Peripheral Palsy

The peripheral (weak) paralysis is characterized by a lesion affecting the peripheral motor neuron of the pyramidal pathway – *tractus corticospinalis*. The lesion is localized in the area of occurrence of the peripheral alpha-motor neuron, i.e. in the *cornua anteriora medullae spinalis* and centrifugally from this place, i.e. *radices anteriores nervorum spinalium* or in the peripheral nerves themselves with a motor component.

Etiology

The cause of peripheral paralysis of the upper (or lower) limbs is a lesion in the cervical region (or lumbar intumescence). The origin of the lesion can be vascular, oppression by a benign or malignant tumor, traumatic. In the case of spinal nerve root involvement, it is most often a herniated *intervertebral disc*, most often between L5–S1 a L4–L5. Lesions of peripheral nerves - traumatic, demyelinating - also show signs of peripheral palsy.

Symptomatic

Peripheral paralysis, due to its manifestations also called weak paralysis, is subjectively characterized by weakness in the affected limb and objectively by the following symptoms:

- Decreased muscle strength,
- Reduced elementary postural reflexes,
- Hyporeflexia to areflexia of myotatic reflexes,
- Absence of pathological reflexes (deliberative phenomena),
- The presence of fasciculations (eye-visible twitching of muscles) and fibrillations (observable only by electromyography– EMG) from muscle denervation,
- Muscle atrophy.

Based on the localization of the lesion, we recognize the weakness of individual muscles or muscle groups in case of peripheral nerve involvement. In the case of a lesion of the nerve plexus, or of the spinal roots forming the plexus, we observe monoparesis to monoplegia of the limb. Hemiparesis is typical of central plegia. The localization of transverse spinal cord lesion syndromes and their manifestations are described below.

Spinal cord lesions

A lesion in the spinal cord can also correspond to damage to the axons of the central motor neuron themselves, in which case we speak of central spastic palsy. Based on the segmental localization of the lesion in the spinal cord, we also describe combined paresis/plegia. In the case of localization of the lesion in the area of cervical intumescence, symptoms of peripheral (weak) paralysis of the upper limbs and central paralysis of the lower limbs are clinically manifested, other situations are described below.

Location of the lesion	Impairment of the upper limbs	Impairment of the lower limbs	explanation
C1–C3	central palsy	central palsy	involvement of central motor neuron axons for all limbs
C4–Th2	peripheral palsy	central palsy	involvement of motoneurons in the anterior corners of the spinal cord for upper limbs (cervical intumescence) and axons of central motoneurons for lower limbs
Th3–Th9	without paralysis	central palsy	involvement of central motoneuron axons for the lower limbs
Th10–L2	without paralysis	peripheral palsy	involvement of the motoneurons of the anterior horns of the spinal cord for the lower limbs (lumbar intumescence)

Peripheral palsy is also described in relation to the cranial nerves, e.g. peripheral palsy of the facial nerve, and oculomotor nerve.

Differential diagnosis

The most essential differential diagnostic consideration is to distinguish peripheral paresis from the pseudoweak stage of central palsy, which is induced by shock after a central motor neuron lesion. In the acute stage of central palsy, there may not even be pathological reflexes, so it is necessary to assess the syndrome comprehensively.

Links

Related Articles

- Central palsy
- Traumatic spinal cord syndromes

Použitá literatura

- PETROVICKÝ, Pavel. *Anatomy with topography and clinical applications.* 1. edition. Osveta, 2002. 542 pp. vol. 3. ISBN 80-8063-048-8.