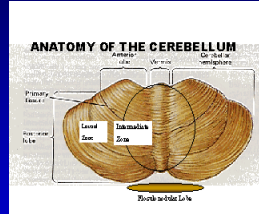


Cerebellum

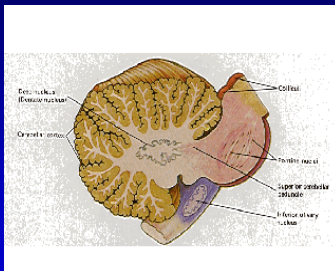
- In fossa posterior below tentorium cerebelli
- Vermis – paleocerebellum
- Hemispheres – neocerebellum



Cerebellum

- **Grey matter – cortex and nuclei**
- nc. fastigii – in white matter of vermis
- nc. dentatus – in white matter of hemispheres
- nc. interpositus (nc. emboliformis and nc. globosi) – between first two
- **White matter of cerebellum – pathways**

Cerebellum



- **Corticonuclear organization**
- **Zona medialis and nc. fastigii**
- **Zona intermedia and nc. interpositus**
- **Zona lateralis and nc. dentatus**

Cerebellum

- **Connection with brainstem – pedunculi cerebellares**
- **Inferiores – with medulla oblongata**
- **Medii – with pons**
- **Superiores – with mesencephalon**

Cerebellum

- **Afferent pathways**
- 1/ t. vestibulocerebellaris
- 2/ with spinal cord
 - t. spinocerebellaris posterior
 - t. cuneocerebellaris
 - t. spinocerebellaris anterior
- indirect – through olivary nucleus and fastigium

Cerebellum

- **Afferent pathways**
- 3/ from cortex
 - t. cortico-pontocerebellaris
 - t. cortico-olivocerebellaris
 - t. cortico-reticulocerebellaris

Cerebellum

- **Efferent pathways**
- **From vermis** – through nc. fastigii to vestibular nuclei and FR
- **From zona intermedia** – through nc. interpositus to spinal cord
- **From zona lateralis** – through nc. dentatus to thalamus and gyrus precentralis

Cerebellum - functions

- **Regulation of muscle tone**
- Spinal cerebellum – decrease
- Neocerebellum – increase
- **Balance**
- Paleocerebellum
- **Koordination of movements**
- Agonists, antagonists, synergists
- **Cerebellar hemisfer coordinate movements of homolateral side** – pathways are crossing 2x

Cerebellum clinical feature

Muscle tone

- **Hypotonia** – increased pasivity (tone of antagonists is not increased)
muscle turgor is not decreases
reflexes are normal
- **Pendular reflexes**

ERP

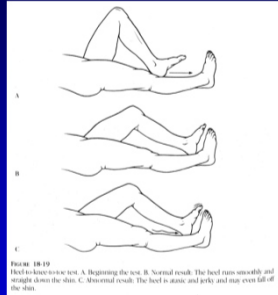
- **Decreased ERP on the side of lesion**



Hypermetry

- **Failure of coordination** – hypermetry
- **Failure of coordination of synergists** – asynergy
- **Bradyteleokinesis** – slowness of movement before the goal



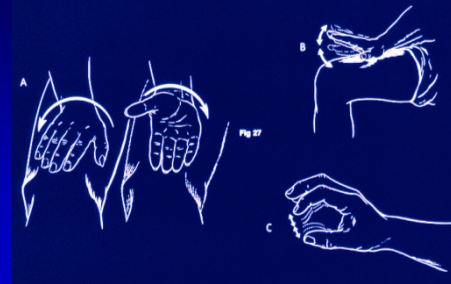


Hypermetria

- During spontaneous and automatic movements – gait, synkinesis
- Makrography

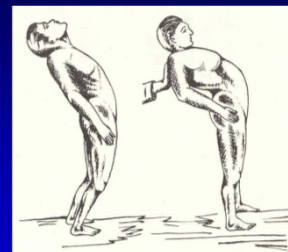
Adiadochokinesia

- Failure of coordination of alternating movements
- Failure of rhythm
- Movements are slower
- Failure of continuity of movements



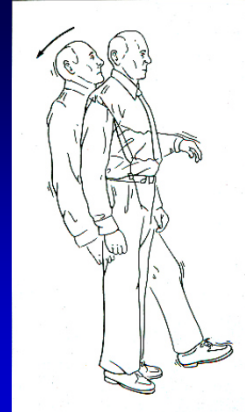
Assynergia

- Failure of coordination of muscle groups of various parts of the body
- Small assynergia – on the extremities
- Big assynergia – during automatic and locomotoric movements – inclination and falls backward (**paleocerebellar lesion**)
- **Dysarthria** – (assynergia + hypermetria) –



Cerebellar ataxia

- Falls backward
- It does not depend on the position of the head and visual control



Intention tremor

- Coarse, irregular nonrhythmic, during voluntary movement, increased before goal – nc. dentatus lesion