

# Ear Injury

## External Ear Injuries

Injuries are divided into **open** and **closed**:

1. **open** – *tearing, cutting or biting*,
2. **closed** – *created by a blunt blow*:
  - **othaematoma auriculae** occurs most often
  - the basis is a blood effusion between the cartilage and the perichondrium – bluish-red swelling with fluctuation, changes the shape of the auricle,
  - can fester → abscess or absces či perichondritis,
  - can organize → ligament forms → permanent cartilage deformity ("boxer's ear").

## Treatment

- Open ones are sutured, in case of cartilage injury - resection and then suture,
  - smaller othematomas – compression, larger ones – puncture, they are drained, drenují se,
  - ATB cover is suitable



Boxer's Ear

## Injury to the Ear Canal

- independently or in more complicated traumas,
- open wounds - often accidentally when cleaning the ear canal,
  - middle ear injury must be ruled out,
- blunt trauma - swelling or hemorrhagic blister
- injury to the bony part - part of the temporal bone fractures - typically a stair deformity with lost lumina occurs,
- treat open wounds with antiseptics, drain larger subepidermal hematomas,
- the result can be fibrous stenosis - a surgical solution.

## Perforation of the Eardrum

- **directly** – when cleaning the ear, during injuries,
- **indirectly** – by a sudden increase in pressure (barotrauma, acoustic trauma, blow with the surface of the palm),
- it can be part of a larger injury (middle ear, fractures...).

## Symptoms

- pain, bleeding from the ear canal, conductive hearing loss (depends on the size),
- otoscopically - perforation of various sizes with uneven bloody edges,
- in case of secondary infection, pus flows out,
- the discharge of clear fluid raises the suspicion of cerebrospinal fluid or perilymphatic fluid leakage.

## Therapy

⚠ **If a perforation of the eardrum is suspected, we do not rinse the ear canal!**

- careful cleaning,
- adapt the edges of the perforation, or cover the perforation with paper (prevents dirt from entering),
- uninfected, centrally located tend to heal spontaneously (several weeks),
- at worst surgery – myringoplasty.

## Middle Ear Injuries

- mechanisms are similar to the drum,
- indirect damage can also occur behind an intact eardrum,
- as a rule, the injury is accompanied by an effusion of blood into the middle ear - **hemotympanum**,
- the chain of auditory ossicles can be broken (most often between the anvil and the stirrup),
- the stirrup can be torn out of the oval window,
- the facial nerve and inner ear may be affected.

## Symptoms

- pain, bleeding from the ear canal, hearing impairment;

- conductive hearing loss, when there is also a perceptual component, the inner ear is also affected;
- when the eardrum is intact - on otoscopy - blue-red coloration behind the eardrum.

## Therapy

- simple hematympanon - no need to intervene, it resorbs spontaneously (possibly ATB),
- we remove foreign bodies,
- disruption of bones - surgical reconstruction.

## Inner Ear Injuries

(Labyrinth shock, coma)

- most often as part of larger skull injuries,
- there will be a violation of the micromechanical structure of the membranous system,
  - e. g. breach of the barrier between endo and perilymph, bleeding into the labyrinth,
  - we usually cannot diagnose the cause.

## Symptoms

- functional disabilities of varying extent (impairment of balance functions, perceptual hearing impairment, possibly both...),
- hearing usually improves within **2 weeks**, dizziness lasts longer,
- acute symptoms are usually covered by symptoms of cerebral coma or brain contusion.

## Acoustic Drama

- acute ear damage from sound,
- in isolation, the inner ear is mainly affected by a bang that lasts a shorter time (shot)
- during the explosion, the middle ear is still damaged by the pressure,
- functional loss is most often in the area of the basal turn of the cochlea (typical hearing loss with a maximum around 4 kHz).

## Symptoms

- hearing loss to deafness, often also tinnitus,
- vestibular apparatus disorder - dizziness with nystagmus,

## Therapy

- the influence of the treatment on the condition has not yet been unequivocally proven.

## Fractures of the temporal bone and the laterobasal injuries

### 1. Longitudinal type:

- the fracture line runs through the area of the external auditory canal,
- violates the annulus tympanicus, can damage the eardrum and middle ear,
- goes further to the tip of the pyramid to the foramen lacerum,
- the inner ear is not usually affected, the facial nerve is rarely affected,
- **main symptom** - hemotympanum, perforation of the tympanic membrane, conductive hearing loss, liquorice,
- there is a risk of ascending infection and meningitis.

### 2. Transverse type:

- the fracture line is perpendicular to the long axis of the pyramid,
- can go through the labyrinth, the middle ear is not affected,
- involvement of N. VII and N. VIII is common,
- **symptoms** - severe dizziness, nausea, vomiting dominates,
  - severe perceptual hearing loss,
- the balance is compensated centrally within a few days, the hearing impairment remains,

- **therapy** - mostly conservative - cover the ear canal sterilely, ATB prophylaxis.

## Inflammation of the Middle Ear (Otitis Media)

- we have either catarrhal (non-purulent) or purulent inflammations,
- each is either acute or chronic,
- purulent chronic is either mesotympanic or epitympanic.

## Links

## Source

- BENEŠ, Jiří. *Studijní materiály* [online]. ©2007. [cit. 2009]. <[http://jirben2.chytrak.cz/materialy/orl\\_jb.doc](http://jirben2.chytrak.cz/materialy/orl_jb.doc)>.

## Reference

- KLOZAR, Jan. *Speciální otorinolaryngologie*. 1. edition. Praha : Karolinum, 2005. 224 pp. ISBN 80-246-1125-2.