obesity,
  • smoking of cigarettes,
  • alcoholism

Etiology and pathogenesis
• Direct reasons:
  • spasm,
  • thrombosis,
  • tromboembolism of cerebral and precerebral arteries.
• A considerable place is taken a psychoemotional overstrain Classification.
• Distinguished transitory ischemic encephalopathy,
  • selective necrosis of neurons,
  • ischemic and
  • hemorrhagic stroke.

Morphology
• At the transitory ischemia of cerebrum an edema,
• dystrophic changes, is marked in nervous cells,
• single shallow hemorrhage,
• laying of hemosiderin at chronic motion.

• The extensive white matter petechial hemorrhages seen here are typical for fat embolism syndrome. Interestingly, neurologic signs and symptoms usually appear about a week after the initiating event, such as long bone fractures in a vehicular accident.

Selective necrosis of neurons
• can have diffuse character or
focus – after the attacks of hypotension.
Diffuse selective necrosis of neurons, which is observed at the stop of heart, leads to death of patients in a few days.
Thus in the cerebrum of displays of heart attack does not find.
Only on a microscopic level widespread necrosis of neurons appears especially in hippocampus, III, V, VI layers of bark of cerebrum.
Focus selective necrosis of neurons arises up after the attacks of hypotension and often meets in areas between the arterial pools of brain and cerebellum.
The most remote from arterial vessels structures of cerebrum suffer.

The neurons are the most sensitive cells to anoxic injury. Seen here are red neurons which are dying as a result of hypoxia. One of the most sensitive areas in the brain to hypoxic injury is the hippocampus, as seen below.

The Purkinje cells between the molecular and granular layers of the cerebellum are also highly susceptible to anoxia. Those seen here have red cytoplasm, indistinct cytoplasmic borders, and karyolysis.

An ischemic stroke
• arises up as a result of stopping of arterial blood supply of cerebrum through thrombosis of the atherosclerotic changed vessels of brain.
• The morphological display of ischemic stroke can be
  • ischemic,
  • hemorrhagic and
  • a heart attack is mixed.
• In the mixed heart attack it is possible to find the areas of both ischemic and hemorrhagic heart attack.
• He more frequent arises up in the grey matter of brain. At an ischemic stroke circulatory ischemic necrosis which looks as a cell of grey softening cerebral matter develops in the brain;

An acute cerebral infarct is seen here. Such infarcts are typically the result of arterial thrombosis or embolism.

The arteriolar sclerosis that results from chronic hypertension leads to small lacunar infarcts, or "lacunes", one of which is seen here in the pons. Such lesions are most common in basal ganglia, deep white matter, and brain stem.

This is the microscopic appearance of a lacunar infarct. Note that it is a cystic space from the resolved liquefactive necrosis. There can be hemosiderin pigment from hemorrhage as well.

This intermediate infarct of the frontal lobe shows liquefactive necrosis with formation of cystic spaces as resolution begins.

Here is a cerebral infarct from an arterial embolus, which often leads to a hemorrhagic appearance. There is edema which obscures the structures. The acutely edematous infarcted tissue may produce a mass effect. Note the decrease in size of the ventricle on the left with shift of the midline.

This cerebral infarction demonstrates the presence of many macrophages at the right which are cleaning up the lipid debris from the liquefactive necrosis.

Resolution of the liquefactive necrosis by macrophages in a cerebral infarction over weeks leads to the formation of a cystic space.
Here is a large remote cerebral infarction. Resolution of the infarction has left a huge cystic space encompassing much of the cerebral hemisphere in this neonate.

A remote cerebral infarction is seen here, with a residual cystic space after resolution of the liquefactive necrosis. The resultant Wallerian degeneration has decreased the descending corticospinal tracts, and the cerebral peduncle of the midbrain is reduced unilaterally.

A hemorrhagic stroke
- shows up: by a intracranial haematoma,
- hemorrhagic impregnation of tissue of the cerebrum,
- subarachnoid hemorrhage.

A spontaneous intracranial hemorrhage often meets at hypertension (cerebral hemorrhage) and break of aneurysm of arteries (subarachnoid hemorrhage).

Reason of spontaneous intracranial hemorrhages can be bleeding at a sharp leucosis, hemorrhage in the tumor of primary or metastasic origin.

A cerebral hemorrhage
- (hemorrhagic stroke, cerebral apoplexy) develops at the break of microaneurysm of artery which is often formed for patients with arterial hypertension.
- At a hemorrhagic stroke, saturating with blood of the damaged area of brain is marked additionally with development of haematoma of brain.
- In the place of hemorrhage tissue of brain collapses and is softened – red softening to the brain.
- In the first days a cerebral haematoma is an area of brain, which is presented the blasted matter of brain from pr

Here is an incidental non-ruptured berry aneurysm located at the bifurcation of the left middle cerebral and anterior communicating arteries of the circle of Willis at the base of the brain. These aneurysms may be present in 1% of persons. They form at points where there is a developmental weakness in the arterial wall. Multiple aneurysms the circle of Willis

The circle of Willis has been dissected, and three berry aneurysms are seen. Multiple aneurysms are seen in about 20-30% of cases of berry aneurysm. Such aneurysms are "congenital" in the sense that the defect in the arterial wall is present from birth, but the actual aneurysm takes years to develop, so that rupture is most likely to occur in young to middle age adults.

The subarachnoid hemorrhage from a ruptured aneurysm is more of an irritant producing vasospasm than a mass lesion.
The subarachnoid hemorrhage
hemorrhage in the tumor of the brain.
hemorrhage in the ventricle of the brain
hemorrhage in the trunk of the brain
hemorrhage in the trunk of the brain and ventricle

Червоне розмякшення мозку

This cerebral hemorrhage occurred in conjunction with an overdose of cocaine. Such acute hemorrhages can occasionally be seen with cocaine use.

The orange-brown, scalloped appearance of these lesions is consistent with old contusions. The resolution left behind hemosiderin from the hemorrhage that produces the orange-brown staining.
hemorrhage in the brain
• The large hemorrhage in this adult brain arose in the basal ganglia region of a patient with hypertension. This is one cause for a "stroke".

• **Infectious diseases**
  • of the nervous system.

*Festing infections* in a cerebrum cause *meningitis*—inflammation of his space or *encephalitis*—inflammation of tissue of cerebrum.

• After localization *meningitis* can be: pachymeningitis is inflammation of hard brain-tunic,
  • *leptomeningitis* is inflammation of vascular and arachnoid.

*Leptomeningitis*
• arises up after penetration of infection (meningococcus, pneumococcus, intestinal stick is in subarachnoid space.
• Characteristic is the hematogenic infecting and air-drop way of infection.
• At morphological research find pus in subarachnoid intracraniial and spinal spaces, at crinkles hemispheres and on the basis of brain. In ventricles a turbid cerebrospinal liquid, fibrin, pus, appears on walls and vascular interlacement, hydrocephaly