Lumbar puncture

Lumbar Puncture

'*Lumbar puncture* ***is a diagnostic and, in some cases, a therapeutic procedure. During a lumbar puncture, cerebrospinal fluid is collected from the spinal canal or medications are administered. The area of the lumbar spinee is most often chosen. Collecting a larger amount of cerebrospinal fluid can serve to*** *reduce intrathecal pressure*. Biochemical, cytological and microbiological examinations of the fluid are used, for example, to confirm or rule out infections, tumors, autoimmune and degenerative diseases of the CNS or bleeding into the CNS.

Lumbar punture

Indication

We perform a lumbar puncture to rule out or confirm:

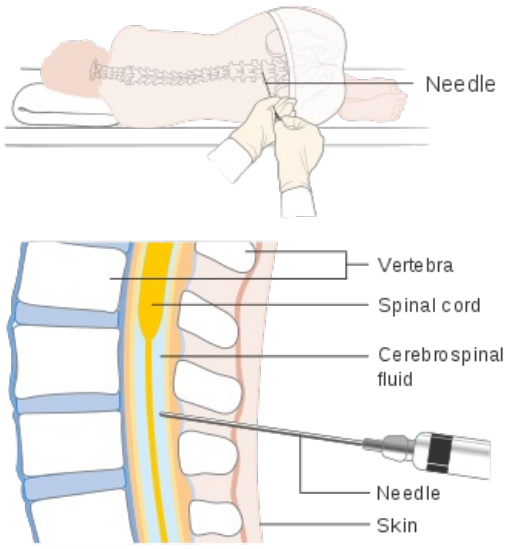
- neuroinfections – meningitis, encephalitis,
- hemorrhage into the CNS,
- demyelinating diseases,
- primary CNS tumors and metastases.

Contraindications

- High intracranial pressure (more than 20 mm Hg).[1]
- Confirmed expansive intracranial processes.
- Infection at the injection site.
- Sepsis.
- Bleeding diseases.
- Deformation of the vertebrae (pronounced scoliosis, kyphosis, intervertebral fusions).

Execution

Lumbar puncture is performed when the patient is lying on his side with the knees flexed to the chest and the head in anteflexion (imitation of the prenatal position). Another possibility is sampling with a sitting patient in a forward bend. The position ensures sufficient spacing between the vertebral processes.



Performing a lumbar puncture

1. '*Determining the injection site****: We find the junction of the upper edges of the hip bones, we palpate the intervertebral space*** *L_3/L_4* ***or*** **'L_4/L_5**. We will color mark the place.
2. **Field preparation**: Disinfection of the injection site and surroundings, we will ensure a **sterile work field**.
3. Local anesthesia: subcutaneously around the injection site.
4. **Injection direction**: Needle angle and *proc. spinalis* grip 15°, ventrocranial (i.e. navel) direction. The tip of the needle should be sagittally in order to minimally traumatize the spinal roots. We proceed through the skin, subcutaneous tissue, ligament, epidural space, dura and subarachnoid space between the spinal roots.
5. We will measure '*CSF pressure*: Normal pressure is 70-200 mm H_2O.
6. **Own collection**: We do not aspirate CSF, let the necessary amount drip into the collection tube (as little as possible, usually 3–4 ml).
7. **Ending the sampling**: We pull out the needle and compress the injection site.

{{Vide | url = https://emedicine.medscape.com/article/80773-technique Videoukázka LP krok za krokem (Medscape)][2]

Complications

- Headache due to a change in pressure (the so-called post-puncture syndrome),
- paresthesia of the lower limbs,
- swelling at the injection site,

- bleeding from the injection site,
- disorders of consciousness,
- migraine,
- nausea,
- micturition disorders.

Links

Related Articles

- Cerebrospinal fluid
- Messial papilla
- Cytological examination of cerebrospinal fluid
- Neuroinfections

References

- KALA, Miroslav. *Lumbar puncture and cerebrospinal fluid.* 2008. edition. 2008. ISBN 9788072625680.

References

1. ŠEVČÍK, Paul, et al. *Intensive care medicine.* 3.. edition. Galen, 2014. 1195 pp. pp. 461. ISBN 9788074920660.
2. SHLAMOVITZ, Gil Z. *Lumbar Puncture Technique* [online]. The last revision 8.5.2012, [cit. 2013-01-18]. <https://emedicine.medscape.com/article/80773-technique>.

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