Examination of hearing loss in newborns

Hearing defect

- 6 - 12 / 1000
- 1 / 1000 has a very severe hearing loss
- Higher incidence than in phenylketonuria, congenital hypothyroidisms

Hearing defect

- congenital (genetic)
- obtained (during pregnancy, childbirth or shortly after, during the life-infection, trauma, tumor ..)

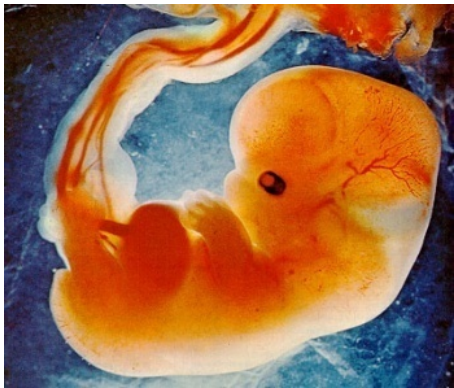
Hearing defect

- prelingually (created before the end of the child's speech development, 6th year of age)
- postlingually (persons with advanced speech)

Genetic hearing loss

- several genes
  (mostly gene for connexin)

- these are the different types disability of cochlea
- (Michel´s, Mondini´s, Scheibe´s type ...)



Scheibe´s dyspalsia

- Scala media disappeared
- Bony labyrinth is normal
- Dyspalsia is seen in the cochlea and saccule
- Autosomal-recesive, non syndromic

Michel´s aplasia

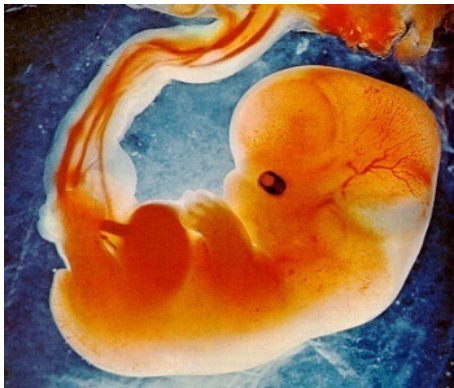
- Complete absence of bony and membranous labyrinth
- External and middle ear may be unaffected

Mondini´s dysplasia

- May be seen in many syndroms
- Only basal coil is present

Genetic hearing loss

- part of syndromes
- Alport syndrome (a kidneys)
- Uscher syndrome (an eye)
- Turner syndrome (45X) ..
- incidence can be reduced



Acquired hearing defect

- Prenatal- before birth
- Perinatal- during birth
- Postnatal- after birth

Acquired hearing defect

- "Sensitive" period is around 20 day after conception
- maternal infectious diseases (rubeOlla, measles, mumps, scarlet fever, flu, toxoplasmosis in the first trimester)
- ototoxic drugs, X-ray
- maternal metabolic diseases (diabetes, uncontrolled high blood pressure ..)

Acquired hearing defect

- premature birth - risk neonate
- risk increase 20-40 / 1000
- at birth (neonatal prematurity, Rh-incompatibility, a difficult birth, which may cause bleeding into the inner ear or to the brain centers for the hearing, asphyxia or hypoxia of the child)
- after birth (mechanical ventilation longer than 4 days, severe neonatal jaundice, severe fetal infection, meningitis)

Identifying hearing loss

- difficult, if not profound deafness
- parents perceive deviation after several months (2-3 years), delayed speech, poor pronunciation, or disobedience

Identifying hearing loss

- hearing test, reaction to sound
- lack of adequate response
- undeveloping speech
- the incidence of congenital deafness in the family
- followed by an objective hearing tests

Screening

- Screen = sieve
- search method of early forms of disease, or deviations from the norm in a population through tests

TEOAE

- In the neonatal ward
- 1st and 4th day
- quiet room, usually after feeding
- Into ear insert a small probe (transmitting sounds and records the otoacoustic emissions - the sound of the probe evoked "response" of outer hair cells in the cochlea (inner ear).

- emissions are present ("PASS"), confirmed the proper function of outer hair cells - probably is not present any hearing defect.
- emissions are absent ("REFER"), which may indicate a hearing defect.

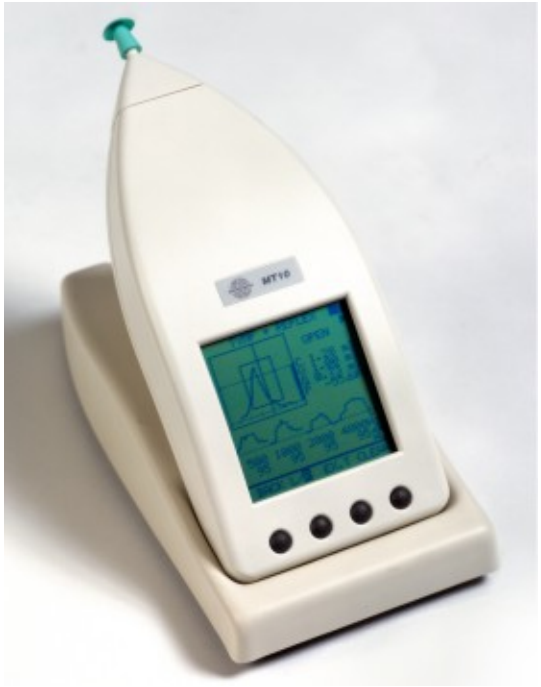
- continual monitoring the child and his speech development
- rare and unlikely hearing disorders (disorder of the auditory nerve), which may begin to develop after birth
- hearing may be damaged in the child development

- For PASS TEOAE is needed not only proper function of outer cells in the cochlea, but also air and function of the middle ear and ear canal.
- REFER do not always mean (sensorineural) hearing loss.

- absence of emission (30%), it is appropriate to repeat the test after two days, or after a month.

Tympanometry

- Absence of emissions (sebaceous plug in the ear canal, middle ear ossicles changes, fluid in the middle ear)
- perform tympanometry-objective examination
- examination of eardrum compliance, which is dependent on the ratios of the middle ear
- for the accuracy of the TEOAE result is needed curve A.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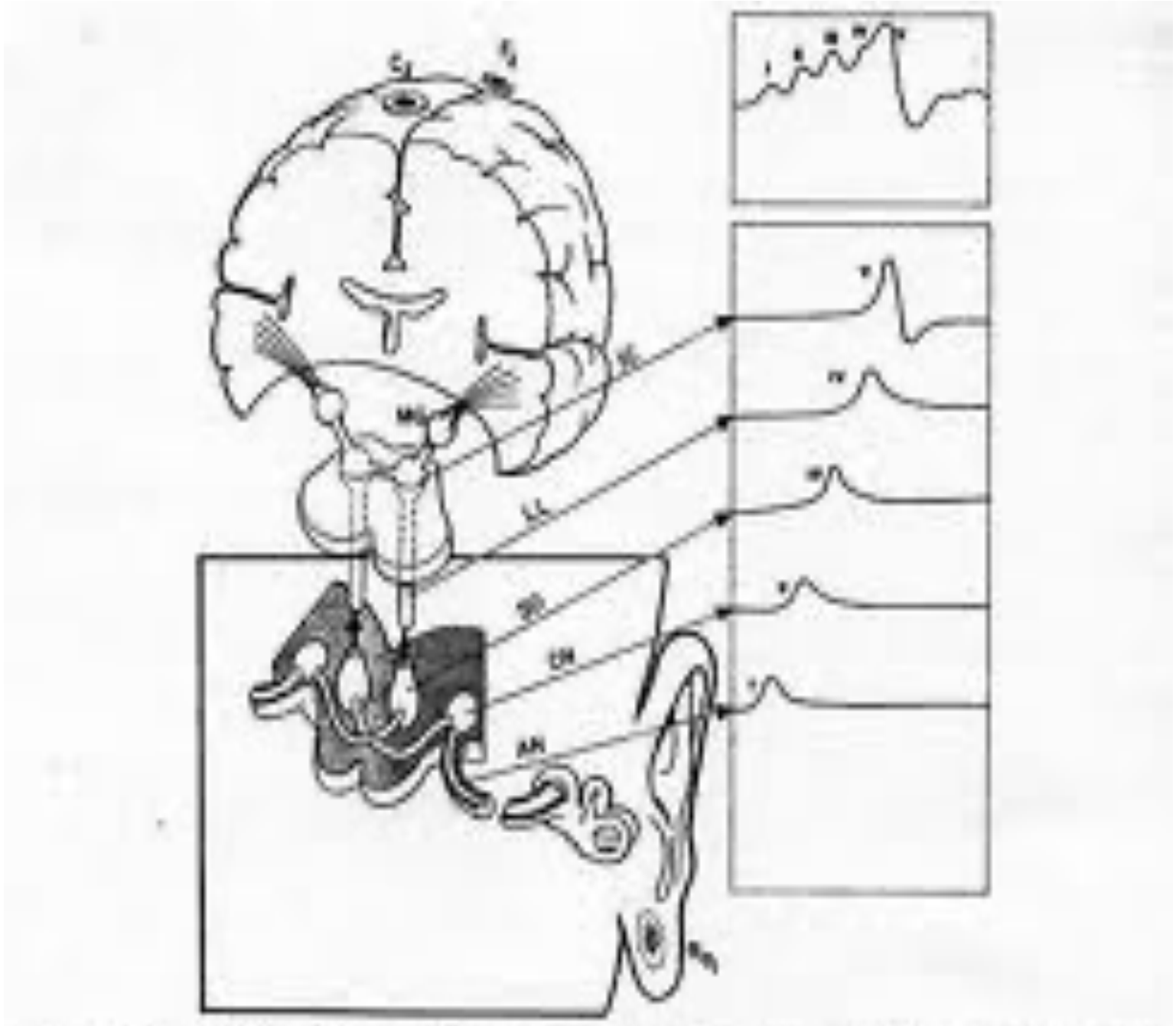
BERA

- Repeatedly absented TEOAE, Tympanometry A
- suspected hearing loss incurred in the cochlea
- BERA (Brainstem Evoked Responses Audiometers)
- objective audiological test
- records the electrical potentials of the brain stem, which arise as a brain response to sound signals coming from the surroundings
- Headphone tones are bringing the patient to which a hearing brainstem patient responds to electrical activity (recorded by the probe attached to the patient's head)



rehabilitation of hearing

- first hearing aids (from 3 months)
- on both ears
- effect is considered ideally around the 6th – 9th months of age
- inadequate compensation for hearing loss with hearing aids, cochlear implant
- „Learn to hear"

First Moravian Centre for cochlear implantation

- 19th july 2012
- It is intended for patients with severe sensorineural hearing loss

- allow patients to understand speech

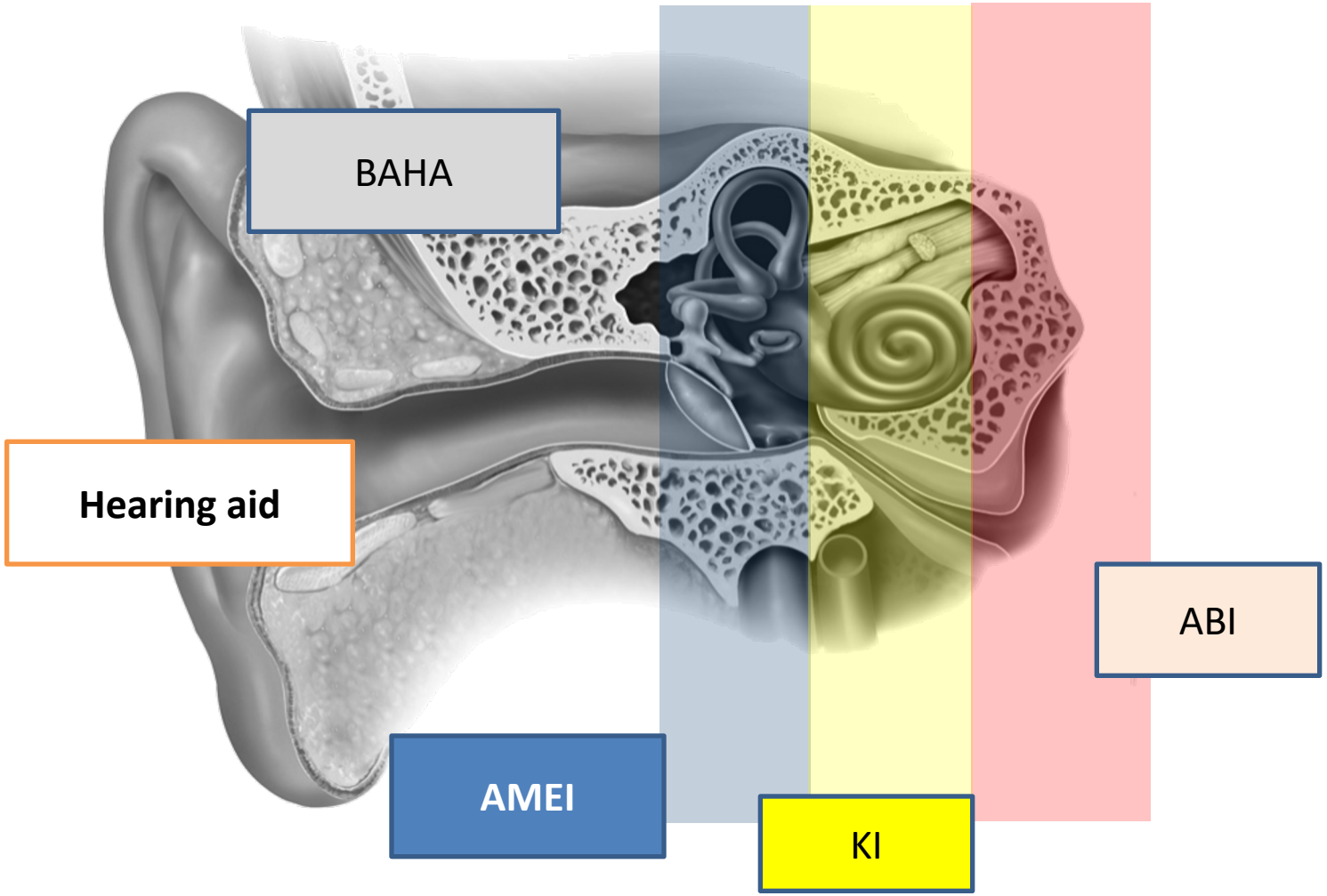
First Moravian Centre for cochlear implantation

- It was established at the University Hospital St. Anna in Brno (adults) + FN Brno, KDORL (children)
- close cooperation with reputable implanting center in Vienna (Prof. univ. Dr. Wolf-Dietrich Baumgartner from Universitätsklinik für Hals-, Nasen-und Ohrenkrankheiten, Medizinische Universitat Wien)

First Moravian Centre for cochlear implantation

- there is no economically challenging commute
- Brno center offers quality and subsequent operative, rehabilitation needs across the spectrum
  satisfaction guarantee not only adults, but also implanted children and their parents.

1st implant child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Hearing aid
AMEI
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