Pyramid phenomena

Pyramid phenomena are divided into:

- irritative (spastic)
- extinction (paretic).

Irritation (spastic) pyramid phenomena

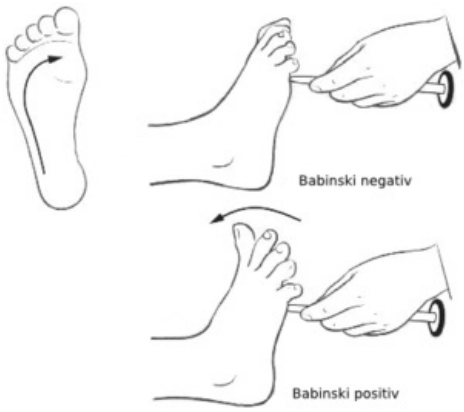
Spastic phenomena are extensional reactions triggered by a specific stimulus. Commonly spastic (or also irritative) phenomena are tested on the upper and lower limbs.

Upper limbs

- **Juster's phenomenon** - the examination is performed by pulling the pin along the antithenar towards the 5th metacarpophalangeal joint and from there further towards the 2nd metacarpophalangeal joint of the index finger. Physiologically, the reflex is nonexcitable. In pathology, there is a tonic, slow, mild adduction of the thumb with an indicated opposition.[1]
- **The Trömner effect** - the doctor grasps the patient's middle finger (between his index finger and thumb) and with the other hand he pinches the belly of this finger. A short flexion of the thumb or fingers occurs.
- **Hoffman's symptom** - similar to the previous one - grasp the patient's whole hand and snap the nail of the third finger.
- **Janiszewski's grip** - we place our two fingers in the patient's palm and try to divert the patient's attention elsewhere. A reflex grip is formed when the fingers are removed from the hand. Area 8 - frontal lobe.
- **Marie-Foix test** - when the volar ulnar part of the distal forearm is irritated, the same response as in the Juster phenomenon appears.

Lower limbs

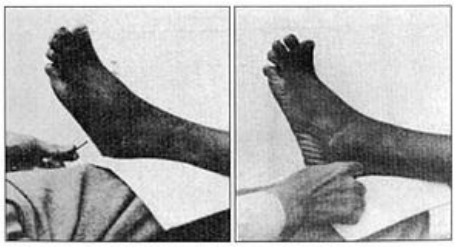
On the lower limbs, we divide irritative phenomena into **extensor** and **flexor**.



Babinski's symptom

Extension phenomena

- **Babinski's symptom** - this symptom is induced by a *sharp irritation of the plantaris*, after which the inverse physiological response of the plantar reflex occurs. In practice, we take a neurological hammer and run its sharp edge over the plantaris from the heel to the little finger and then to the thumb. If the symptom is positive, the thumb extends. *More detailed information can be found on the Babinski reflex page.*
- **Roch's sign** - The Roch's sign is elicited by running the sharp edge of a neurological hammer *across the outside of the foot*. The movement is guided from heel to toe, but only up to about one-third of the length of the leg. When positive, toe extension occurs.
- **Brissaud's phenomenon** - when examining the Babinski phenomenon, clonic contractions of the *m. tensor fasciae latae* occur.[2]
- **Chaddock's sign** - this sign is induced by irritation behind the outer ankle. When positive, toe extension occurs.
- **Oppenheim's sign** - in this examination we move the skin from the tuberositas tibiae distally (thumb and flexed index finger) along the edge of the tibia[2].
- **Siccardian phenomenon** - this is a spontaneous permanent extension of the thumb[2].
- **Strümpel's symptom** - the patient tries to raise the knee against the resistance of the doctor - again, there is an extension of the thumb[2].


Chaddock's sign - thumb extension after irritation behind the external contralateral toe

- Vitek's symptom - on examination the patient lies on his back and tries to raise the pelvis - again there is an extension of the thumb. This phenomenon is also known as the *bridge phenomenon*[2].
- **Gordon's phenomenon** - soreness occurs when massaging the transition of the Achilles tendon to the triceps muscle[2].

Flexion phenomena

- Rossolim's symptom - a blow to the belly of the fingers causes flexion in the base links (similar to Trömner's phenomenon in the upper limbs). [2]

- **Zhukovsky-Kornilov phenomenon** - the same response as the above symptom when tapping on the middle of the flap.[2]
- **Weingrow's phenomenon** - flexion of the toes induced by a blow to the heel centre.[2]
- **Mendel-Bechterev's symptom** - flexion of the toes caused by a blow on the cuboid axis on the dorsum of the foot.[2]

Extinction (paretic) phenomena

Upper limbs

- **Mingazzini's symptom** - the paretic arm drops (more acrally) during forearm extension.[2] *For more detailed information, see the Mingazzini symptom page.*
- **Dufour's symptom** - pronation of the paretic arm (more acral) occurs during supination.[2] *For more detailed information, see the Dufour's sign page.*
- **Rusiecki's symptom** - with pronation in pronation, maximal finger extension and dorsiflexion at the wrist, the paretic arm descends (more acrally).[2]
- **retardation symptom** - when repeating the forearm extension with both arms, the movement on the affected side is delayed.[2]
- **pinch symptom** - the patient is unable to connect all the fingers. [2]
- **fan symptom** - the patient abducts all fingers - active force of abducted fingers can be tested. [2]

Lower limbs

- **Mingazzini symptom** - the patient (lying on the back) holds the lower limbs flexed at the hips and knees in a right angle.[2]
- **Barré's symptom** - the patient (lying on his stomach) has his shins flexed at the knees up to 45 degrees, the leg on the affected side drops by its own weight [2]
- **symptom of retardation** - when lying on the back - the patient bends the lower limbs at the hips and knees and slowly puts them down again without the limbs touching each other. [2]; when lying on the stomach - the patient bends the shins at the knees and puts them down again; on the affected side there is a delay.[2]

Links

References

1. ROTH, Jan – FIALA, Ondřej – RŮŽIČKA, Evžen. *Neurologické vyšetření - norma* [online]. [cit. 2012-11-22]. <https://el.lf1.cuni.cz/neurologie>.
2. NEVŠÍMALOVÁ, Soňa – RŮŽIČKA, Evžen – TICHÝ, Jiří. *Neurologie.* 1. edition. Galén, 2002. pp. 368. ISBN 80-7262-160-2.

Used literature

- AMBLER, Zdeněk. *Základy neurologie : [učebnice pro lékařské fakulty].* 7. edition. Galén, 2011. ISBN 9788072627073.