Polyneuropathies

- Bilaterally symmetric affection of the peripheral nerves, usually involving the legs more than arms, and the distal segments earlier and more severely than the proximal ones.

- **Etiology** – autoimmune diseases, genetic diseases, toxic, metabolic, infectious diseases
Polyneuropathies – symptomatology

- **Numbness and sensory problems**
  
numbness, tingling, burning, the loss of proprioceptive fibers gives rise to sensory ataxia and tremor

- **Motor symptoms (rarely)**
  
symmetric, at lower extremities, later upper

- **Loss of reflexes** – ankle, patellar, UE

- **Trophic changes** – muscle atrophies, dryness of the skin, trophic changes (ulcers), foot deformations
Polyneuropathies - diagnosis

- EMG
- Biopsy
- Lumbar puncture
- Blood examination and serology
- Blood count, sugar, kreatinin, urea, liver enzymes, vit. B12, B1, uroprofyryns, koproprofyryns, rheumatoid serology, CIK, phytan acid (M. Refsum), ELFO, serology – infectious diseases
Polyneuropathies – classification

- Acute, chronic
- Histopathological classification
- Axonal, demyelinating
- According to EMG
- According to etiology
Polyneuropathies – ethiological classification

- Genetically determined
- Metabolically determined
- Nutritional polyneuropathy
- Dys- and paraproteinemias
- Infection diseases
- Poisoning with heavy metals, alcohol, ...
Polyneuropathies – genetically determined

- Hereditary motoric and sensory neuropathies (HMSN) – typ I – VII
- Typ I – Charcot-Marie-Tooth
- AD, distal, LE, foot deformation, thickening of peripheral nerves, decreased velocity, biopsy – axonal degeneration, de- and re-myelinisation, onion formations
- Typ IV – M. Refsum – AR, retinitis pigmentosa, loss of hearing, heart and skin signs, skeleton deformations, phytan acid
Polyneuropathies – genetically determined

- In acute liver porphyria
  mononeuritis multiplex, motoric polyradikuloneuritis, kvadruparesis

- Primary amyloidosis
Polyneuropathies – metabolically determined

- Diabetic
- Uremia
- Liver cirrhosis
- Malnutrition – vit. B$_{12}$, B$_1$ deficiency
Diabetic polyneuropathy

- After 5-10 years of DM
- 10% - earlier than DM
- Patogenesis – metabolic changes and ischemic changes of vasa nervorum (hyalinisation of the wall of vessels)
- Metabolic – earlier problems with sensitivity, myelin fibers are resistant against ischemia
Diabetic polyneuropathy

• Symmetric, mainly distal
• Lower extremities – more often
• Loss of proprioception, ataxia
• Neuropathic pain

Simple tools
Monofilament: 5.07 Semmes-Weinstein (10-g) nylon filament test (10-g monofilament test)
Diabetic neuropathy

- Diabetic polynuropathy
- Proximal assymetric diabetic PN / diabetic amyotrophy
  - Rare
  - Starts with night pain
  - Proximal (ischias)
  - Atrophy
- Mononeuropathy
- Cranial nerves lesions
- Autonomic neuropathy – impotence, impairment of bladder and bowel function, heart rate, …
Alcohol and nervous system

1. Acute intoxication
   • Changes in behavior, aggressivity, incoordination of movement and gait, slurred speech
   • Drowsiness, stupor, coma, problems with breathing
2. Abstinence and withdrawal syndrome

- Tremulousness, hallucinations, seizures, confusion, psychomotor and autonomic overactivity, which develops several hours or days after an addictive drinker abstains from alcohol
Alcohol and nervous system

• Delirium tremens

• In 10% starts with seizures
• Profound confusion, gross tremor, hallucinations, autonomic overactivity – fever, tachycardia, dilated pupils
• 48-96 hours after cessation of drinking
Alcohol and nervous system

3. Alkohol a dementia

- Chronic abuse of alcohol – kognitiv deficit (loss of neurons, brain atrophy)
- Wernicke encefalopathy (hemorrhagic)
- Korsakov syndrom
Alcohol and nervous system

• Wernicke encephalopathy
• Confusion, eye movement problems, ataxia – dysarthria, ataxia of body and extremities, residual signs
• Loss of neuronos, axons, myelin, small hemorrhagies, – corpora mamillaria, around aqueductus, III. A IV. ventricles
• Th.: Thiamin 100 mg/day im., iv. , B-komplex
Alcohol and nervous system

- Korsak syndrom
- Amnestic syndrom with amnesia, confabulations

- Marchiafava-Bignami syndrom
  - Demyelinisation of corpus callosum
  - Confusion, seizures, dementia
Alcohol and nervous system

- Alkoholic degeneration of cerebellum
- Cerebellar atrophy
- Alkoholic polyneuropathy
- Alkoholic myopathy
- Acute nekrotisans myopathy, chronic myopathy
Liver encefalopathy

- Increased amoniak in blood
- Apathy, kognitiv disturbances
- Pyramidal signs
- Apraxia
- Unconsciousness
- MRI hyperintensive signals
Endocrinne disturbances

- Hypoglycemia
  - General signs, headache
  - Neurological signs – siezures, koma, acute hemiparesis
Endocrinne disturbances

- Repating hypoglycaemia – loss of intelect, kognitive disturbances, dementia

- Hyperglycemia
- Metabolic encephalopathy
- DM – risk of stroke
Endocrinne disturbances

- **Hypothyreosis**
- Polyneuropathy – axonal
- **Tinnitus, loss of hearing, dizziness, ptosis**
- Myalgia
- Loss of reflexes
- Apathy, concentration problems, problems with memory, depression, seizures
Endocrinne disturbances

- **Hypertyreosis**
  - Tyreotoxic myopathy – weakness of proximal muscles
  - Dif.dg. MG, ocular myopathy
  - seizures
Kidney - Uremia

- Uremic encefalopathy
- Concentration problems
- Kognitiv impairiment
- Motoric problems, ponyeuroopathy
- Seizures, multifocal myoclonus
- Delirium, koma
Dialysis

• Seizures – at the end or during dialysis (osmotic gradient)
Electrolytes disturbances

- **Hyponatremia** a hypoosmolality

- **Water** – to CSF and brain cells – **brain oedema** – decreased concentration of K
  - decreased action potential at membrane
  - increased neuronal irritability

- **Decreased brain blood flow**

- **Headache, problems with concentration, hallucinations, seizures, koma**
Electrolytes disturbances

- Hypernatremia a hyperosmolality
- Reason – lack of water
- Water from brain cells and CSF to a body – decreased brain volume
- Cognitive impairment, focal signs, koma, trombosis oc capillaries
Central pontinne myelinolysis

- Demyelinisation of pons
- Rapid change in the level of electrolytes
- Dysfagia, dysartria, tetraparesis
- Ocular movement disorder
- Frequently in alcoholics after very rapid therapy of hyponatremia
Lupus erythematosus

- General, skin, heart, cardial signs, lung and kidney signs, myalgia
- Neurological symptoms - 25-75%, 3% - first signs
- Headache, depression, confusion, hallucinations, hemiparesis, transversal spinal cord lesions, mononeuritis, polyneuritis, polymyozitis, brain infarcts
Lupus erythematoses

- **Reason of stroke**
- **Lupoid anticoagulation antifosfolipid antibodies, cardiac embolisation, vaskulitis**
- **CSF** – pleocytosis
- **EEG** – diffuse changes, **MRI** – more subcoritcal lesions of white matter