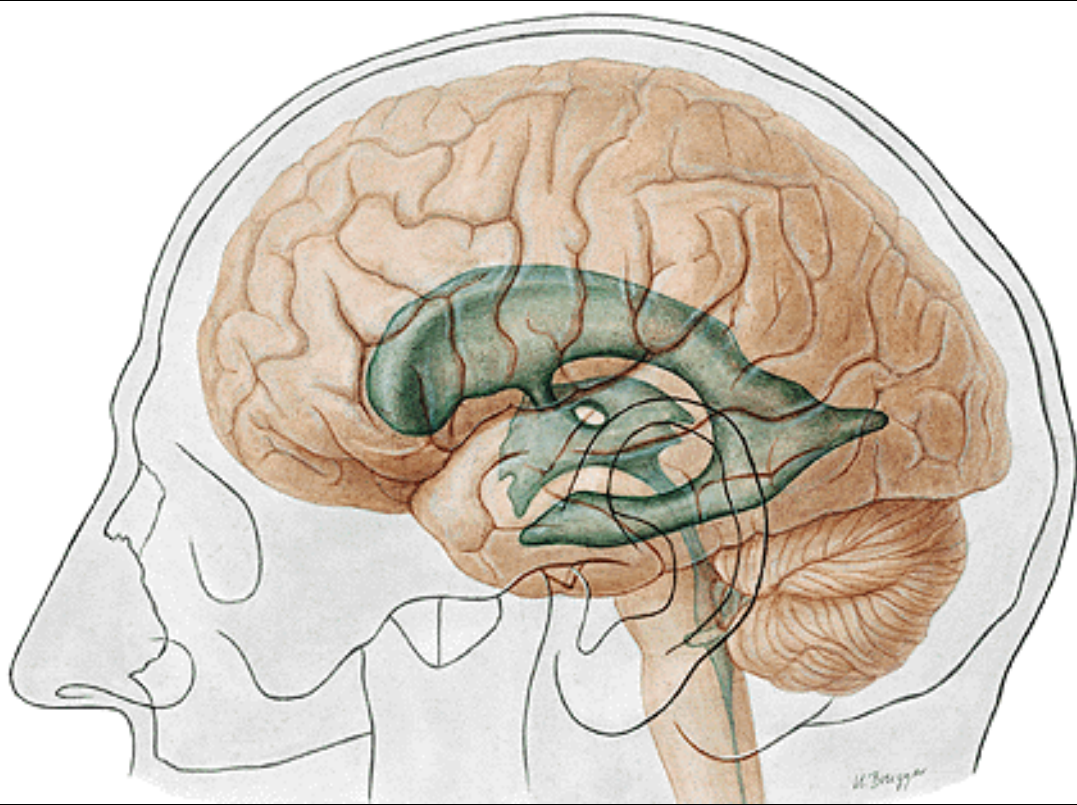


# Ventricles of the CNS

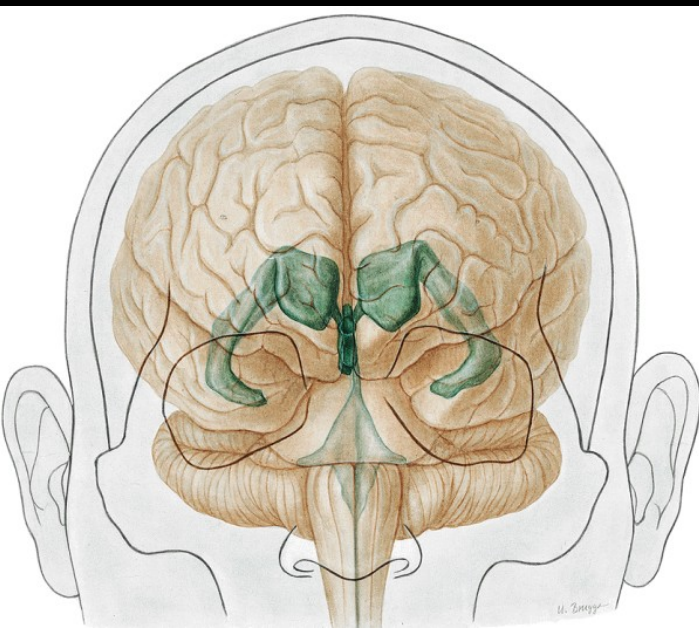




**Lateral ventricles  
(ventriculus lateralis)**

**Third ventricle  
(ventriculus tertius)**

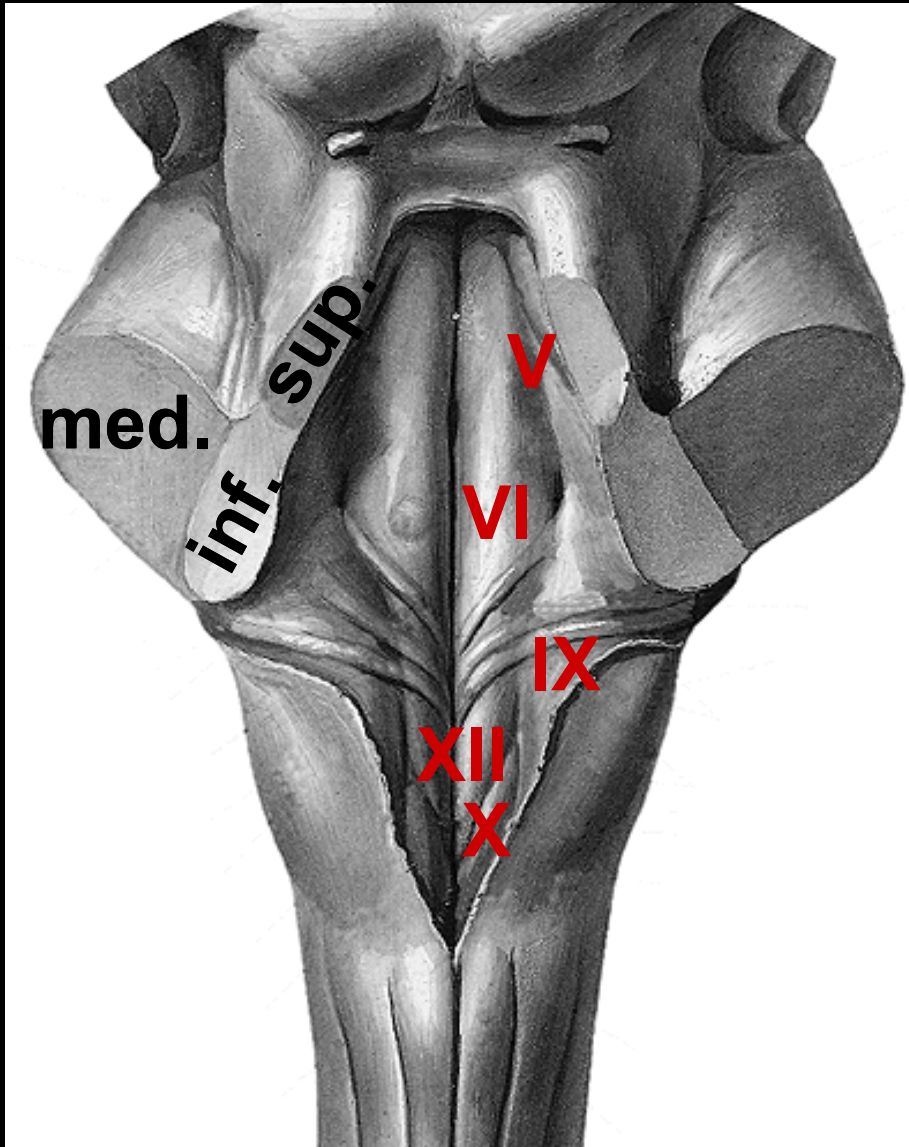
**Fourth ventricle  
(ventriculus quartus)**



**Central canal  
(canalis centralis)**

# Fourth ventricle

Floor = Fossa rhomboidea



Sulcus medianus

Sulci limitantes

fovea sup.

fovea inf.

Trigonum n. XII

Trigonum n. X

Eminentia medialis

- colliculus facialis (VI)

Striae medullares

Area vestibularis

Tuberculum acusticum

# Fourth ventricle



## Roof

Velum medullare sup.

■ Fastigium

■ Velum medullare inf.  
= tela choroidea  
(pia mater+plx. choroid.)

Apertura mediana

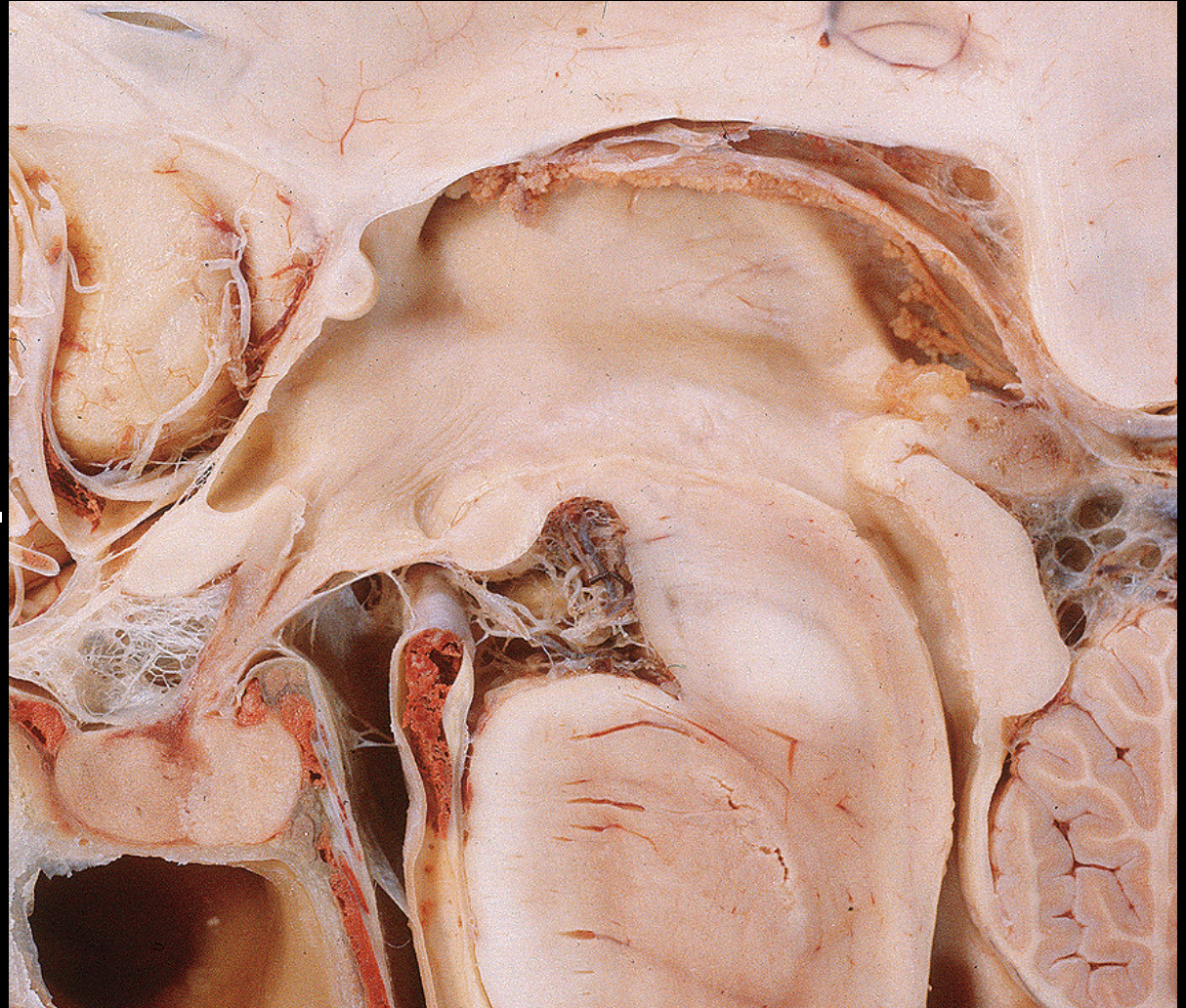
Aperturae laterales

# Aqueductus cerebri – Third ventricle



## Third ventricle:

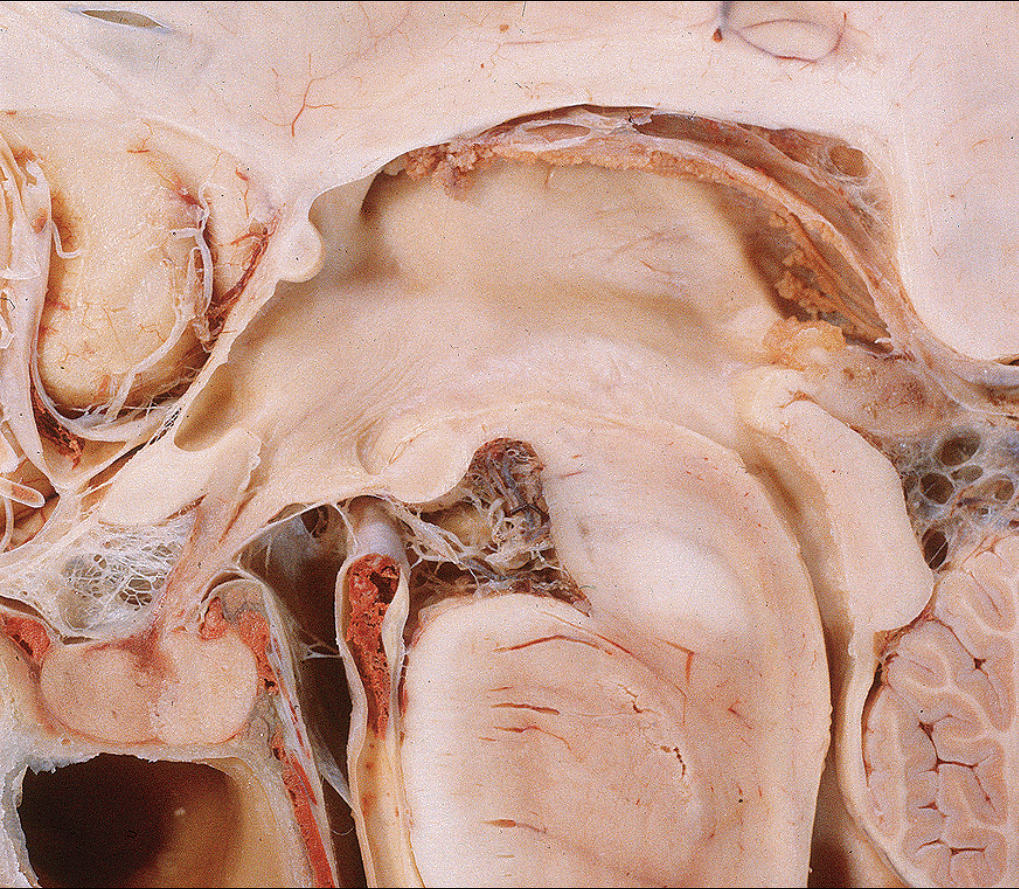
**Superior wall:** Tela choroidea v. tertii



**Rostral wall:**  
Columnae forn.  
Commissura ant.  
Lamina termin.

**Inferior wall:** Chiasma opticum  
Infundibulum

## Third ventricle:



### Posterior wall:

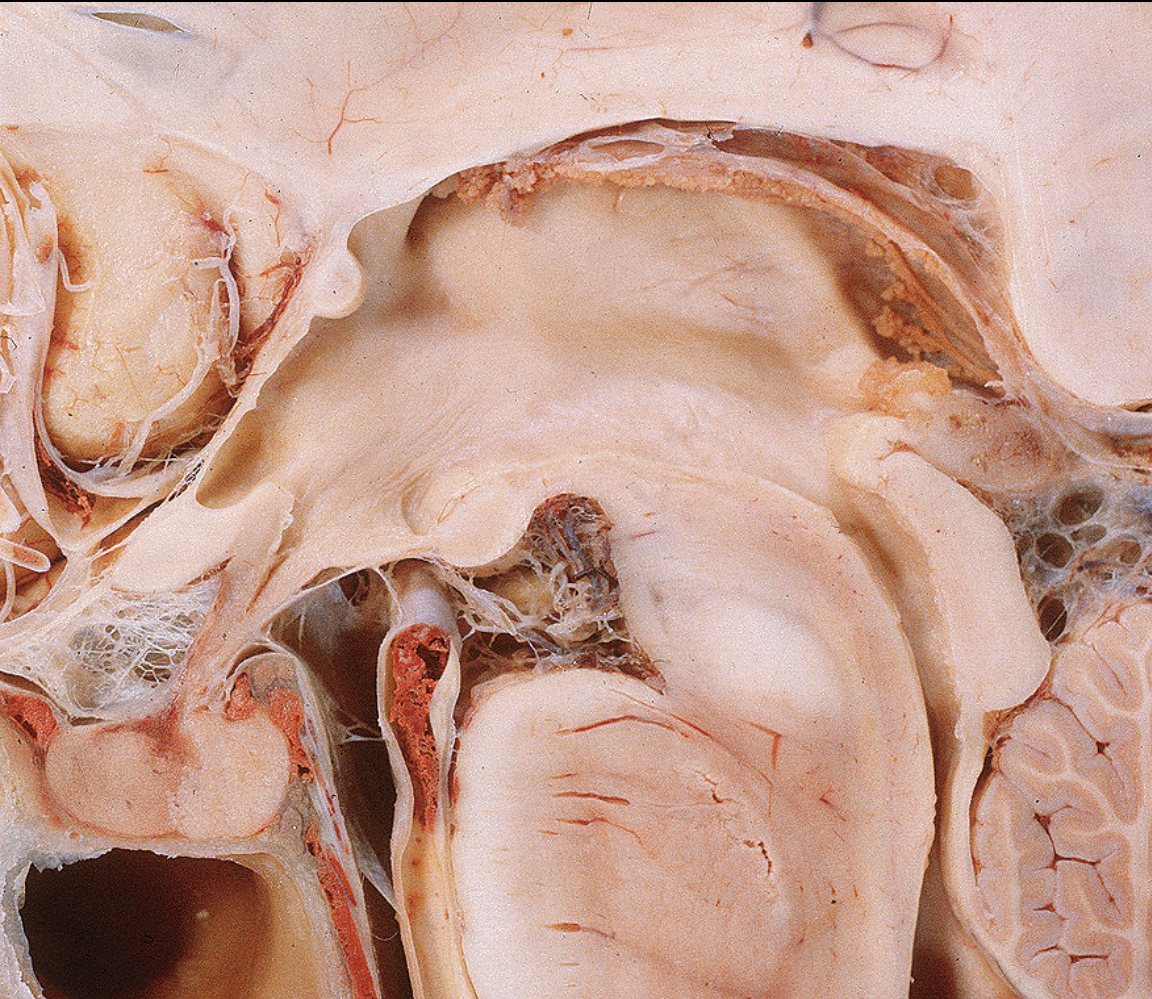
Recessus  
suprapinealis

Commissura  
habenularis

Recessus pinealis

Commissura post.

## Third ventricle:



### Lateral wall:

Thalamus

Sulcus hypothal.

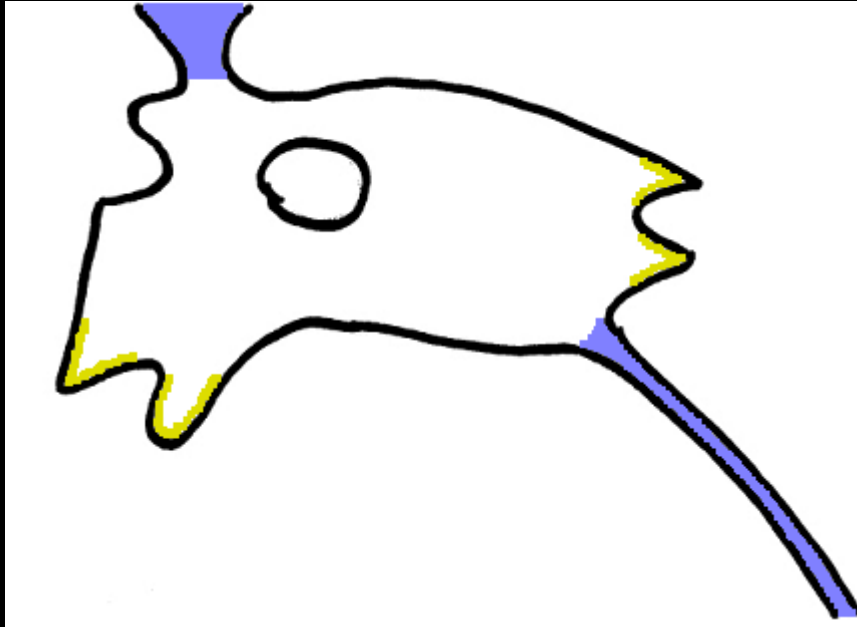
Hypothalamus

Adhesio

interthalamica



**Third ventricle:**  
**Foramen  
interventriculare**

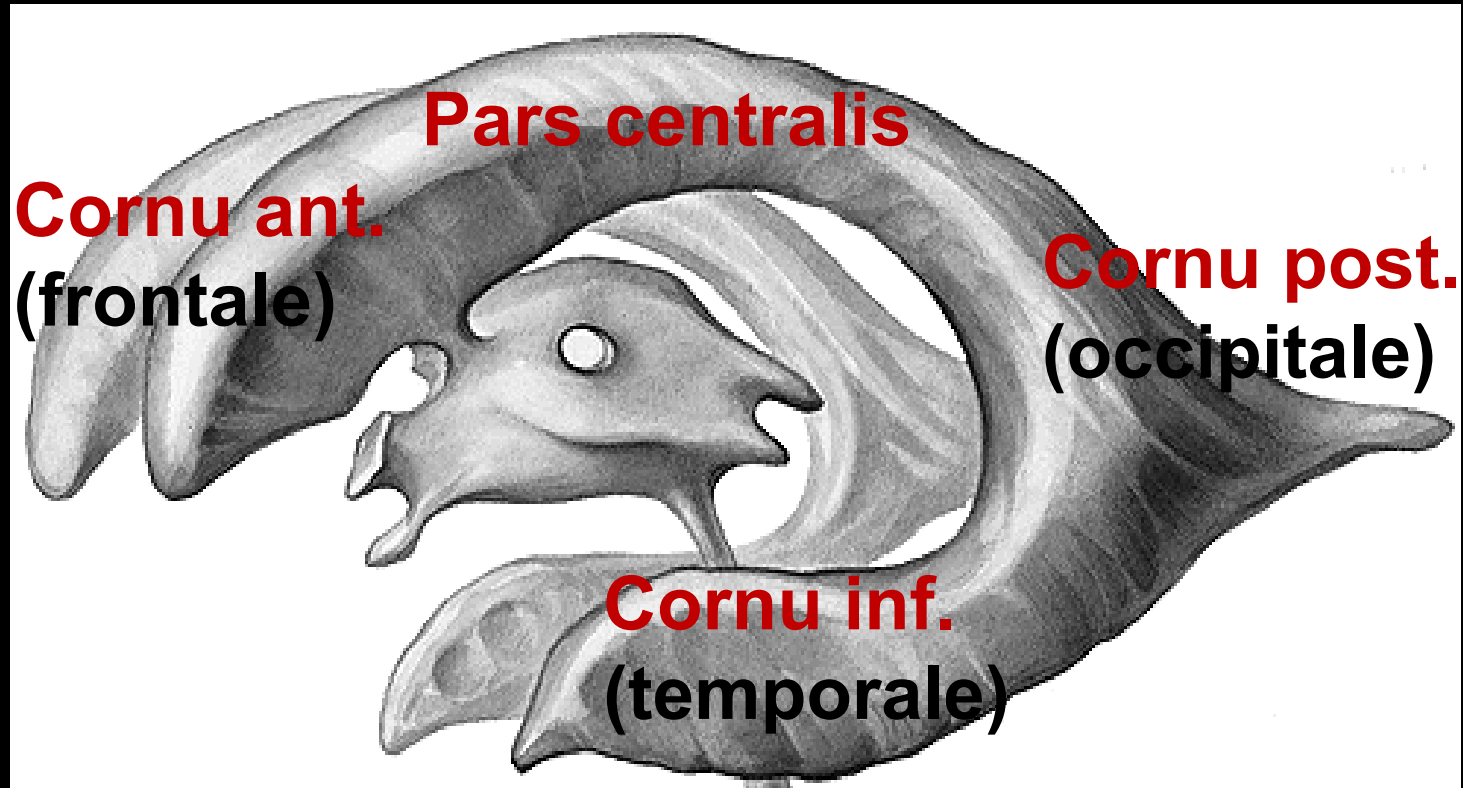


**Recessus suprapinealis  
pinealis**

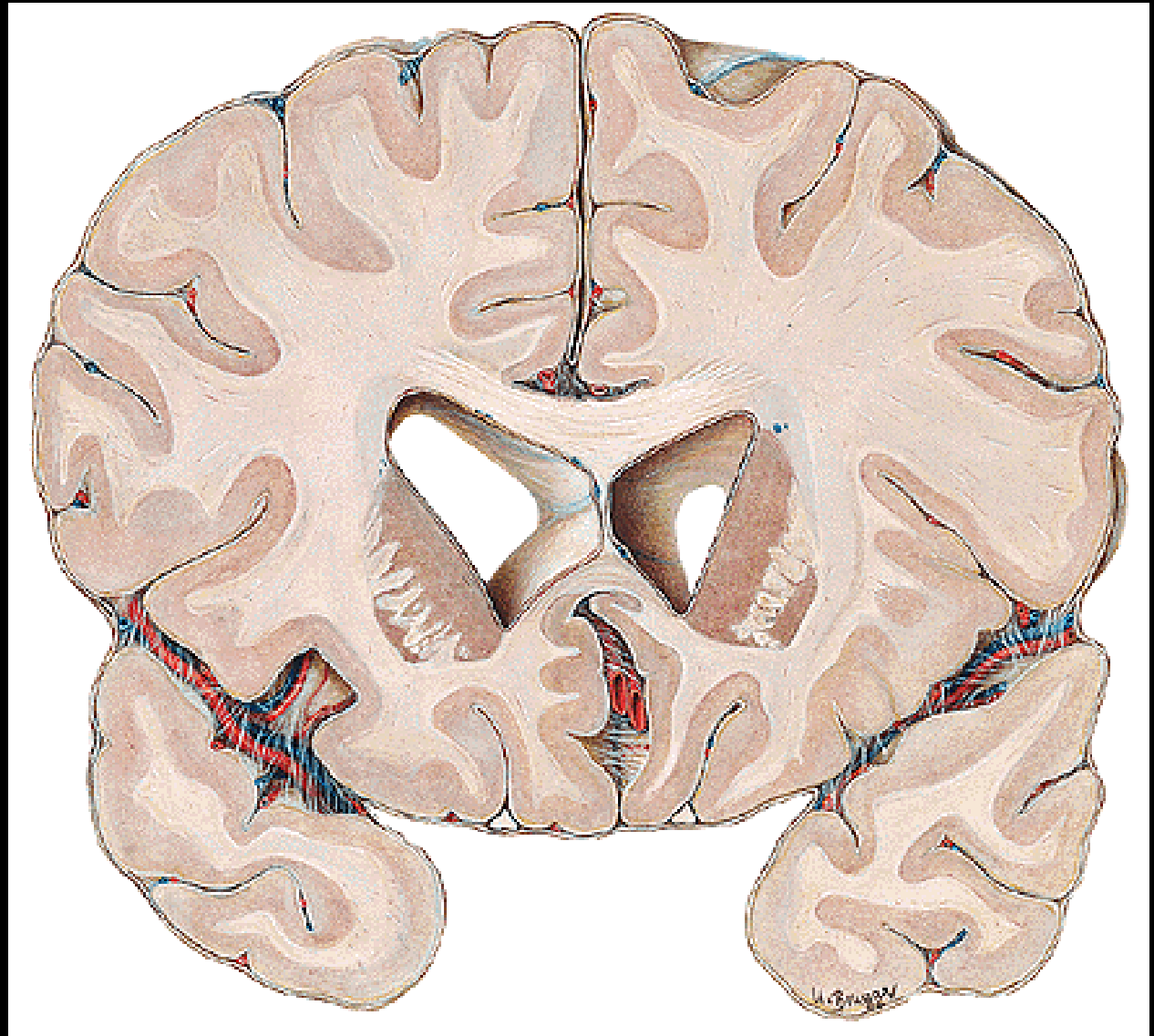
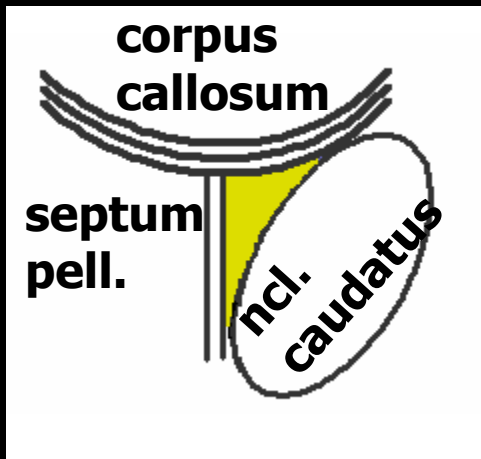
**Recessus opticus  
infundibuli**

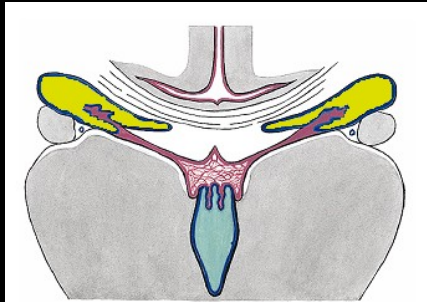
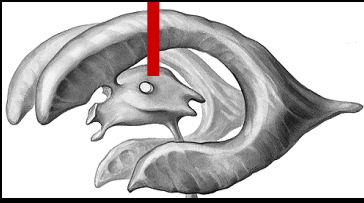
**Aqueductus  
mesencephali**

# Ventriculus lateralis



# Cornu anterius





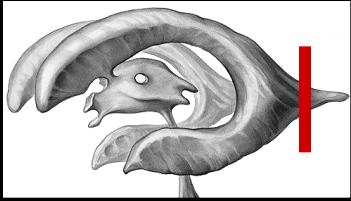
## Pars centralis



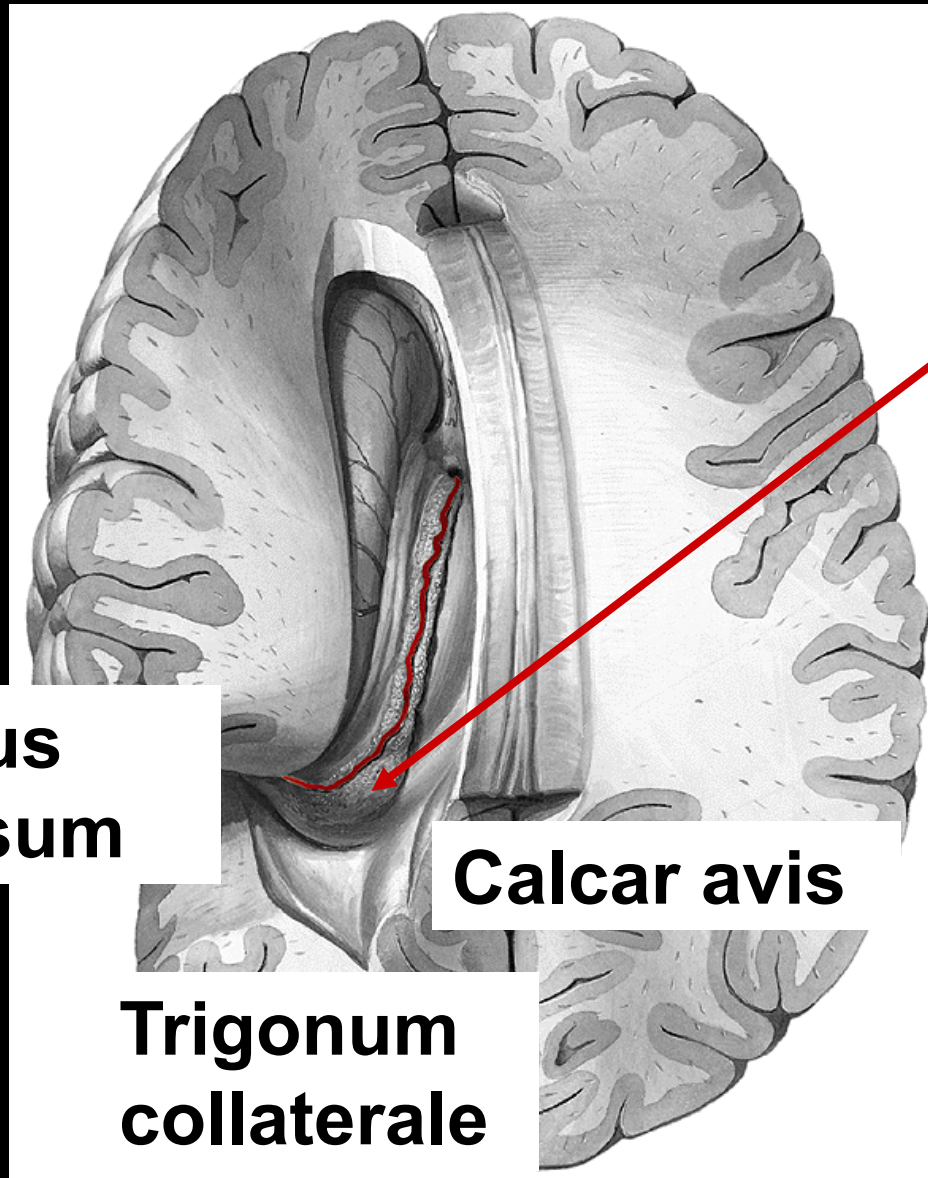
**Roof:**  
**Corpus callosum**

**Floor:**  
**Fornix**  
**Plexus choroideus**  
**Thalamus**  
**Stria terminalis**  
**Corpus ncl. caudati**

**Fissura transversa cerebri**



## Cornu posterius

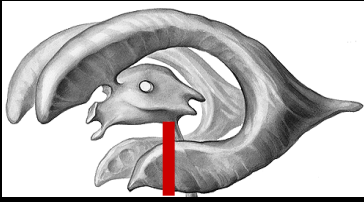


**Glomus  
choroideum**

**Corpus  
callosum**

**Calcar avis**

**Trigonum  
collaterale**



## Cornu inferius

**Roof:**

**Stria terminalis**

**Cauda ncl. caudati**

**Corpus callosum**

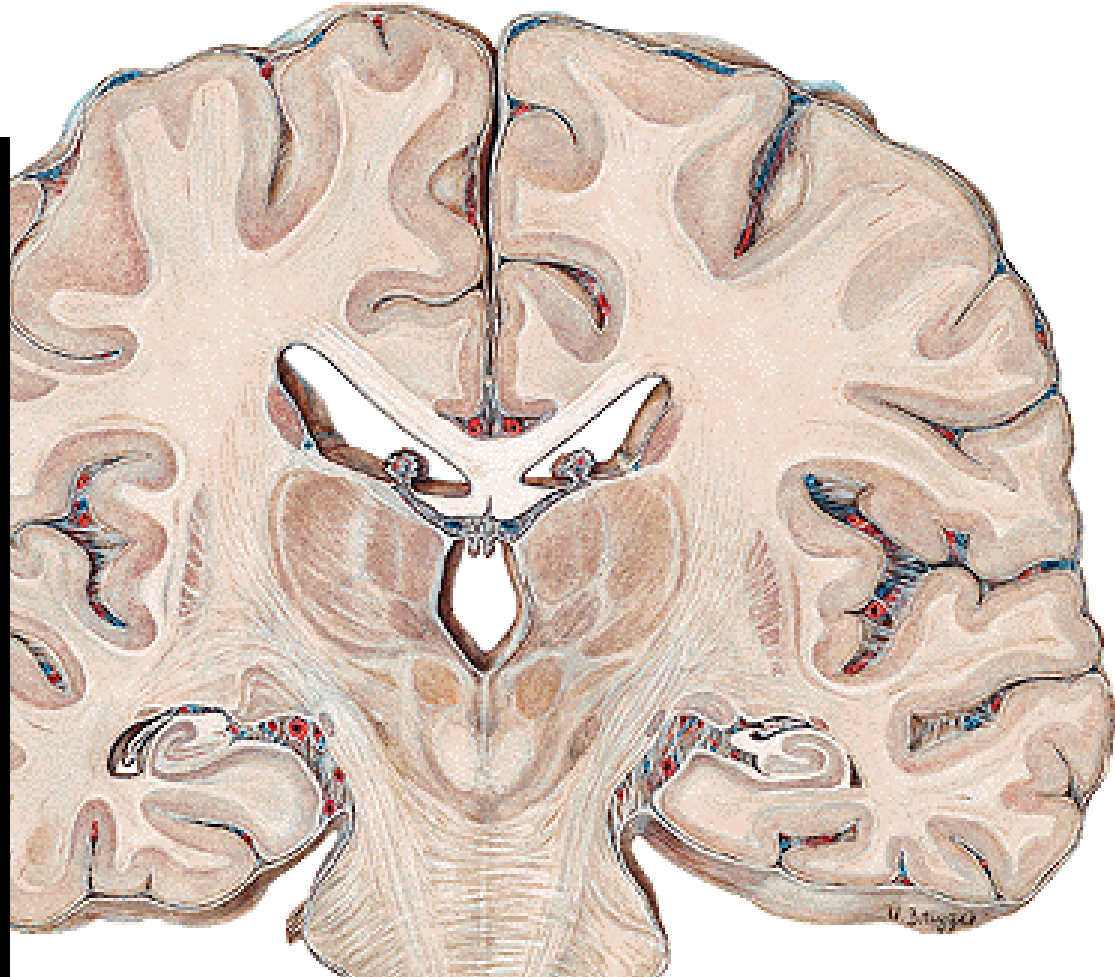
**Floor:**

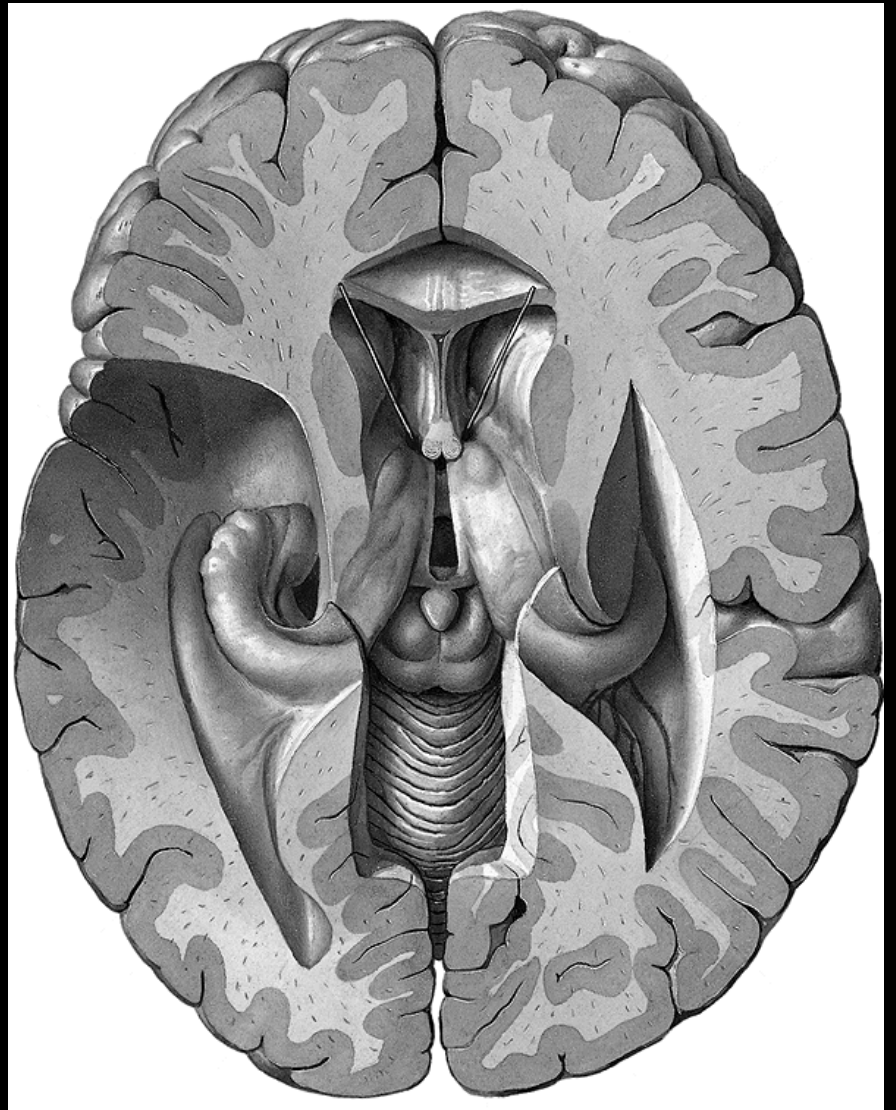
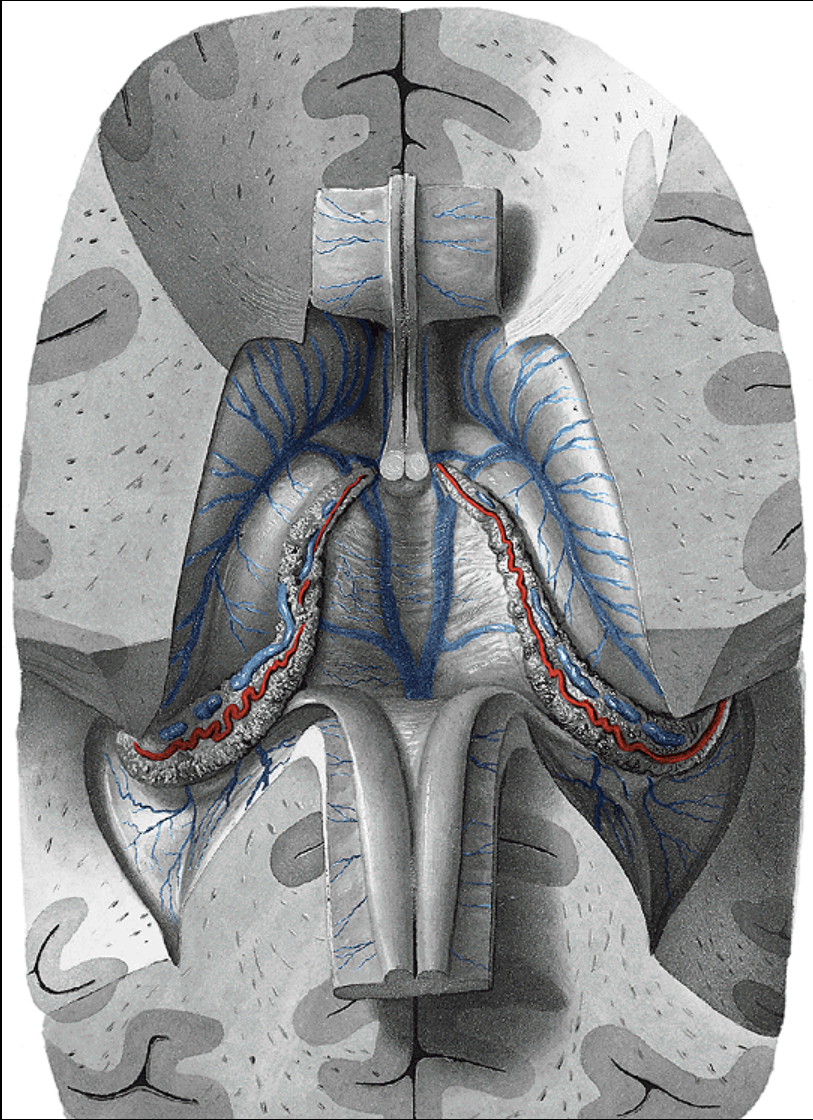
**Hippocampus**

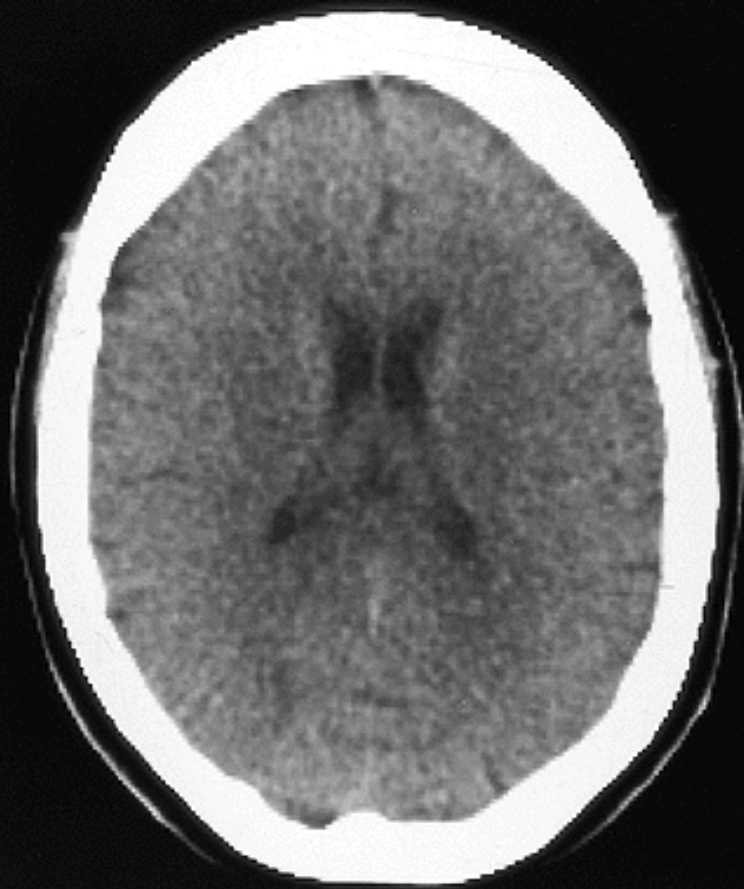
**(fimbria hippocampi)**

**Plexus choroideus**

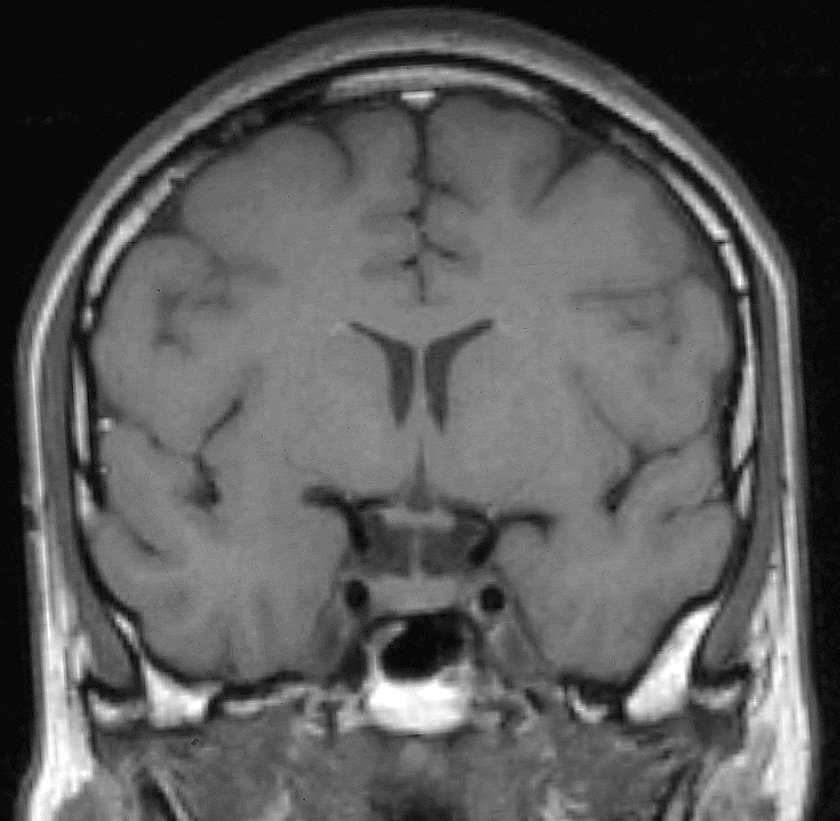
**Eminentia collateralis**







**CT**



**MRI**



# Meninges

## Calvaria

Potential epidural space

**Ektomeninx - dura mater: periosteal, meningeal layers  
(pachymeninx)**

Potential subdural space

**Endomeninx  
(leptomeninges)**

**arachnoid mater**

Cavitas subarachnoidea (CSF)

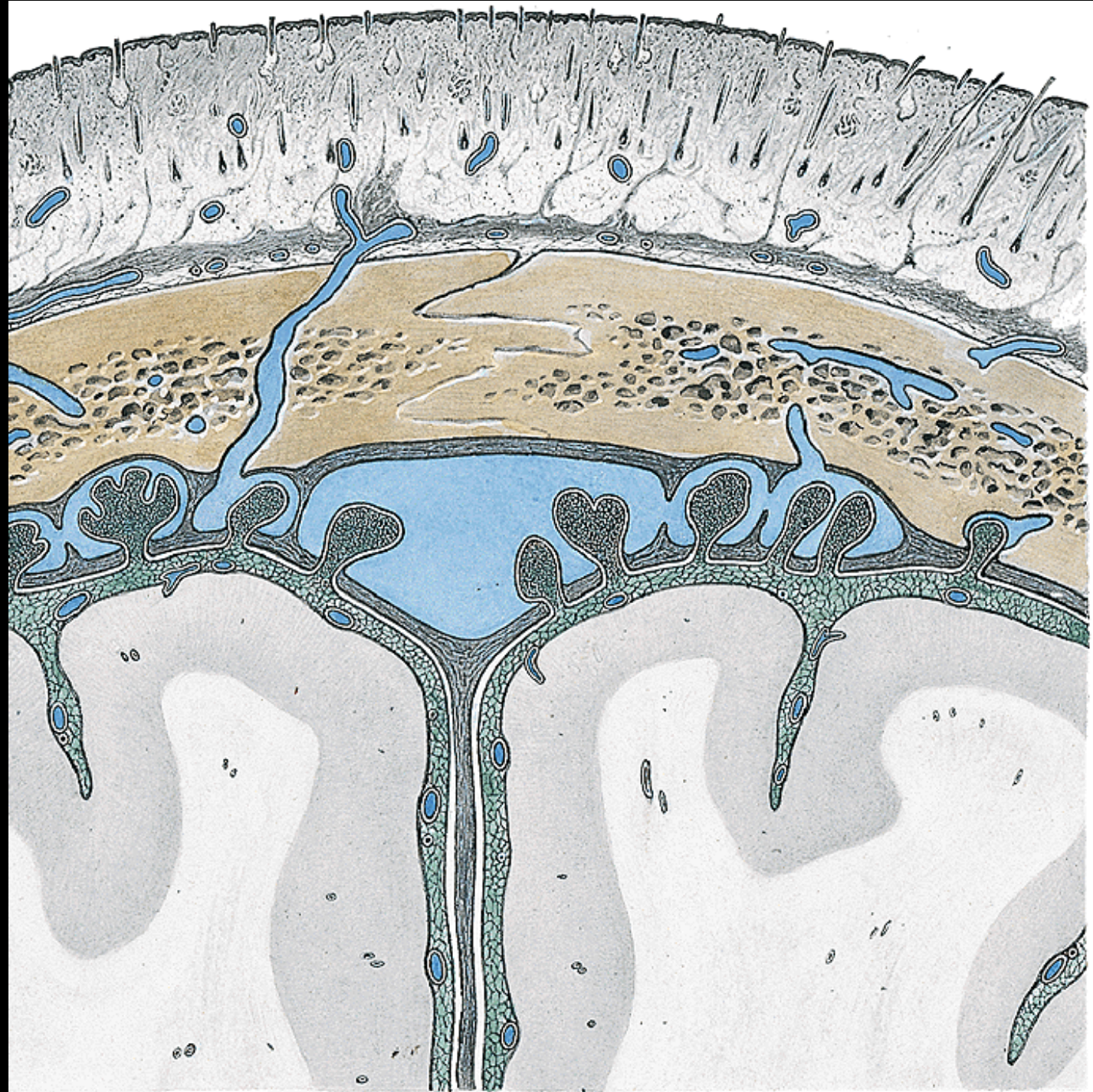
**pia mater**

# **Cranial meninges**

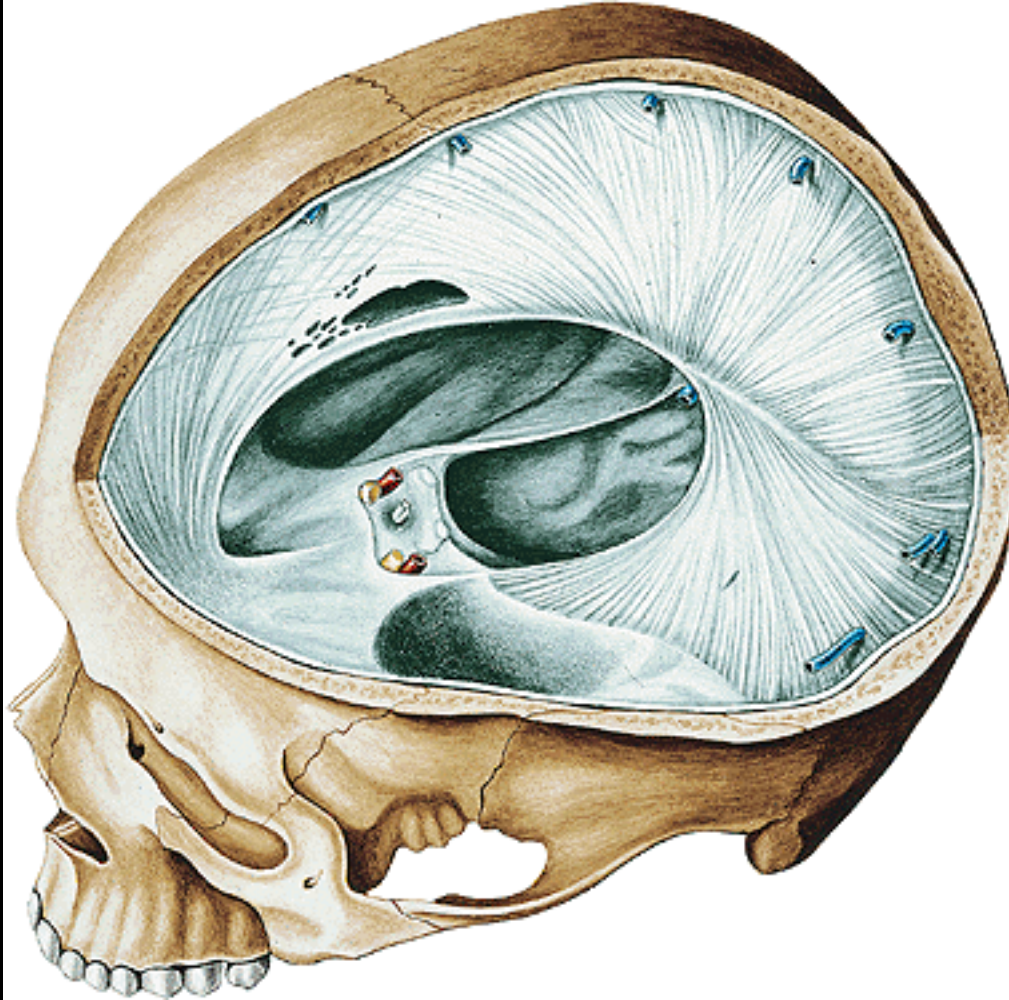
## **Dura mater**

**inelastic layer of fibrous tissue fused with the endosteum of the skull**

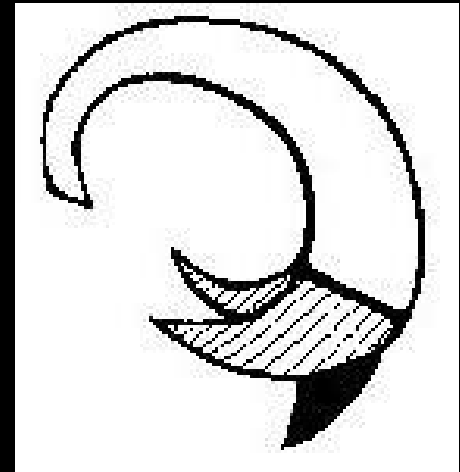
- contains venous sinuses**
- dural folds extend into the cranial cavity and help stabilize the brain**



# Dural folds



**Falx cerebri**  
**Falx cerebelli**  
**Tentorium cerebelli**  
**Diaphragma sellae**  
**Cavum trigeminale**  
**Vagina n. optici**



# Blood and nerve supply of the dura mater



## Aa. meningeae

From:

**a. ethm. ant.** – ant. fossa

**a. maxillaris** – middle fossa

**a. phar. asc.** – posterior  
fossa

**Veins** are tributaries of the  
dural sinuses

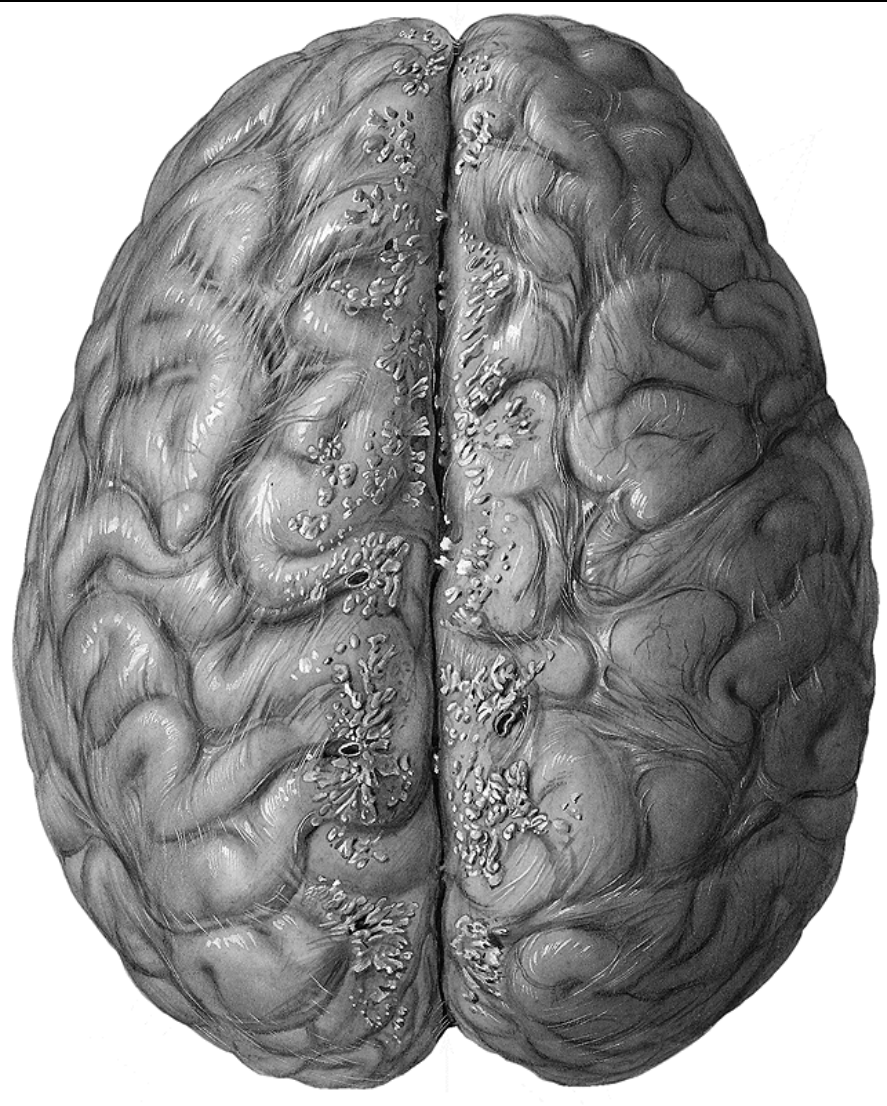
## **CN V:**

supratentorial compartment

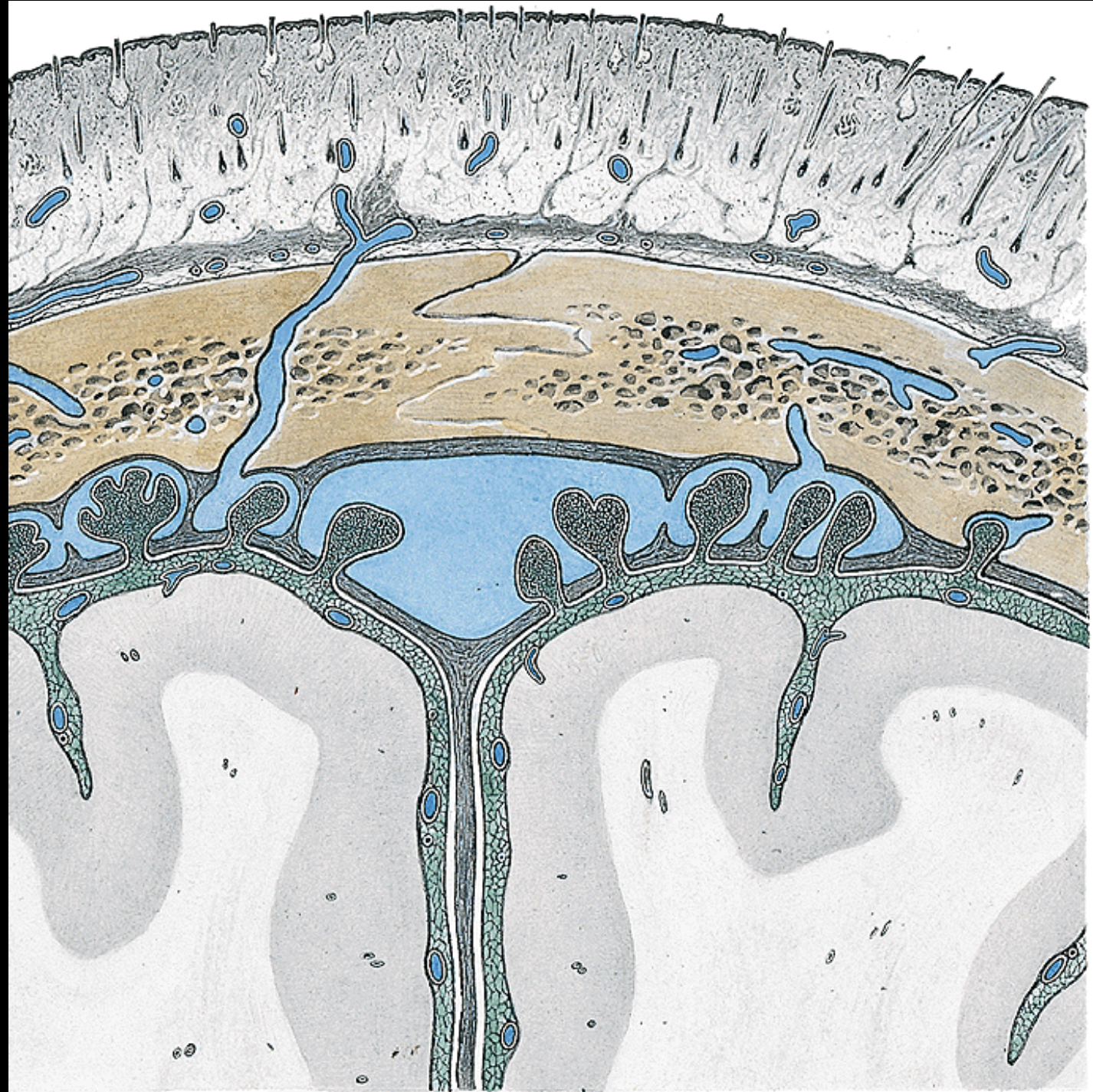
**Spinal nerves** (C2, C3) **CN X:**

infratentorial compartment

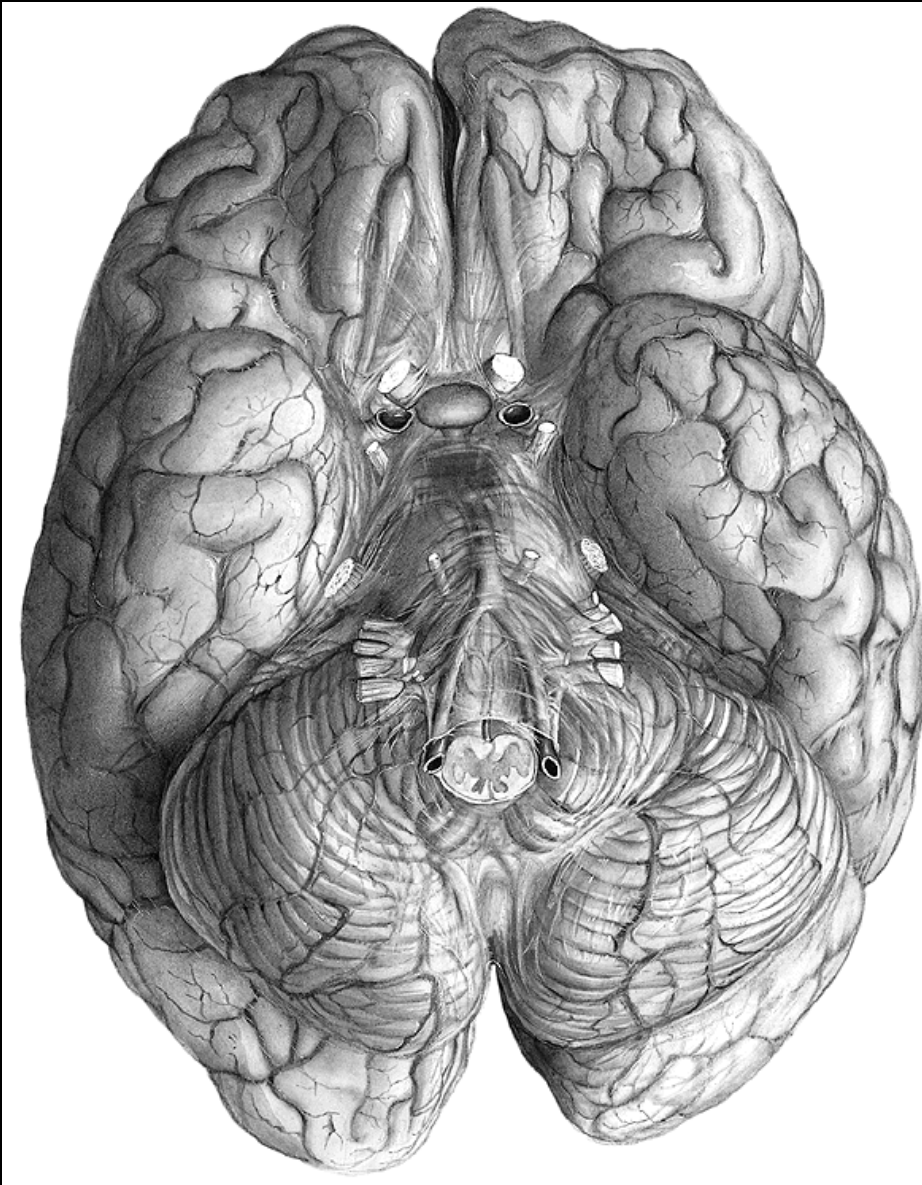
# Arachnoid mater



- Thin avascular delicate layer
- It does not follow indentations of the brain
- Pinhead pouches project through the dural wall of the major venous sinuses - **Granulationes arachnoideales** - transfer of CSF to the venous system



# Pia mater



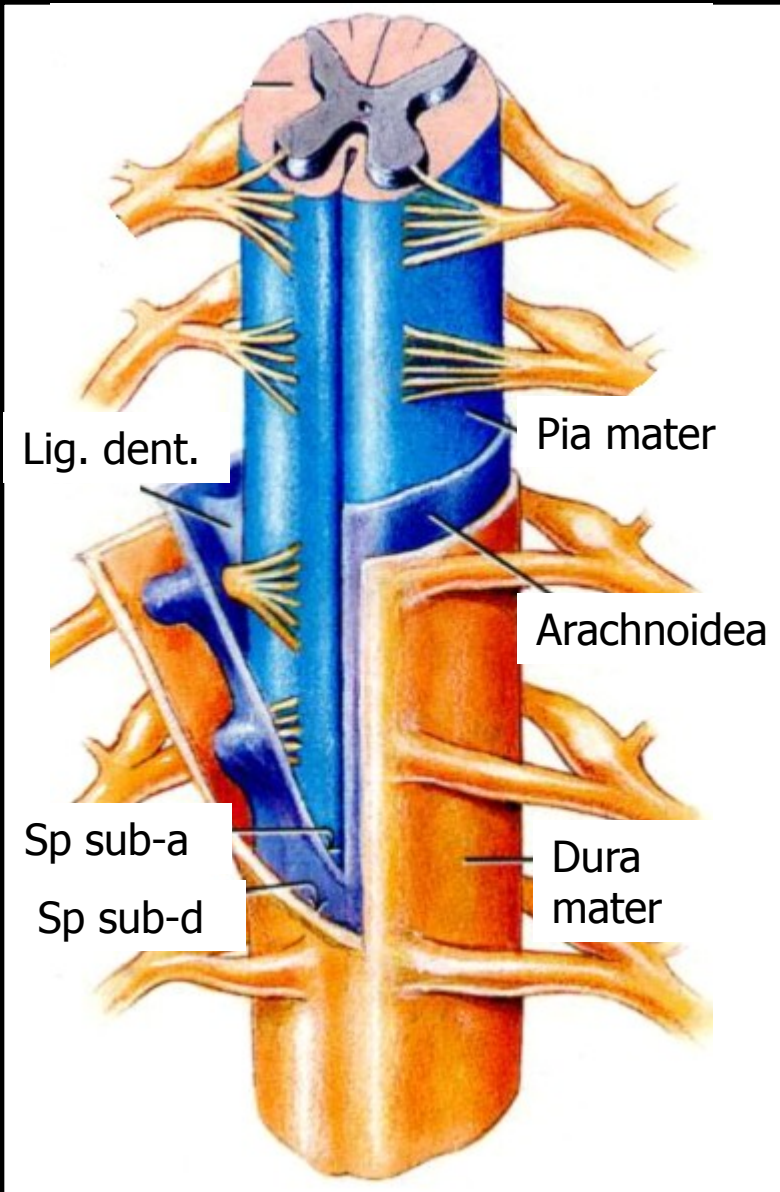
**Vascular, follows contours of the brain**

**Cisternae subarachnoideales:**

- chiasmatis
- fossae lat. cerebri
- interpeduncularis
- cerebellomedullaris



# Meninges of the spinal cord



**Epidural space**  
(Spatium epidurale)

**Dura mater spinalis**

**Subdural space**  
(Spatium subdurale)

**Arachnoidea spinalis**

**Subarachnoid space**  
(Cavitas subarachnoidea)

**Pia mater spinalis:**  
lig. denticulatum

b

Lig. flavum  
(cut surface/Schnittfläche)

Arcus vertebrae

V. spinalis posterior

A. spinalis posterior

Plexus venosus vertebralis  
internus posterior

Radix posterior [sensoria]  
nervi spinalis

(Septum interradiculare)

Radix anterior [motoria]  
nervi spinalis

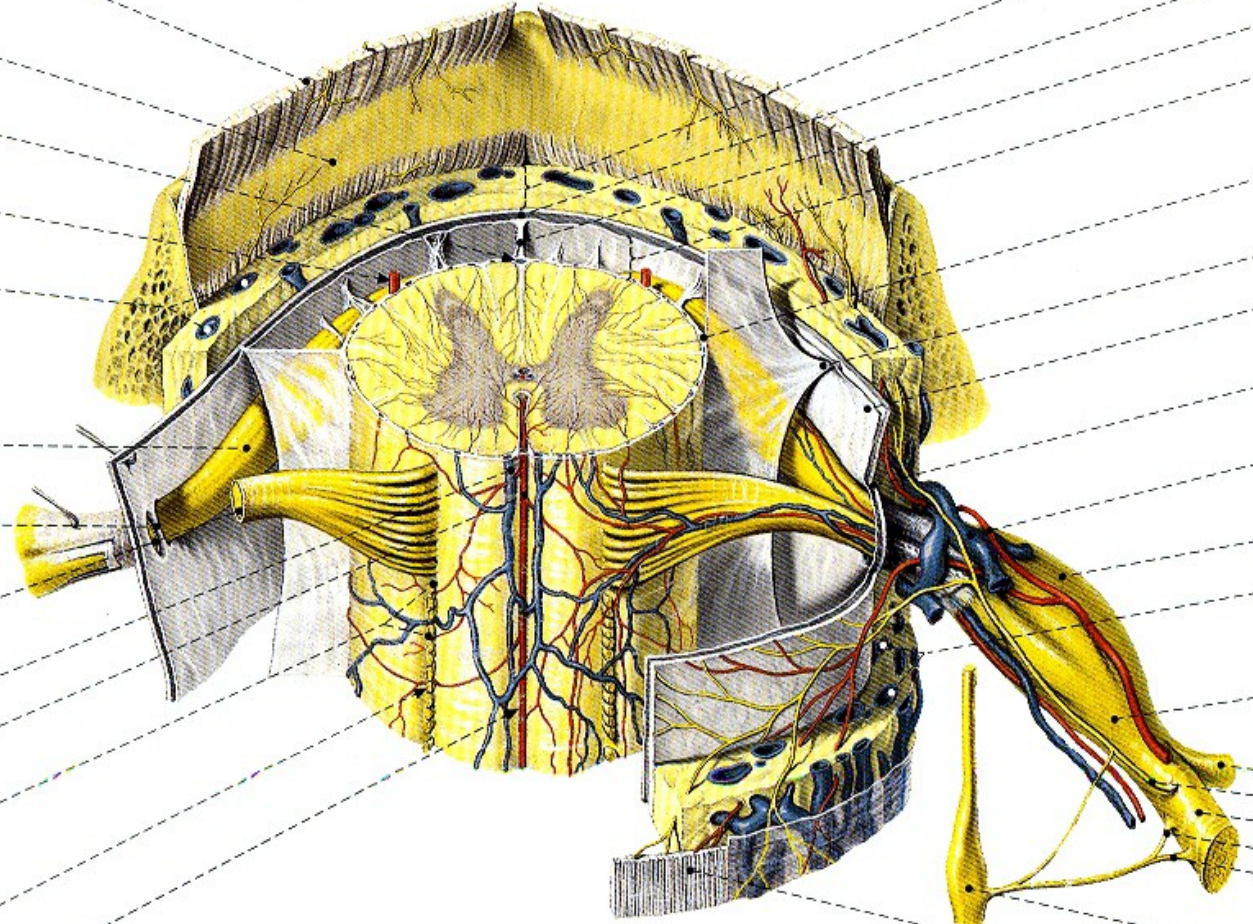
Vv. spinales anteriores

A. spinalis anterior

Radix anterior [motoria]  
nervi spinalis  
Fila radicularia

Sulcus anterolateralis

Fissura mediana anterior



Spatium epidurale  
[peridurale]

Spatium subdurale

(Septum leptomeningicum)

Spatium subarachnoideum

Pia mater spinalis  
(cut margin/Schnitttrand)

Lig. denticulatum

Arachnoidea mater spinalis  
(cut margin/Schnitttrand)

Dura mater spinalis  
(cut margin/Schnitttrand)

V., A. intercostalis posterior  
Rr. spinales

Ganglion spinale

Plexus venosus vertebralis  
internus anterior

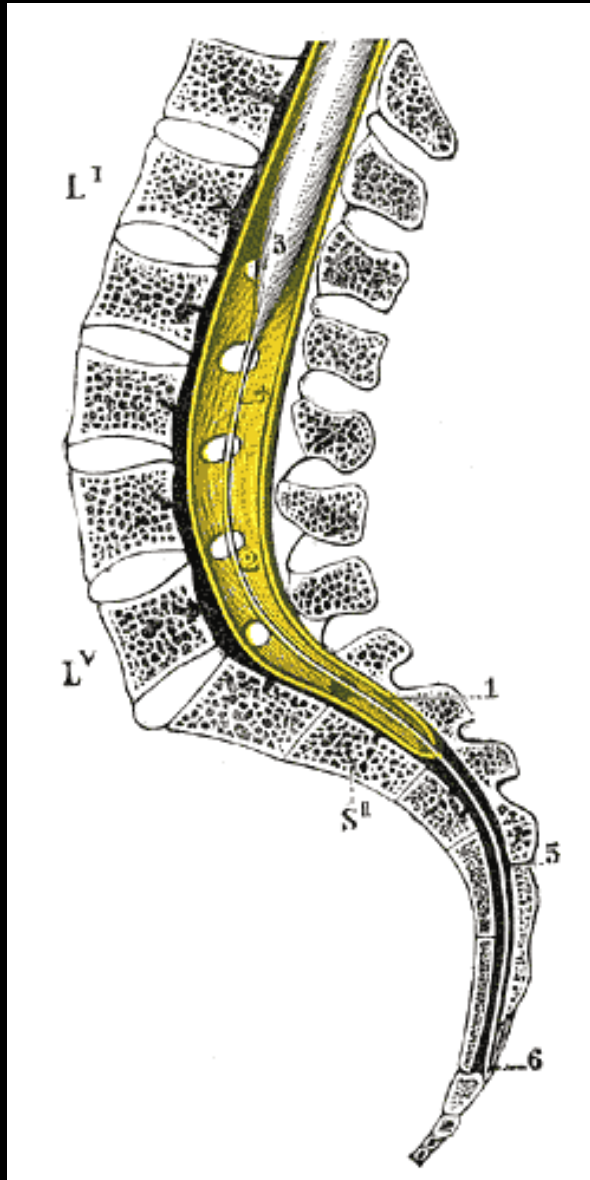
Truncus nervi spinalis

N. spinalis

- R. posterior
- R. meningeus
- R. anterior
- R. communicans griseus
- R. communicans albus

Ganglion trunci sympathetici

Lig. longitudinale posterius



## Cisterna lumbalis

Medullary cone: L1-2

Dural sac: S2-3

Lumbar puncture (spinal tap)

# Liquor cerebrospinalis (CSF)

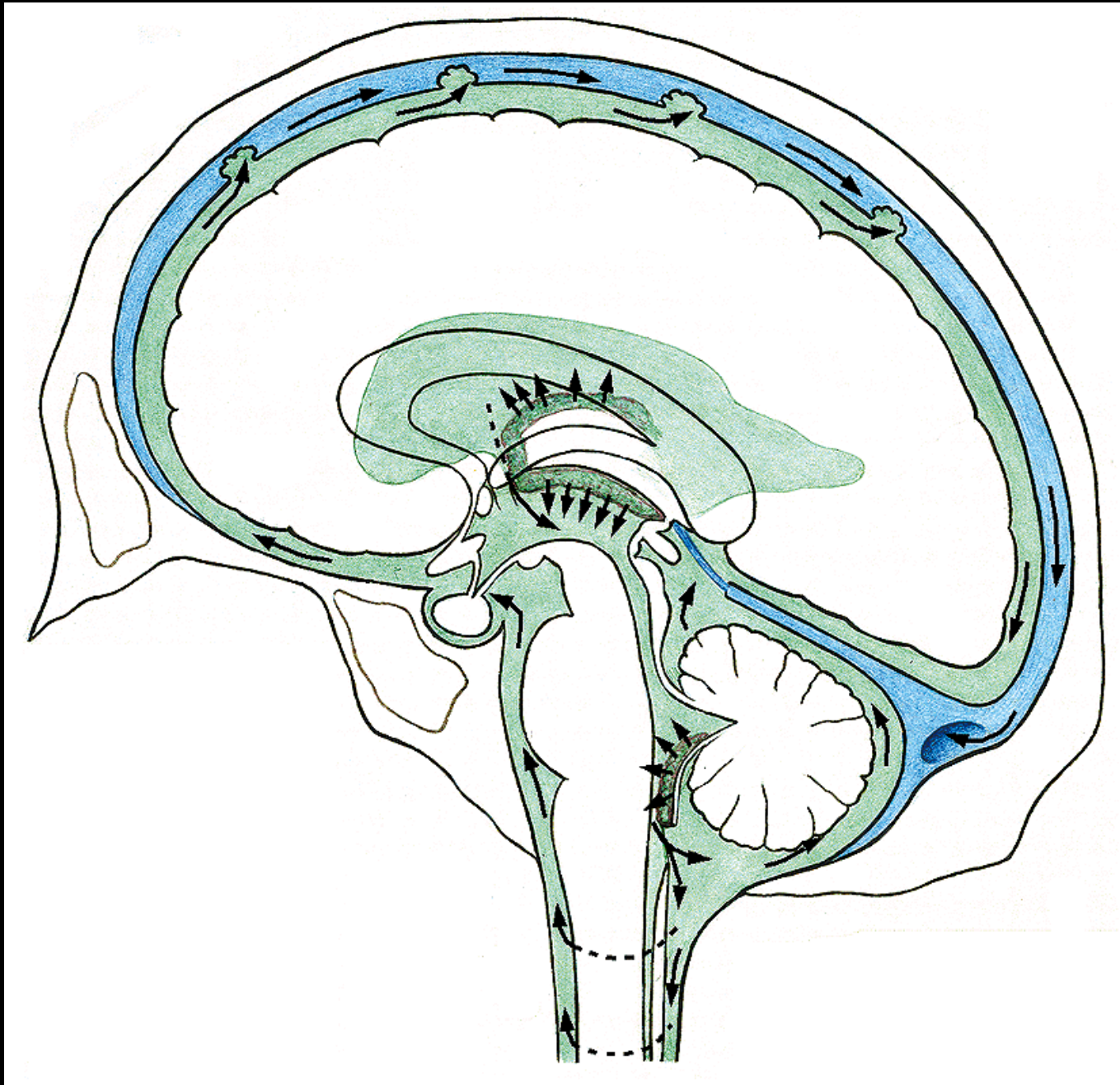
Clear, colorless fluid, 150 mL, secreted at the rate of 400-500 mL daily

Produced by the choroid plexuses of ventricles

Protects the brain, prevents the weight of the brain from compressing the nerves and vessels against the cranium.

## Circulation:

Lateral ventricles – for. interventriculare – 3<sup>rd</sup> ventricle – aquaeductus cerebri – 4<sup>th</sup> ventricle – median and lat. apertures – subarachnoid space – sinus durae matris

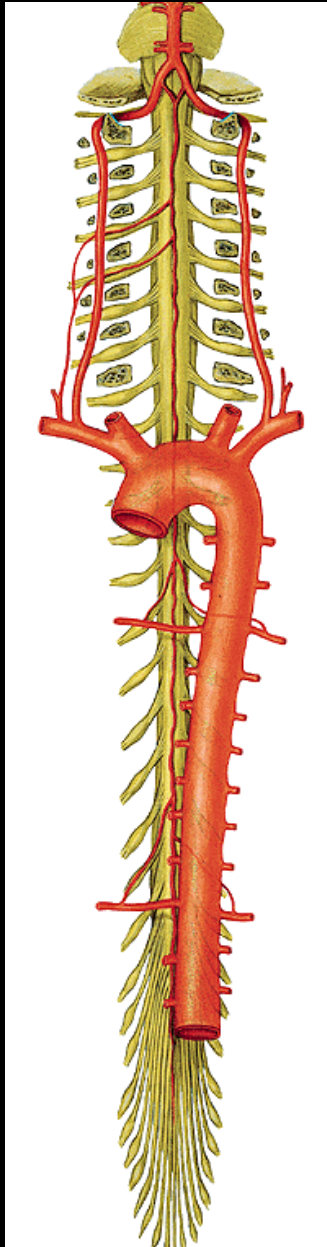


# Hydrocephalus



# Arteries of the CNS

## Spinal cord



### Rr. spinales

a. cervicalis asc.

a. vertebralis

a. cervicalis prof.

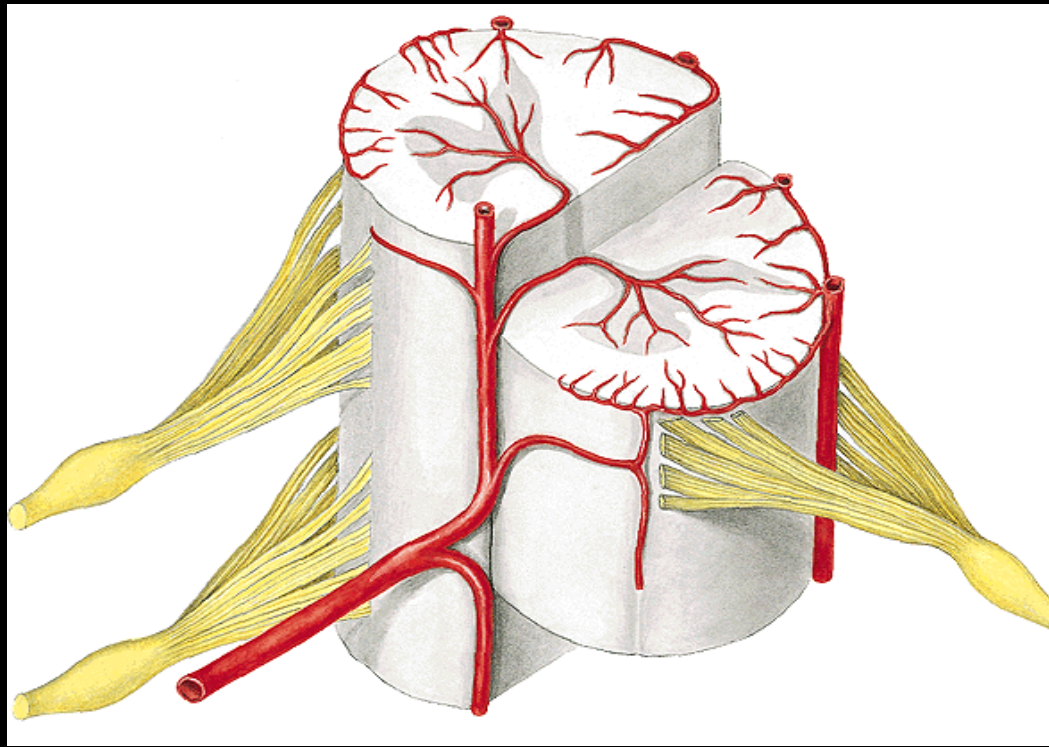
aa. intercostales post.

aa. lumbales

a. iliolumbalis

a. sacralis lat.

a. sacralis mediana



## **Rr. spinales:**

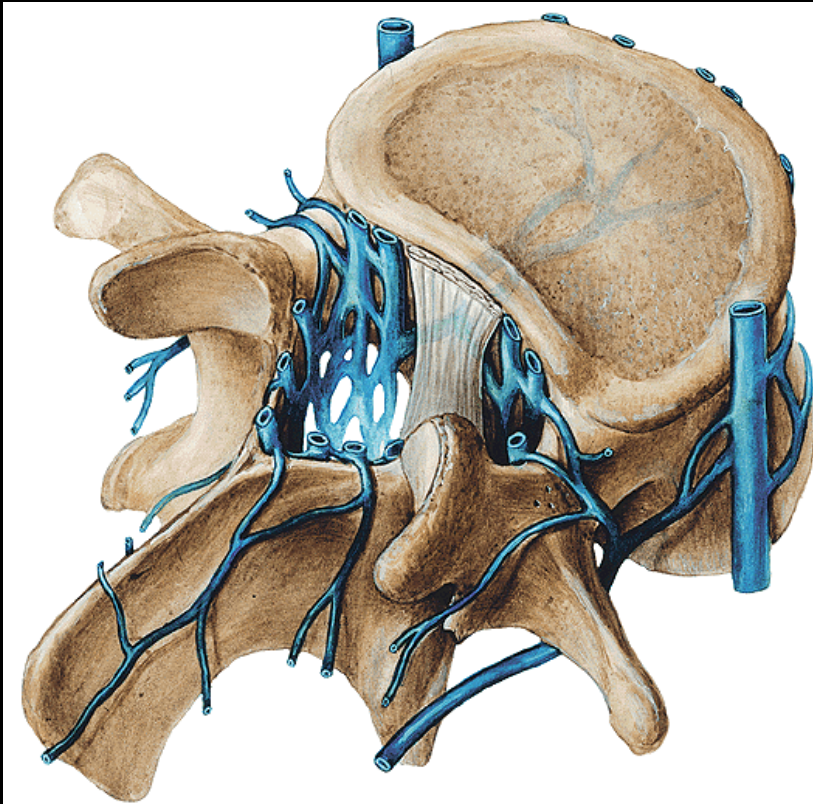
**aa. radicales ant. et post.:**

**a. spinalis ant. (fissura med. ant.)**

**aa. spinales post. (sulcus lat. post.)**



# Vv. spinales



- Plx. venosi vertebr. int.**
- > **Vv. intervertebrales**
  - > **Plx. venosi verteb. ext.**
  - > **Plx. suboccipitalis**
  - > **Vv. vertebrales**

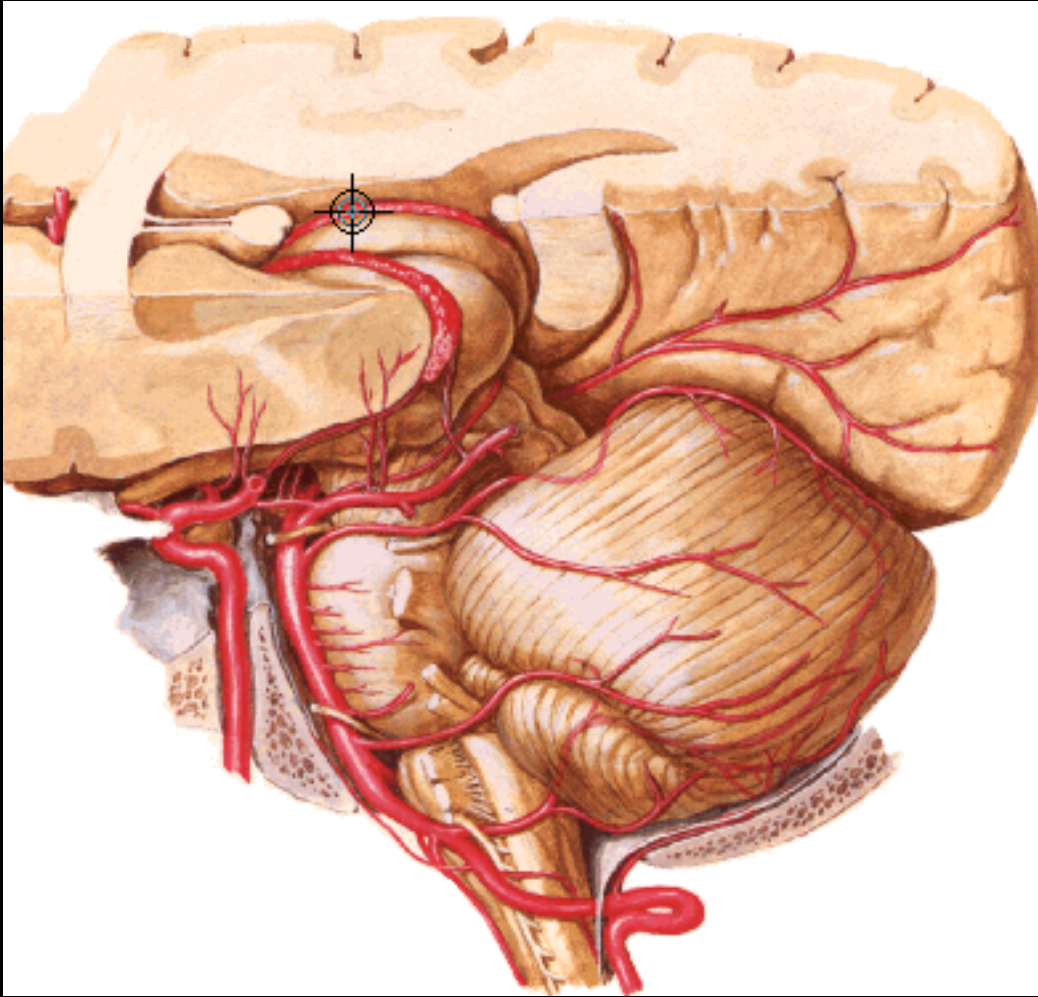
**Vv. cervicales prof.**

**Vv. intercostales**

**Vv. lumbales**

**Vv. sacrales lat.**

# Brainstem, cerebellum

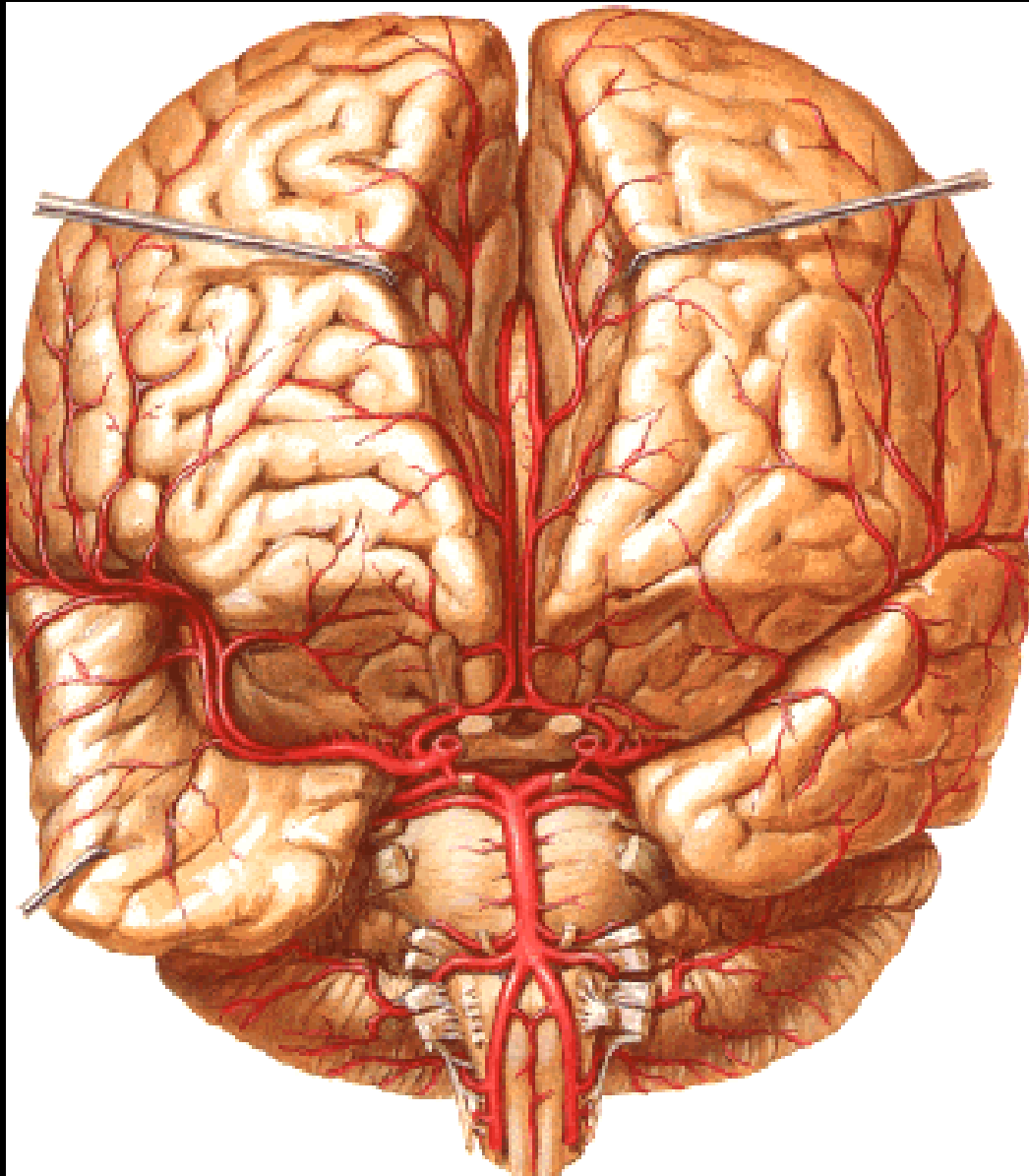


Aa. cerebri post.  
Aa. cerebelli sup.  
Aa. pontis  
Aa. cerebelli inf. ant.  
**A. basilaris**

Aa. cerebelli inf. post.  
Aa. spin. ant. et post.

**Aa. vertebrales**

# Brain



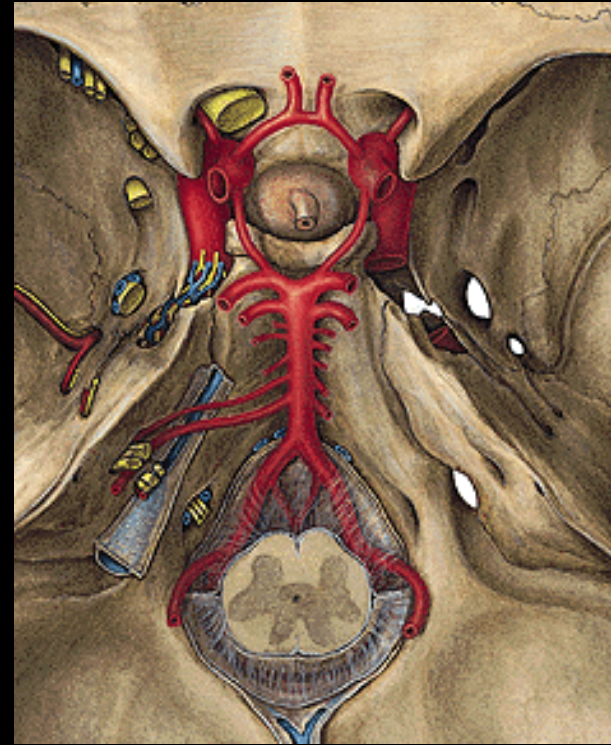
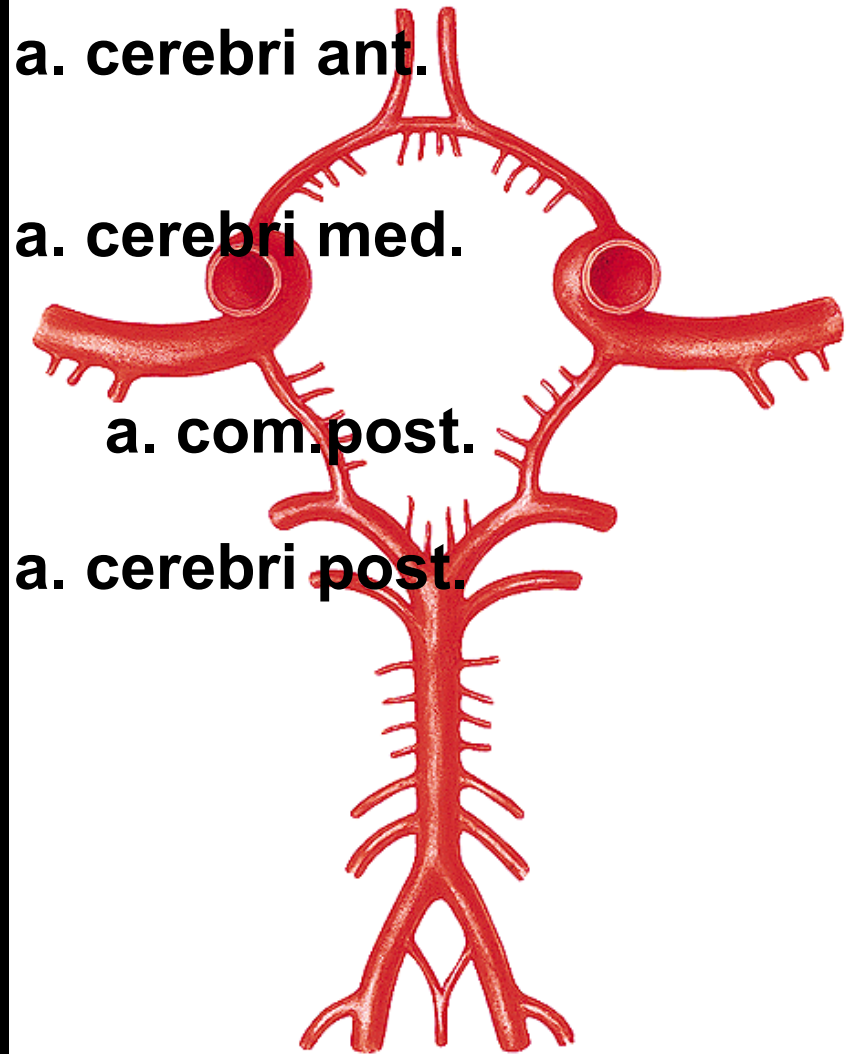
**Aa. cerebri:**

**anterior** (A. car. int.)

**media** (A. car. int.)

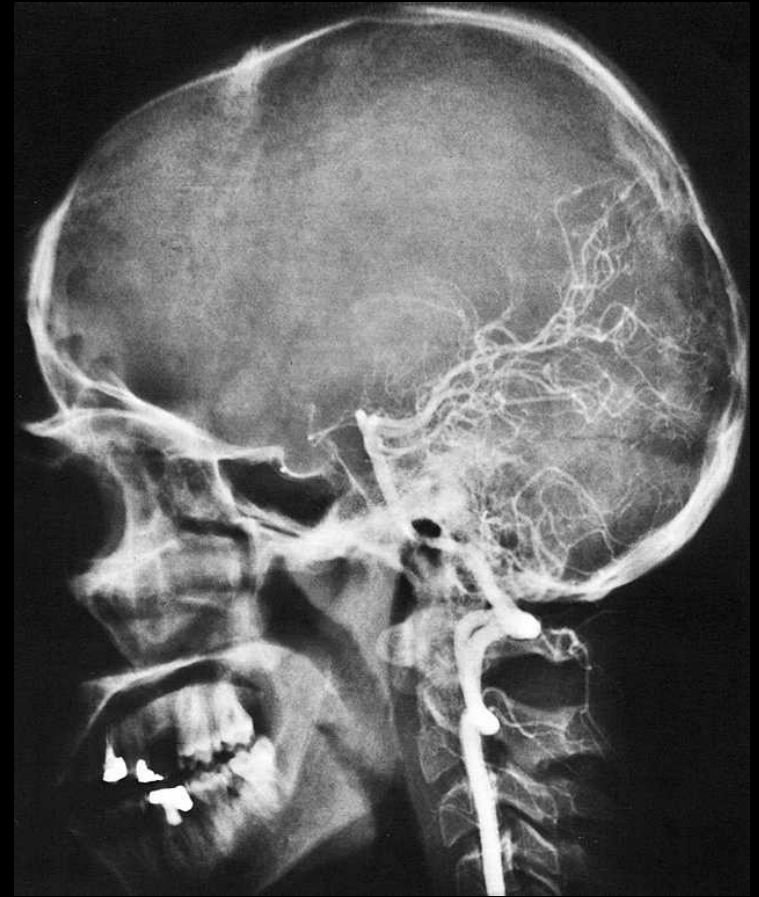
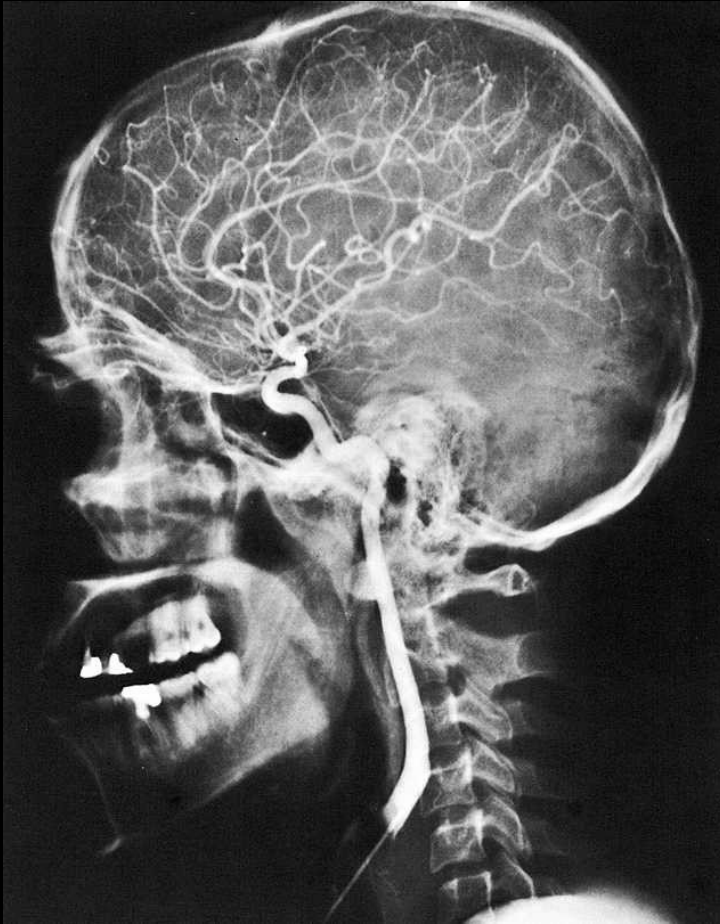
**posterior** (A. basil.)



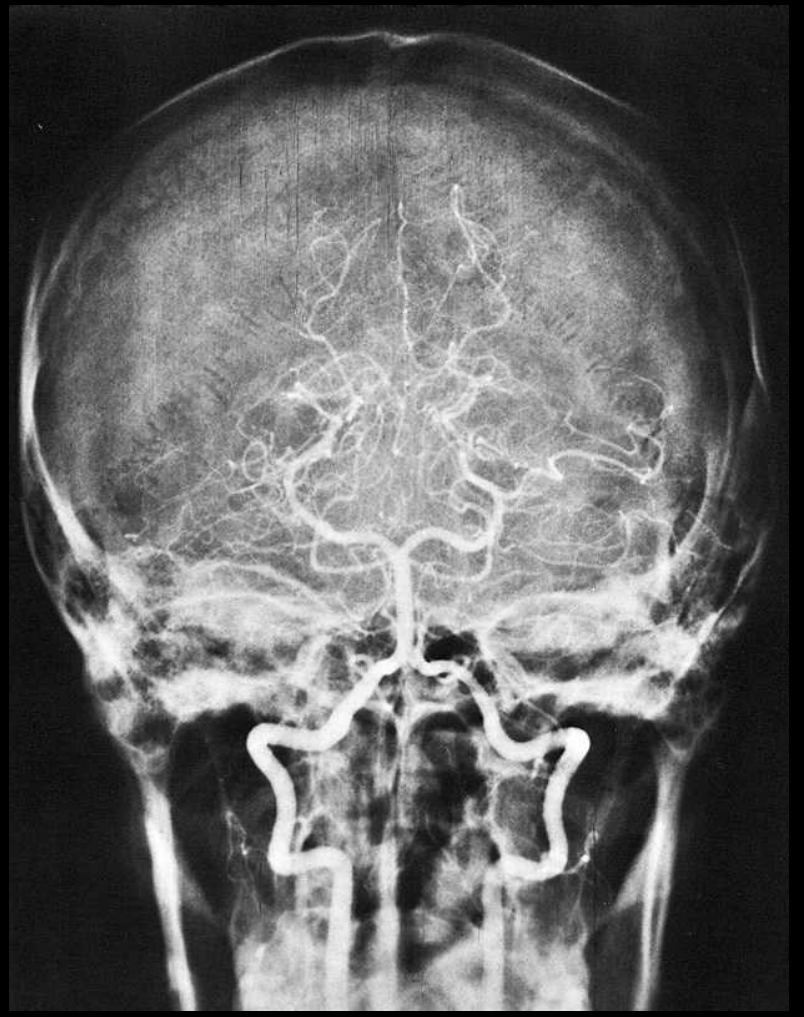
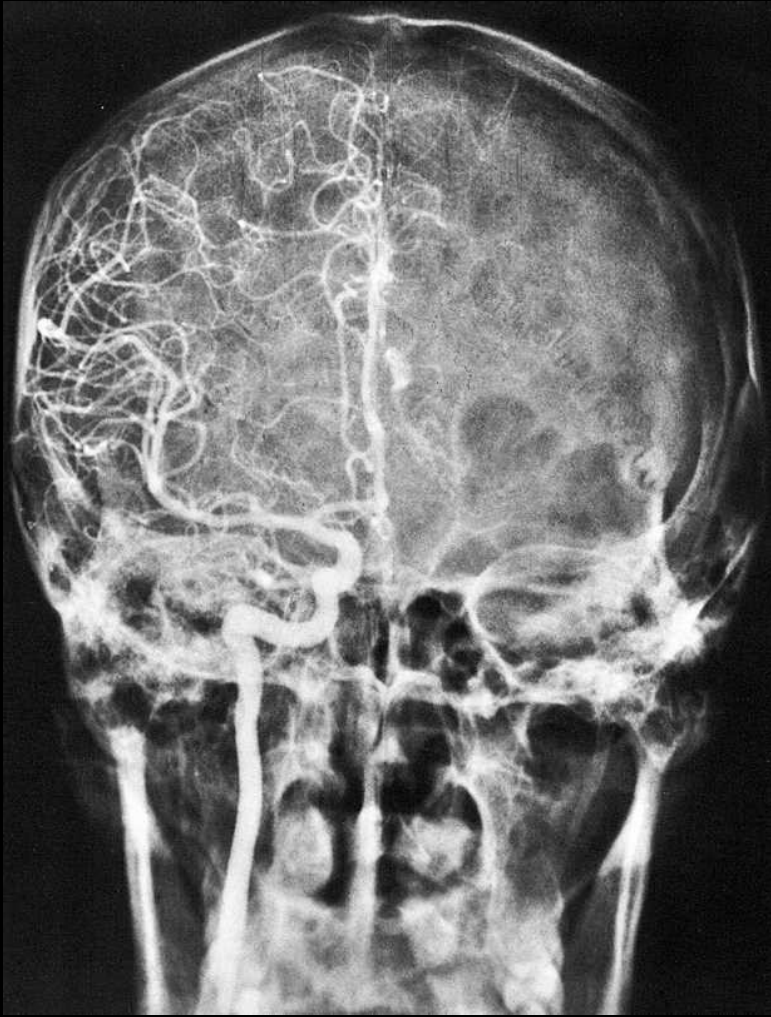


## Circulus arteriosus

- Aa. corticales
- Aa. centrales
- Aa. choroideae

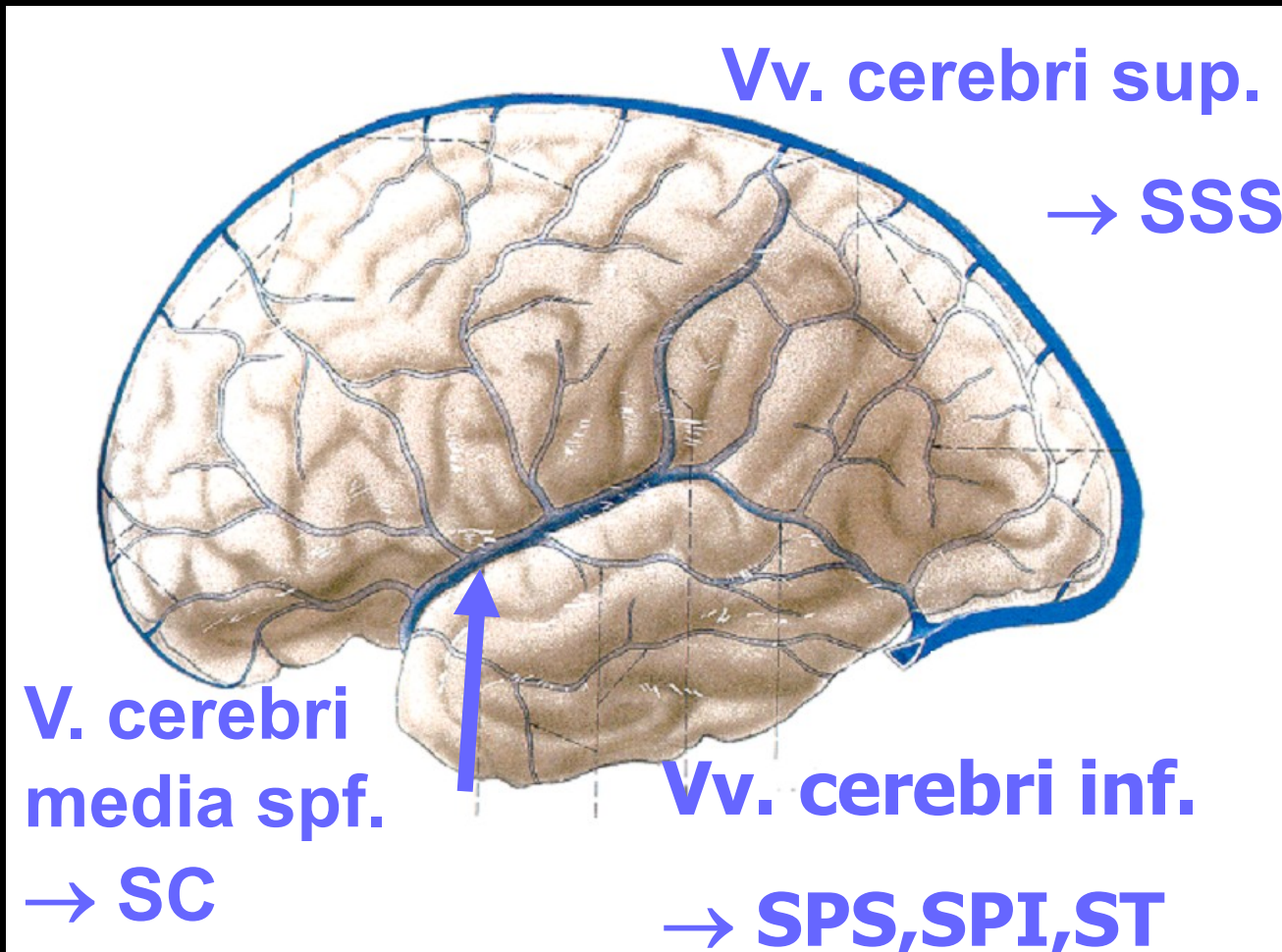


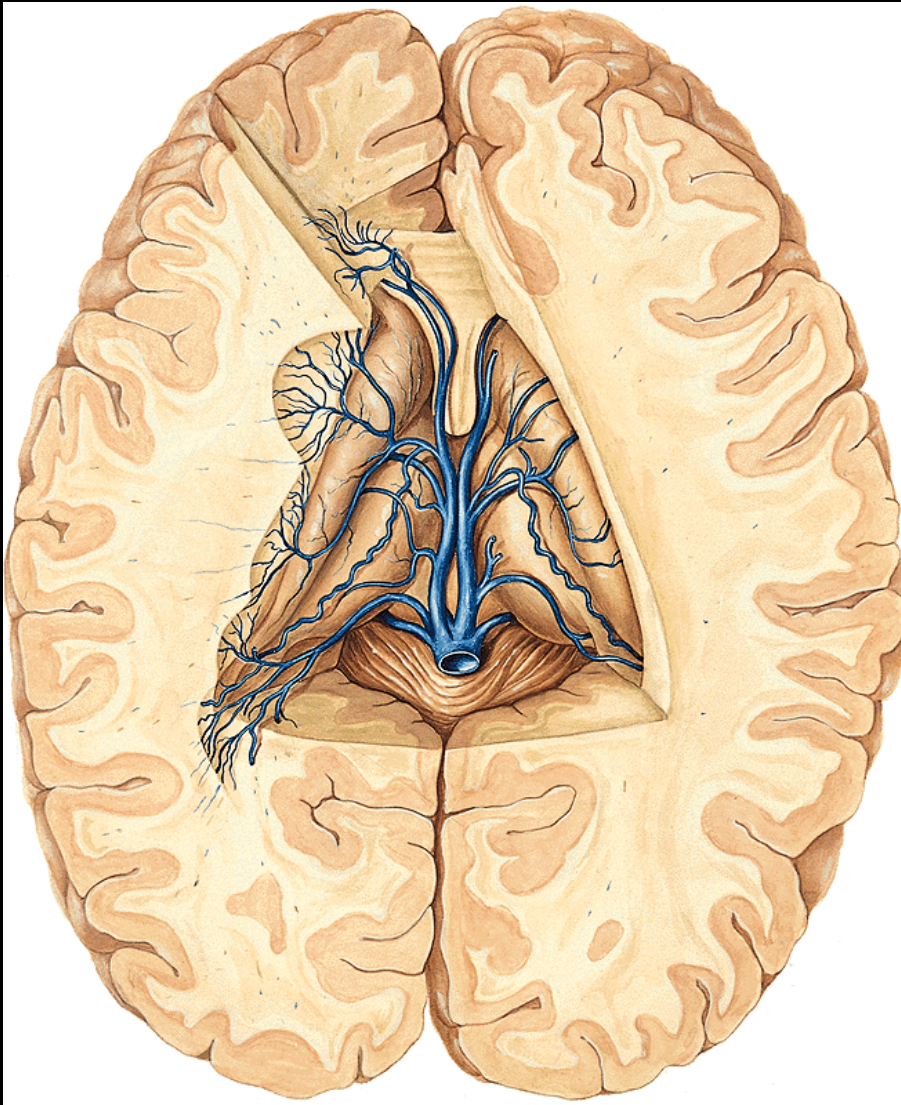
**anterior**  
**media**  
**posterior**



# Veins of the brain

## ■ superficial





## deep veins

1. vv. septi pellucidi
2. vv. thalamostr. sup.
3. vv. choroideae sup.



= Vv. cerebri int.  
+ Vv. cer. med. prof.  
+ Vv. basales

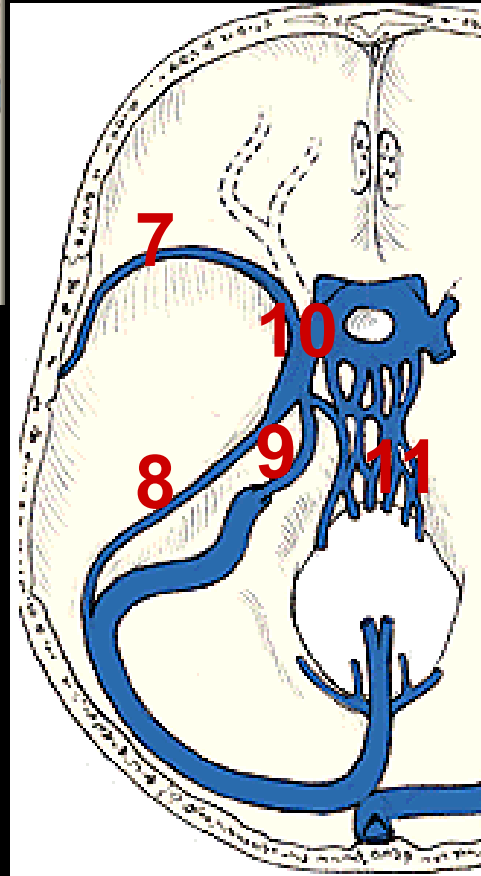
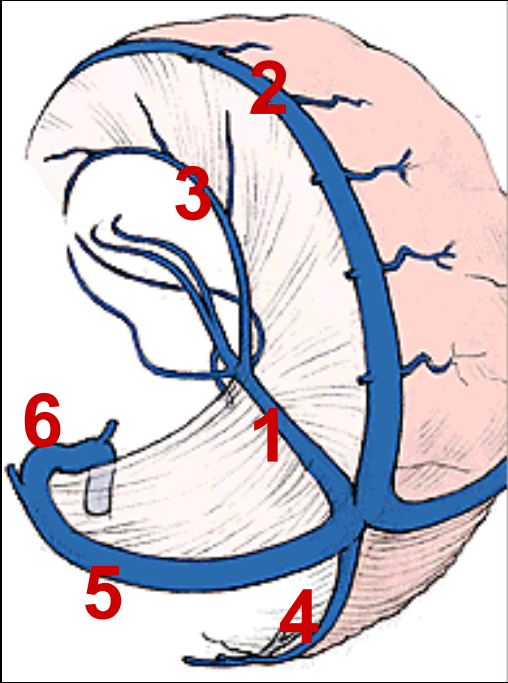
V. magna cerebri



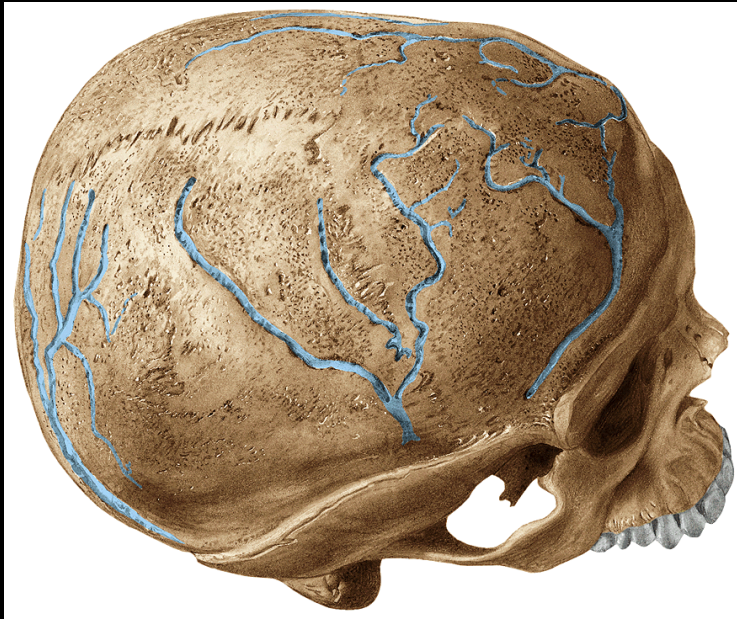
Sinus rectus



# Sinus durae matris



- 1 rectus
- 2 sagittalis sup.
- 3 sagittalis inf.
- 4 occipitalis
- 5 transversus
- 6 sigmoideus
- 7 sphenoparietalis
- 8 petrosus sup.
- 9 petrosus inf.
- 10 cavernosus
- 11 plx. basilaris



# Tributaries of sinuses

Vv. cerebri

Vv. cerebelli

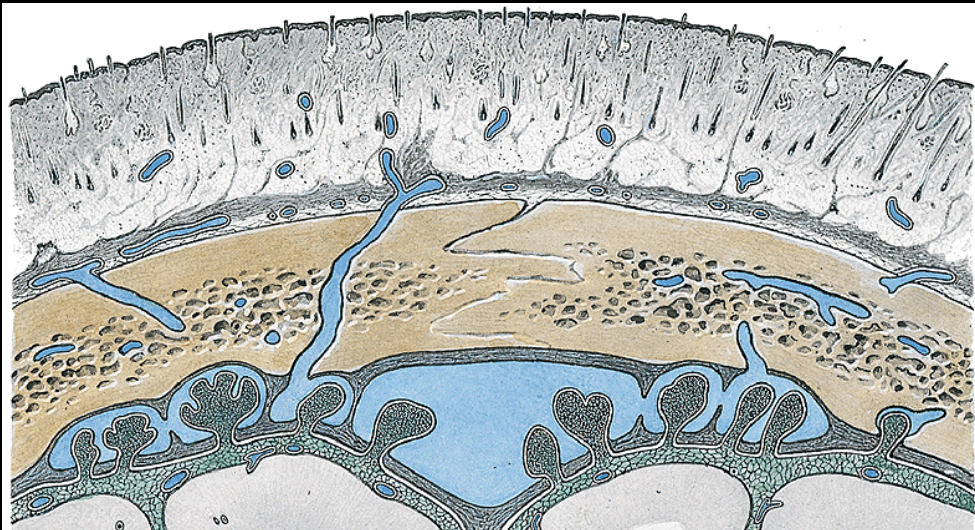
Vv. ophthalmicae

Vv. labyrinthi

Vv. meningeae

Vv. diploicae

Vv. emissariae



- Illustrations were copied from:
- **Atlas der Anatomie des Menschen/  
Sobotta. Putz,R., und Pabst,R. 20.  
Auflage. München: Urban &  
Schwarzenberg, 1993**
- **Netter: Interactive Atlas of Human  
Anatomy. Windows Version 2.0**