

Skull fractures

The brain is most damaged at the site of the skull injury (*coup*) and at the site of the opposite impact (*contre coup*).

[1] However, the existence of a fracture does not necessarily accompany a brain injury.

Classification of fractures

- *Based on breach of skin cover:* closed; openly.
- *Based on dural breach:* penetrating; non-penetrating.
- *According to the fracture line:* linear (cracks, fissures); fragmentary (cominutive) with impression or elevation of the edges; impressive (impressive).

Cranial vault fractures

Fissures (cracks)

- Linear defects, if the brain is not damaged at the same time, have no major clinical significance and do not require special care. There is a risk, if the fracture crosses the course of the meningeal arteries, epidural bleeding.
- In the case of an open fracture (intervention paranasal sinuses, skin wound above the fracture) preventive administration of ATB is necessary.
- Diagnostics: native RTG, or CT.



Child's Skull Fracture

Comminuted fractures (comminuted)

- As a result of a larger impact, the brain is usually also injured.
- It can occur, for example, when the head is compressed (as in a vise) - the head "cracks like a nut", there may not be much damage to the brain, if only pressure and not speed was applied.

Impressive fractures (pivot)

- The bone fragment is wedged intracranially.
- Diagnostics: native X-ray or CT.
- If the impression is in the place of venous drainage, there is a risk of significant subdural bleeding when the fragment is elevated.
- If the brain tissue is pressed by the fragment, its elevation is necessary, because the pressure of the fragment may be a source of epilepsy in the future.[2]

Cranial base fractures

- They are serious, important structures are often injured - basal ganglia, brain stem.
- They are caused by the action of a large force indirectly (hitting another part of the skull). Often they cannot be recognized on the basis of X-ray.

Fractures of the anterior cranial fossa

- Usually a continuous fracture from the frontal landscape - the so-called '*frontobasal injury*'.
- The fracture affects the area of the lamina cribrosa, paranasal cavity, orbit.
- A simultaneous defect in the dura, the mucous membrane of the paranasal sinuses or in the area of the lamina cribrosa is common - open fracture (pathological communication with the external environment). This extent of injury can be indicated by nasal CSF (*rhinorrhea*), i.e. leakage of cerebrospinal fluid through the nose:
 - occurs intracranial hypotension,
 - if the patient is lying down, CSF flows into the nasopharynx, sometimes the patient describes a sweetness in the throat (sweet-salty taste),
 - diagnosis - glucose test, beta-trace protein, immunologically we demonstrate $\beta 2$ -transferrin,
 - can be even with a fracture of the pyramid → CSF to the middle ear and a tube to the nasopharynx.
 - Surgical therapy, antibiotic prophylaxis is indicated in the case of CSF.
 - To stop it, a bifrontal craniotomy is performed, larger openings are blocked with fascia, or muscle (temporal fascia, fascia lata, allogeneic grafts, glue).
- Other possible areas of injury: lobus frontalis, diencephalon, nervus opticus, chiasma opticum, nervus olfactorius, sinus cavernosus, a. carotid internal.
- We observe a spectacle hematoma on the soft tissues of the eye. There may also be an injury to the eyelids, external communications may occur.

Complication

- Pneumocephalus,
- intracranial infection (purulent meningitis, ...).[2]

Fractures of the middle cranial fossa

- The fracture affects the petrous bone, sometimes also the temporal bone - a so-called *temporobasal injury*.
- The middle ear, tympanum, auditus externus are also affected.
- We can observe a retroauricular hematoma, bleeding from the ear or ear liquorea (*otorrhea*) if the dura and eardrum are damaged. If the eardrum is preserved, the fluid leaves through the Eustachian tube (paradoxical rhinorrhea).^[2]
 - The cerebrospinal fluid fistula heals soon, the cerebrospinal fluid usually stops on its own, but the resulting scar is worthless.

Therapy

Links

Related Articles

- Craniocerebral trauma
- Liquor

References

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2. AMBLER, Zdeněk. *Fundamentals of Neurology*. 6. edition. Prague : Galén, 2006. ISBN 80-7262-433-4.

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