

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)**

symetric, 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, uroporfyrins, koproporfyrins, rheumatoid serology, CIK, phytan acid (M. Refsum), ELFO, serology – infectious diseases

Polyneuropathies – classification

- **Acute, chronic**
- **Histopathological classification**
- **Axonal, demyelinating**
- **According EMG**
- **According 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 a sensory neuropathies (HMSN)**
– **typ I – VII**
- **Typ I – Charcot-Marie-Tooth**
- **AD, distal, LE, foot deformation, thickening of periferal nerves, decreased velocity, biopsy – axonal degenration, 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**

Polynuropathies – metobolicaly determined

- **Diabetic**
- **Uremia**
- **Liver cirrhosis**
- **Malnutrition – vit. B₁₂, B₁ 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

- **Symetric, mainly distal**
- **Lower extremities – more often**
- **Loss of proprioception, ataxia**
- **Neuropatic pain**

Simple tools

Monofilament: 5.07 Semmes-Weinstein (10-g) nylon filament test (10-g monofilament test)



Diabetic neuropathy

- **Diabetic polyneuropathy**
- **Proximal asymmetric 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, aggression, incoordination of movement and gait, slurred speech**
- **Drowsiness, stupor, coma, problems with breathing**

Alcohol and nervous system

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. Alcohol a dementia

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

Alcohol and nervous system

- **Wernicke encefalopathy**
- **Confusion, eye movement problems, ataxia – dysarthria, ataxia of body and extremities, residual signs**
- **Loss of neurons, 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**
- **Demyelination of corpus callosum**
- **Confusion, seizures, dementia**

Alcohol and nervous system

- **Alcoholic degeneration of cerebellum**
cerebellar atrophy
- **Alcoholic polyneuropathy**
- **Alcoholic 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

- Repeating hypoglycaemia – loss of intellect, kognitive disturbances, dementia
- **Hyperglycemia**
- **Metabolic encefalopathy**
- **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 impariment**
- **Motoric problems, ponyeuropathy**
- **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, dysarthria, tetraparesis**
- **Ocular movement disorder**
- **Frequently in alcoholics after very rapid therapy of hyponatremia**

Lupus erythematoses

- General, skin, heart, cardiac 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, cardial embolisation, vaskulitis**
- **CSF – pleocytosis**
- **EEG – diffuse changes, MRI – more subcoritcal lesions of white matter**