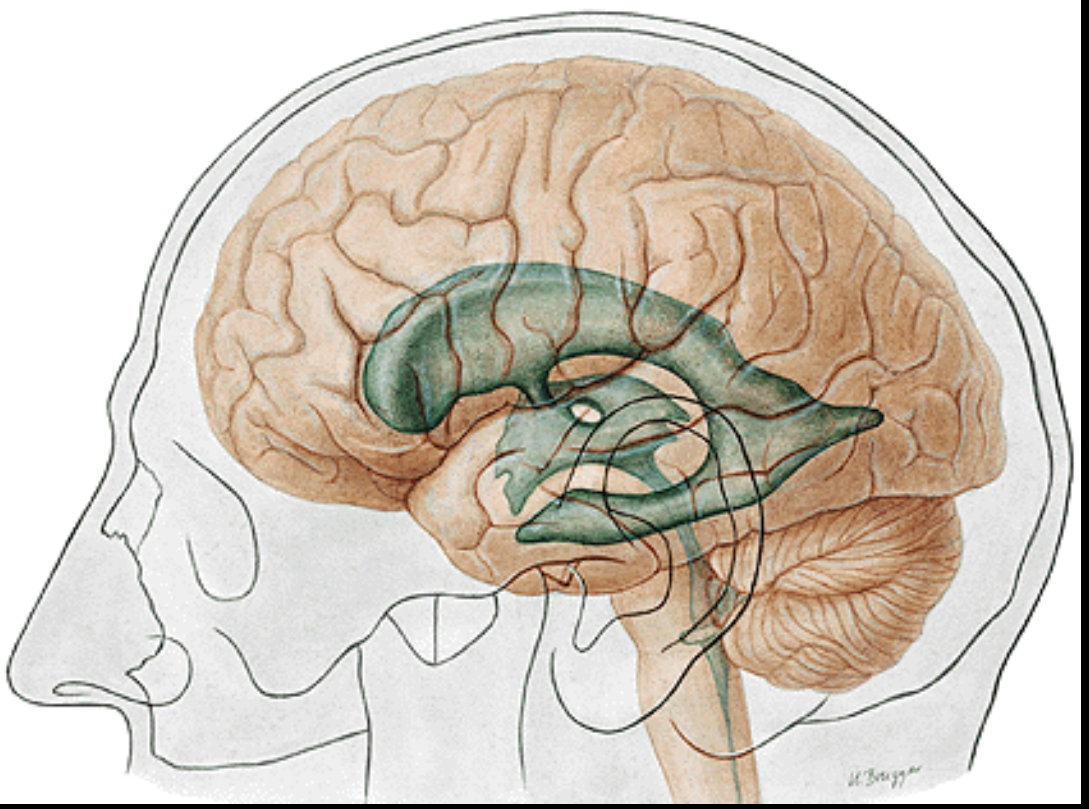
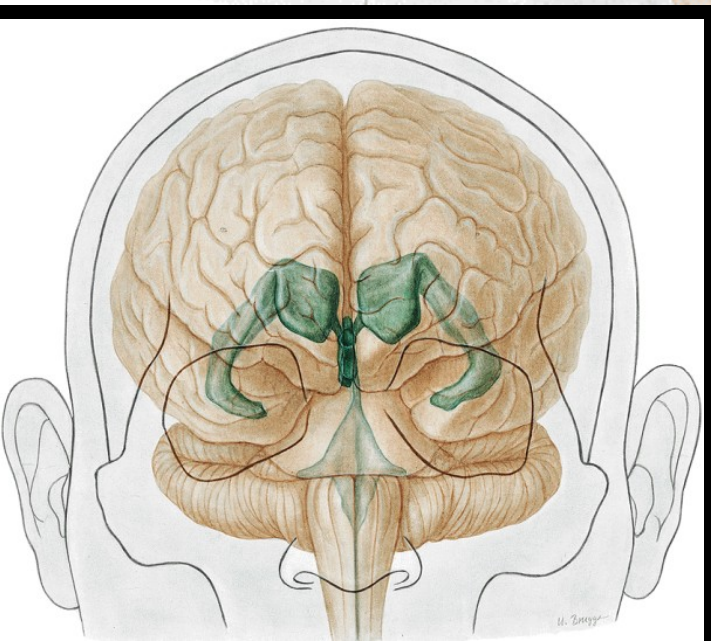
Ventricles, meninges and vessels of the CNS





Lateral ventricle (ventriculus lateralis)

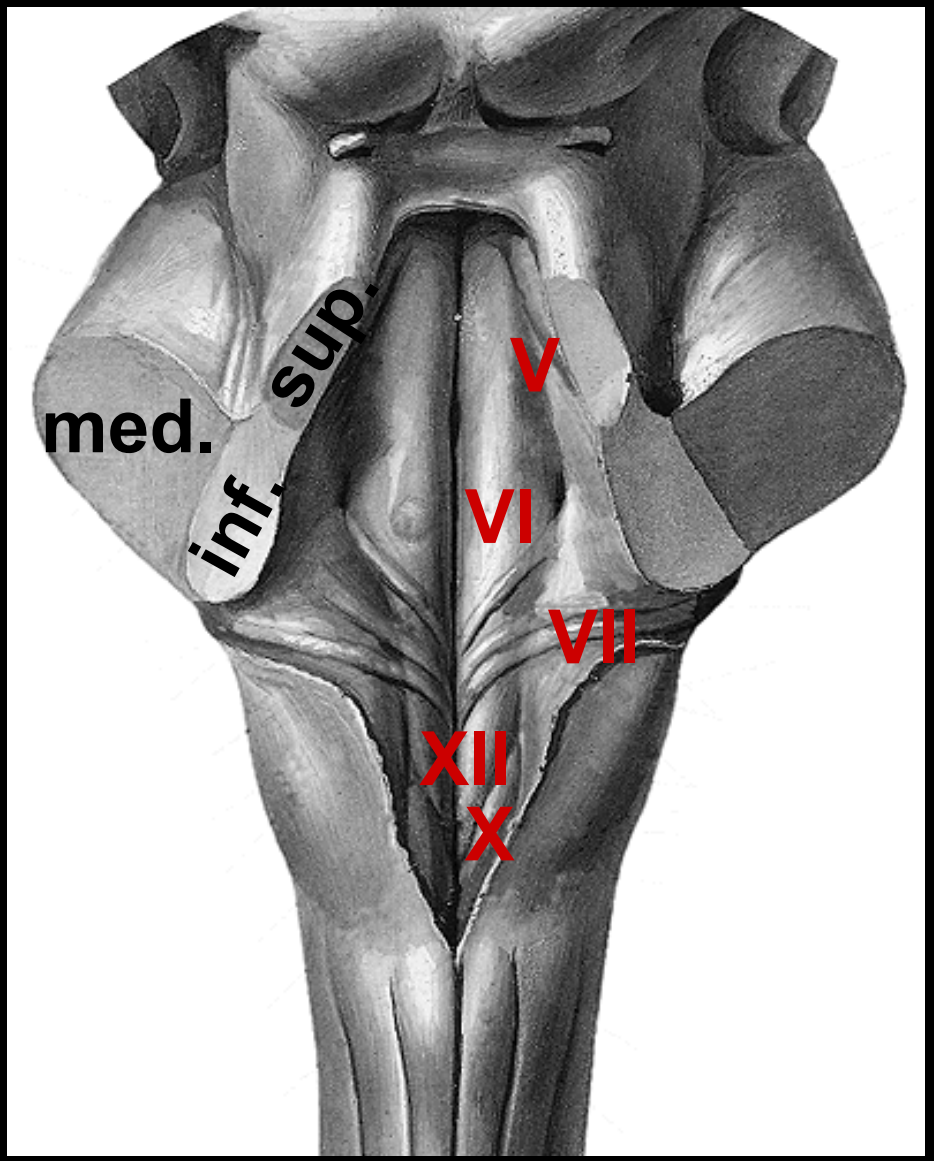
Third ventricle (ventriculus tertius)

Fourth ventricle (ventriculus quartus)

Central canal (canalis centralis)

Fourth ventricle

Floor = Fossa rhomboidea



Sulcus medianus

Sulcus limitans

Trigonum n. XII

Trigonum n. X

Eminentia medialis

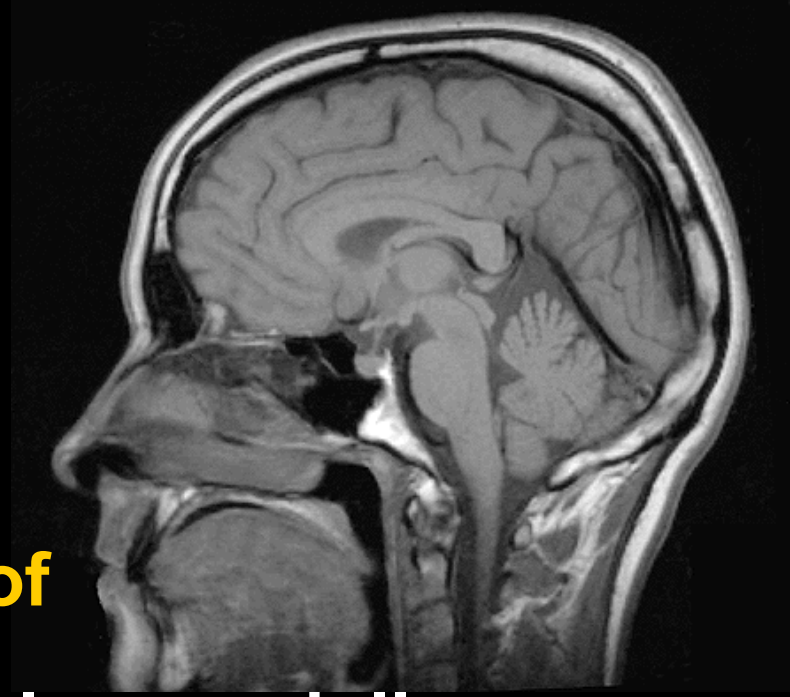
- colliculus facialis (VI)

Striae medullares

Area vestibularis

Tuberculum acusticum

Fourth ventricle



Roof

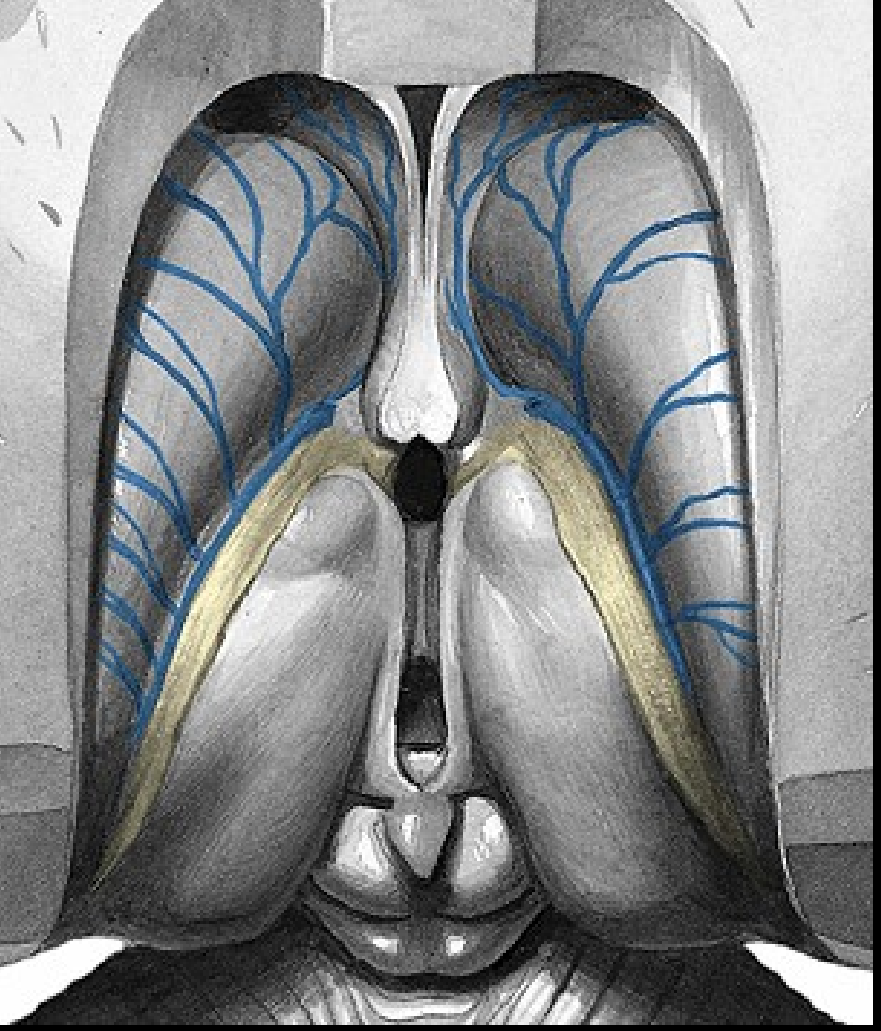
Velum medullare sup.

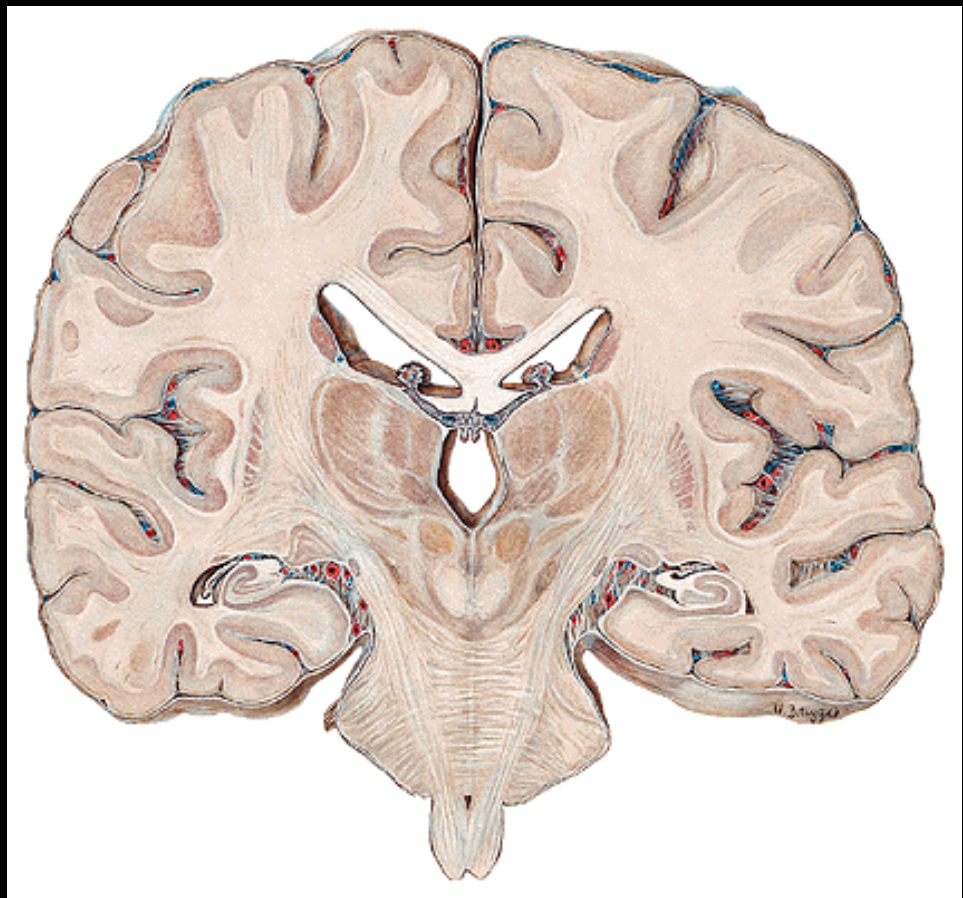
- Fastigium
- Velum medullare inf.

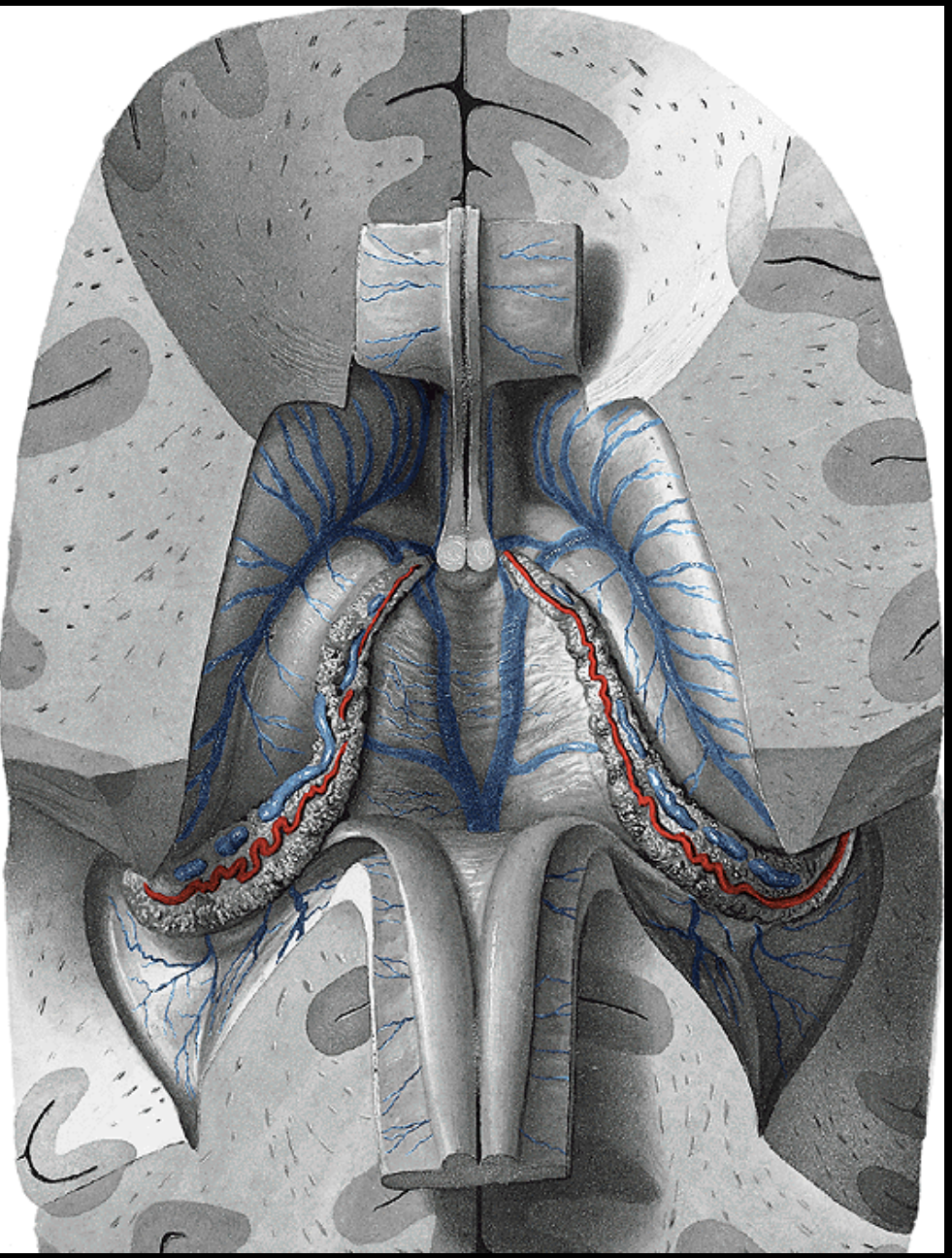
= tela choroidea
(pia mater+plx. choroid.)

Apertura mediana
Aperturae laterales

Aqueductus cerebri – Third ventricle





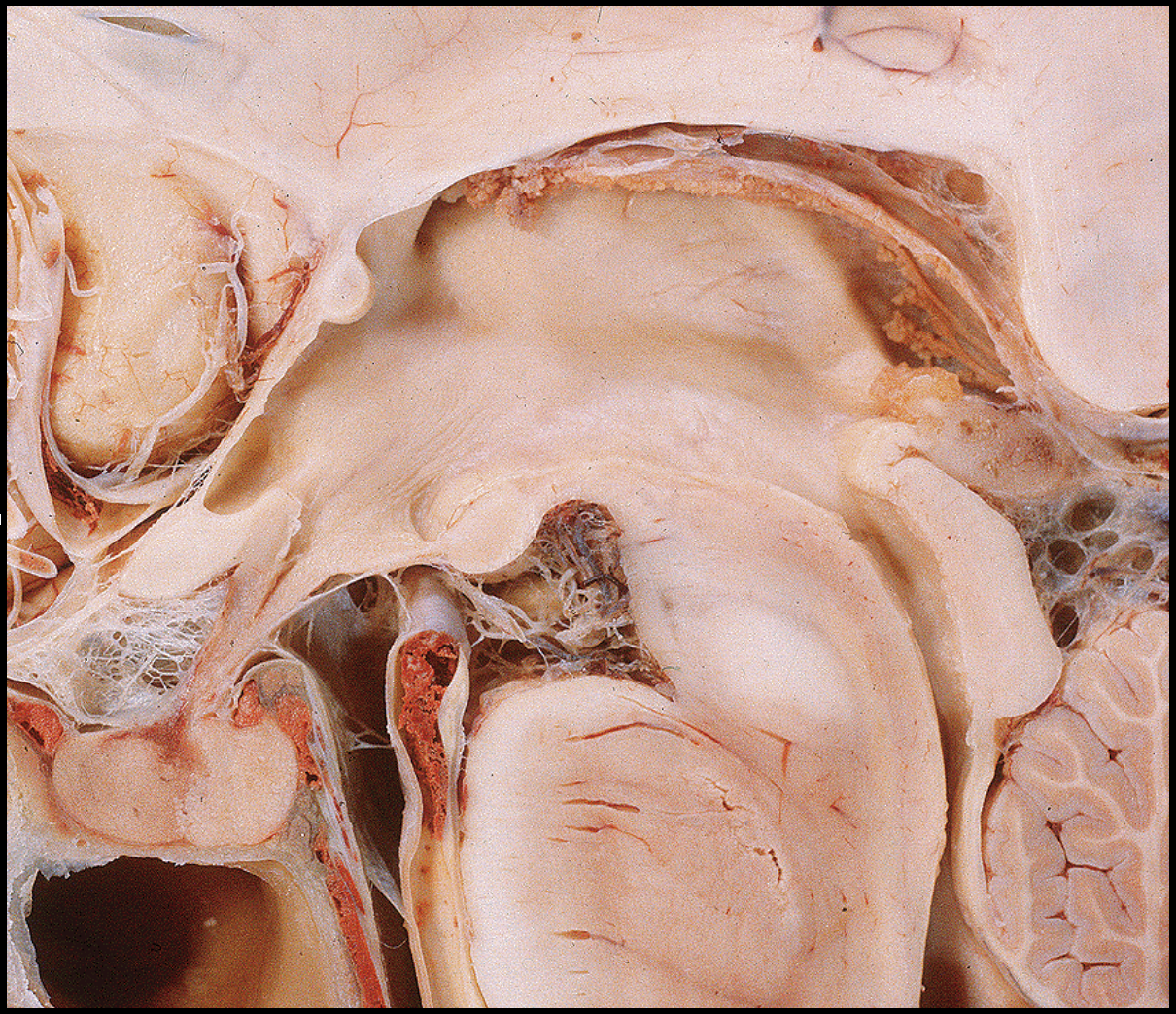


Tela choroidea v. tertii

Tela choroidea v. lateralis

Third ventricle:

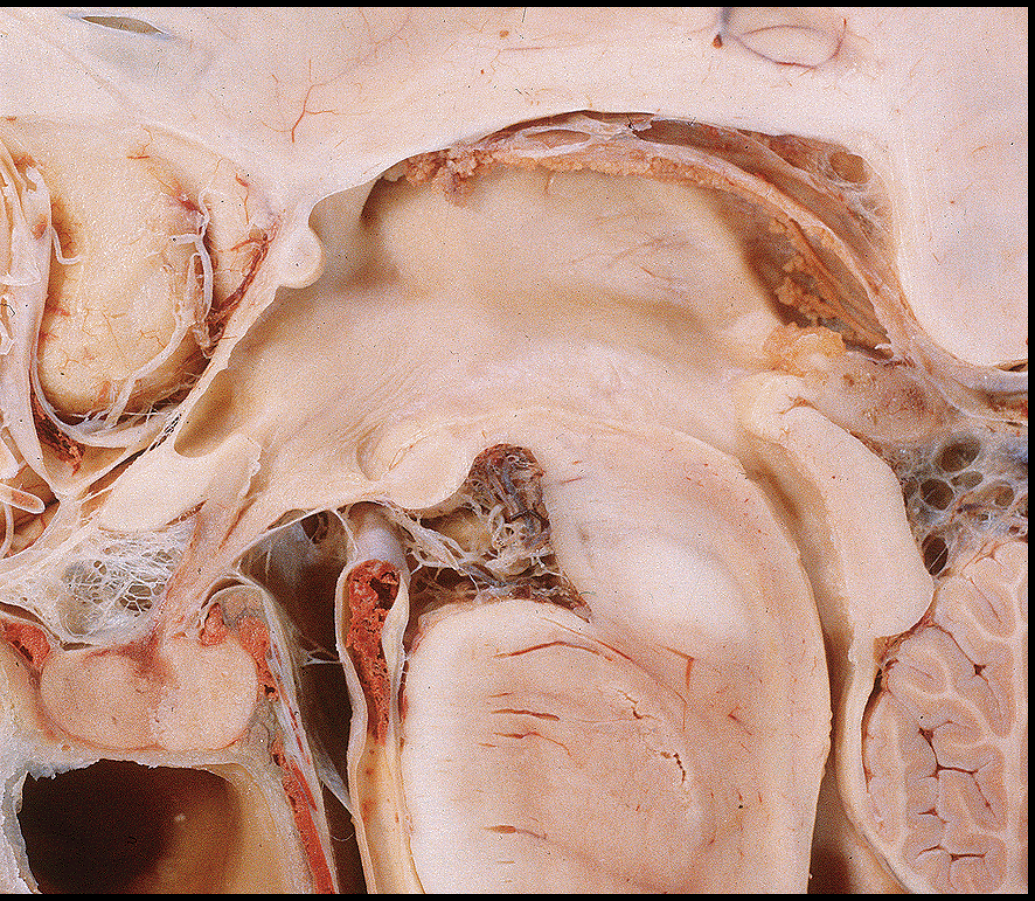
Superior wall: Tela choroidea v. tertii



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

Inferior wall: Chiasma opticum
Infundibulum

Third ventricle:



Posterior wall:

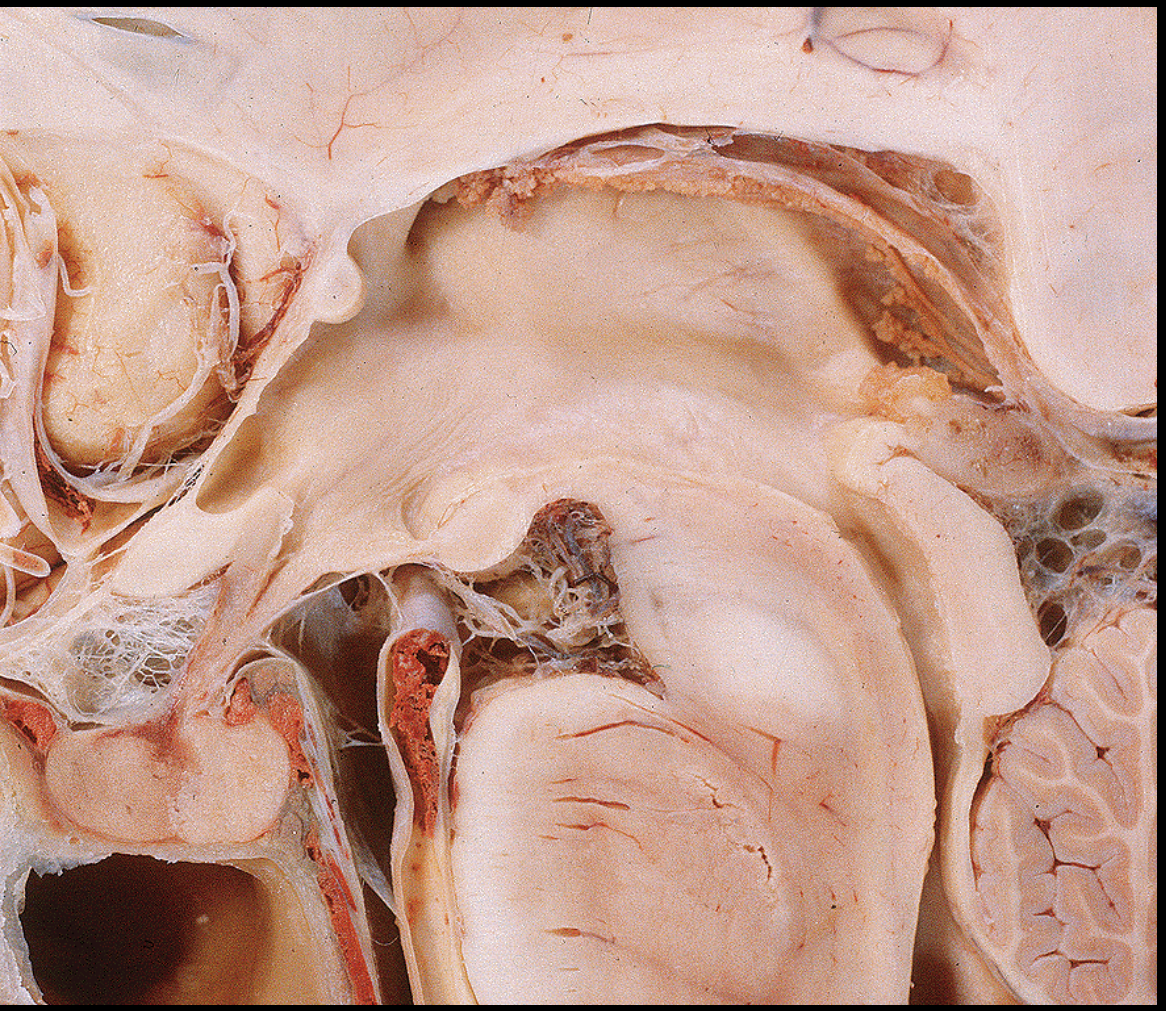
Recessus suprapinealis

Commissura habenularis

Recessus pinealis

Commissura post.

Third ventricle:

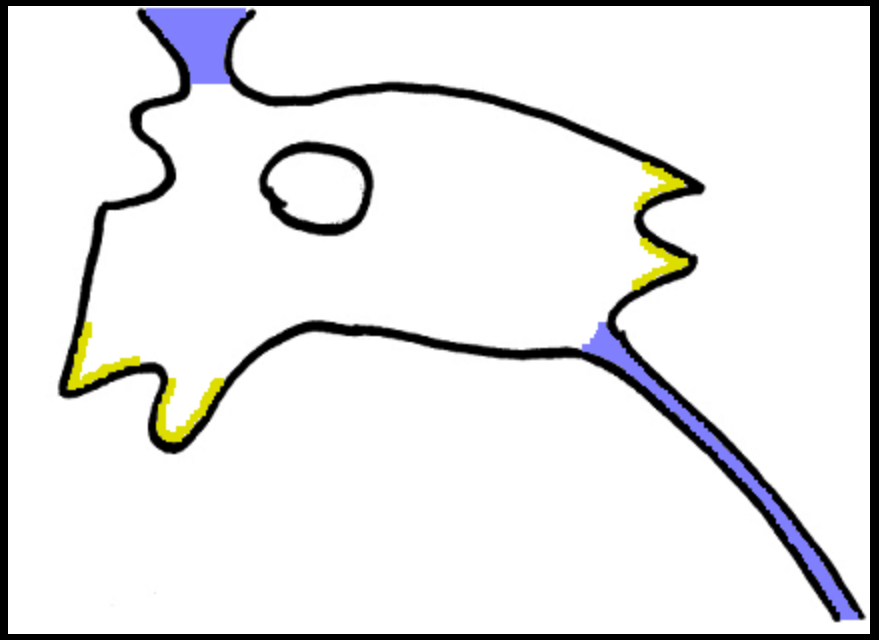


Lateral wall:
Thalamus
Sulcus hypothal.
Hypothalamus

Adhesio interthalamica

Third ventricle:

Foramen interventriculare

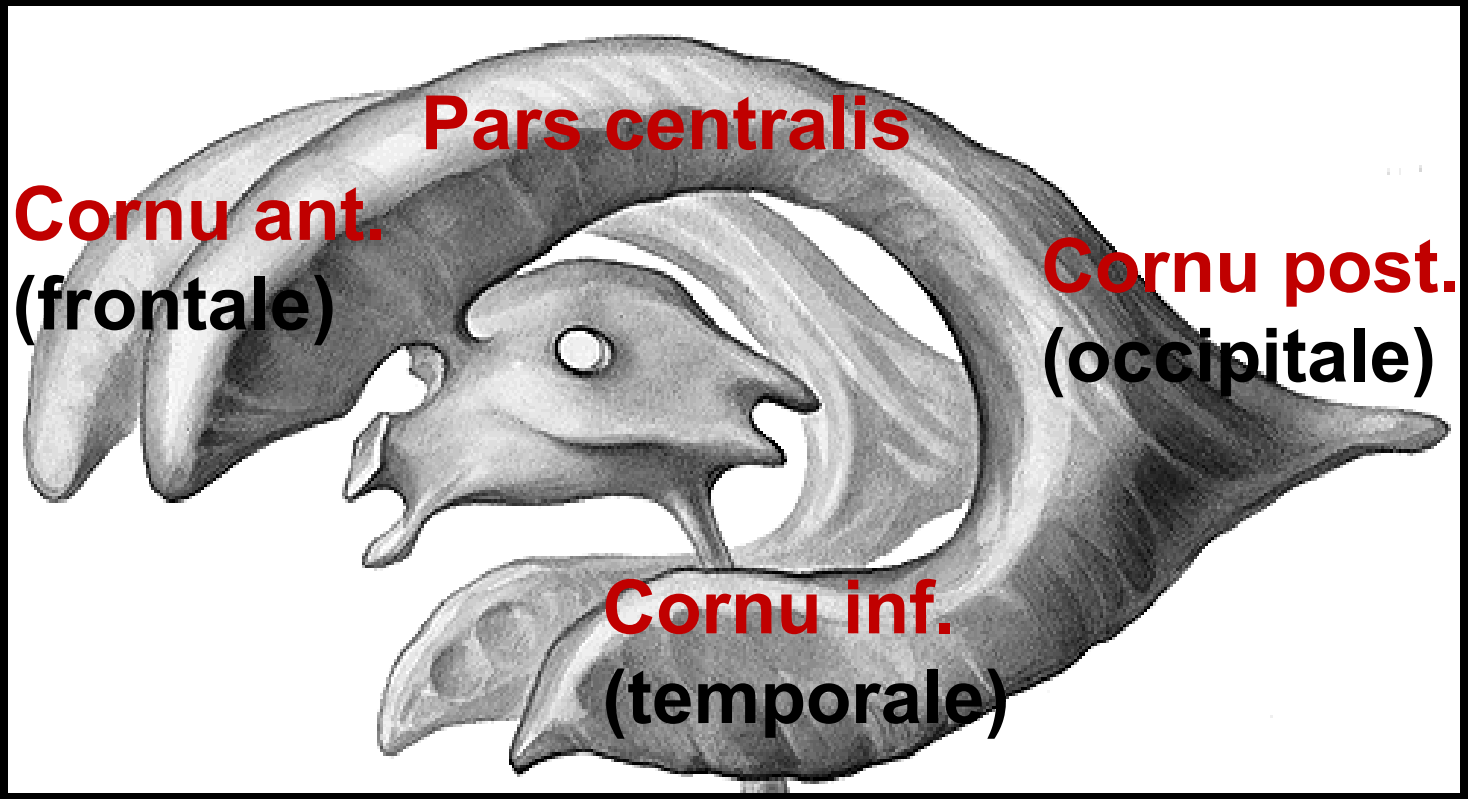


Recessus suprapinealis pinealis

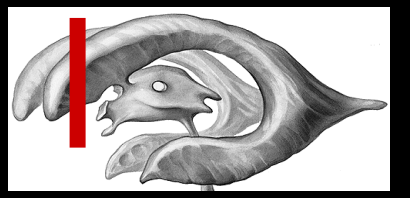
Recessus opticus infundibuli

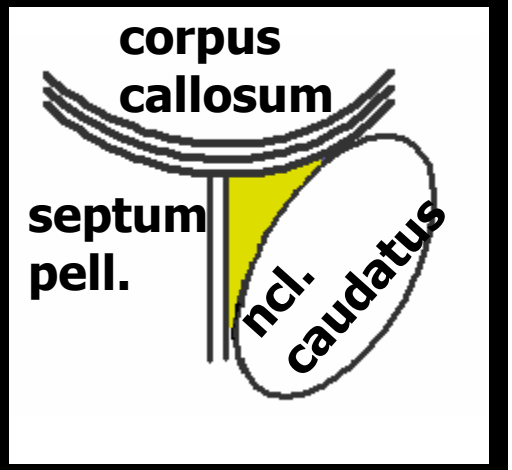
Aqueductus mesencephali

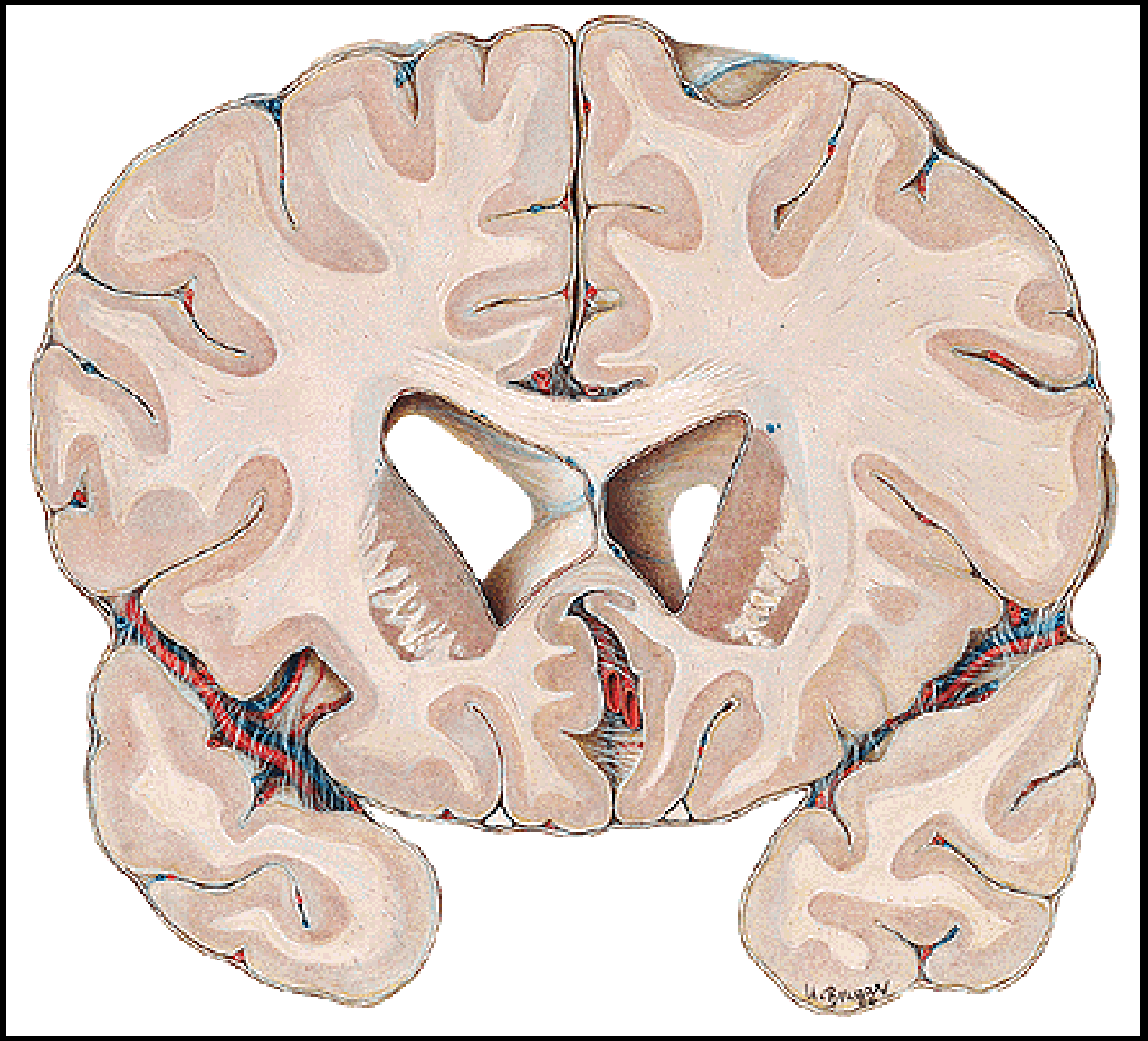
Ventriculus lateralis

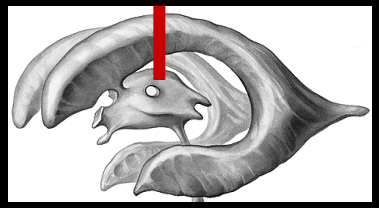


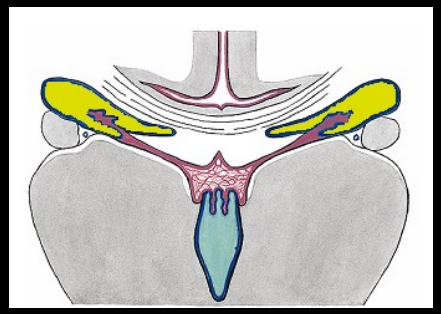
Cornu anterius



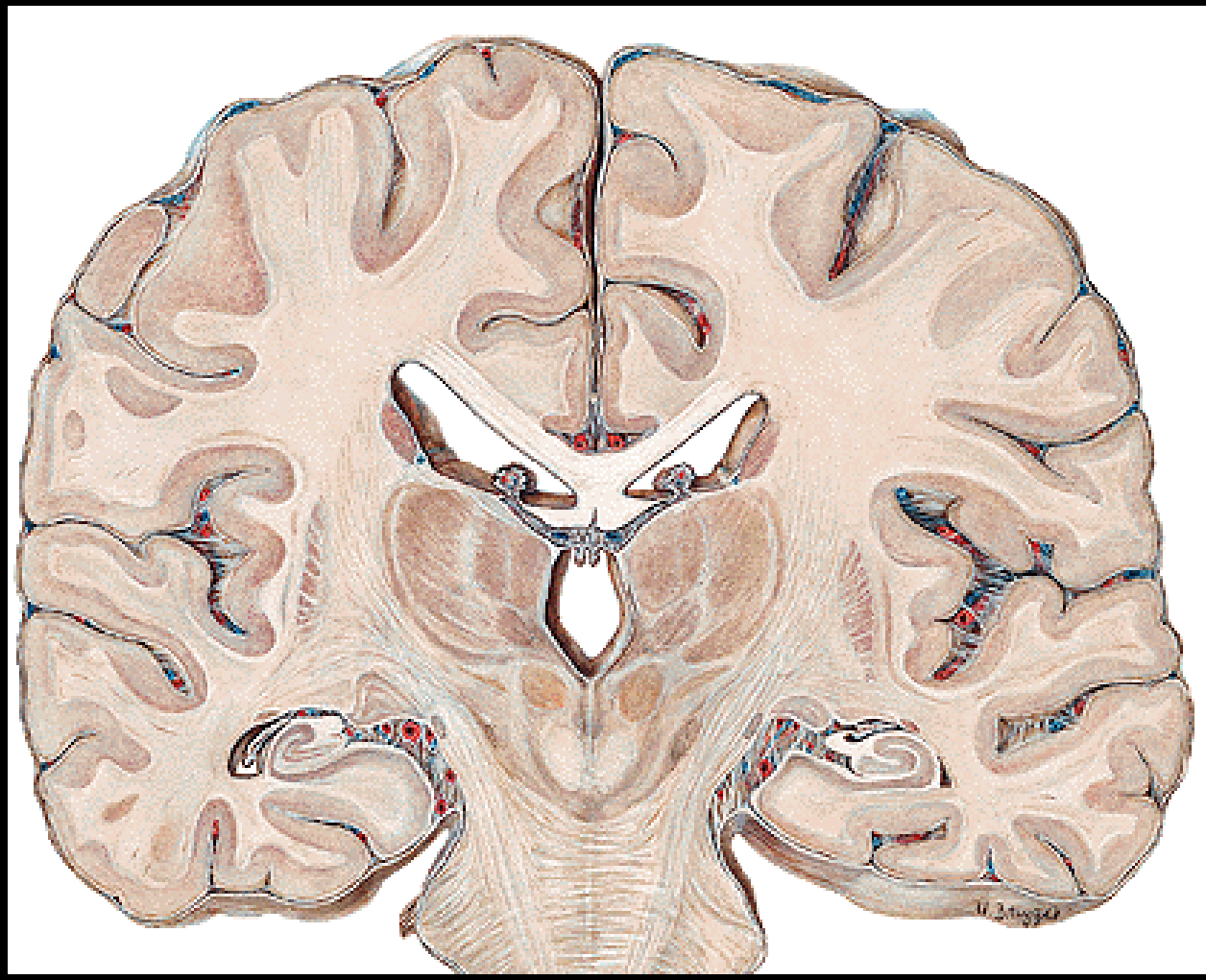








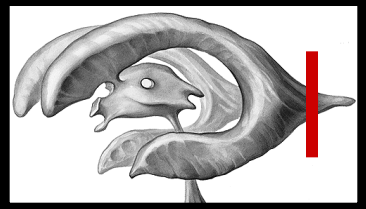
Pars centralis



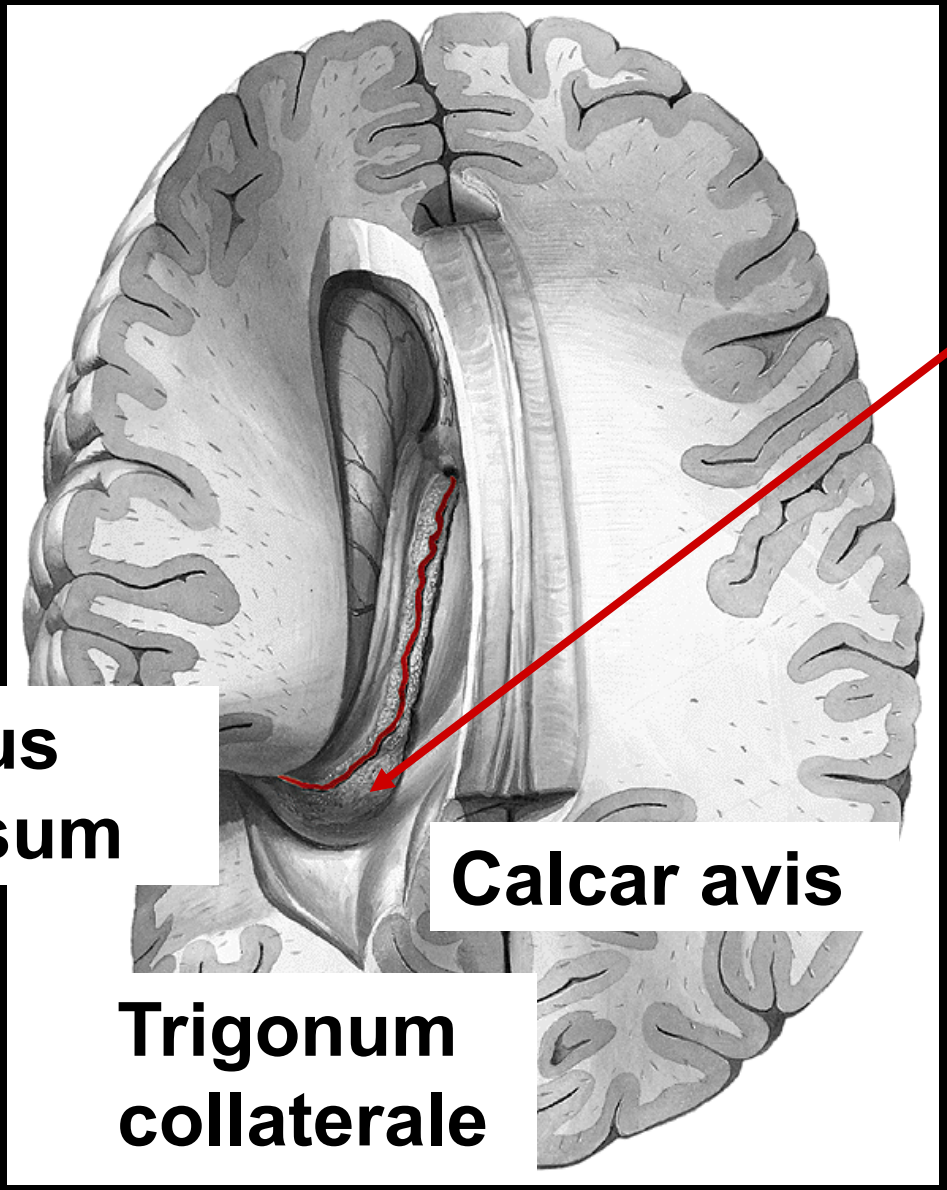
Roof:
Corpus callosum

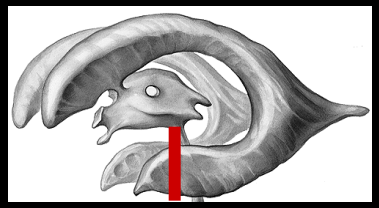
Floor:
Fornix
Plexus choroideus
Thalamus
Stria terminalis
Corpus ncl. caudati

Fissura transversa cerebri

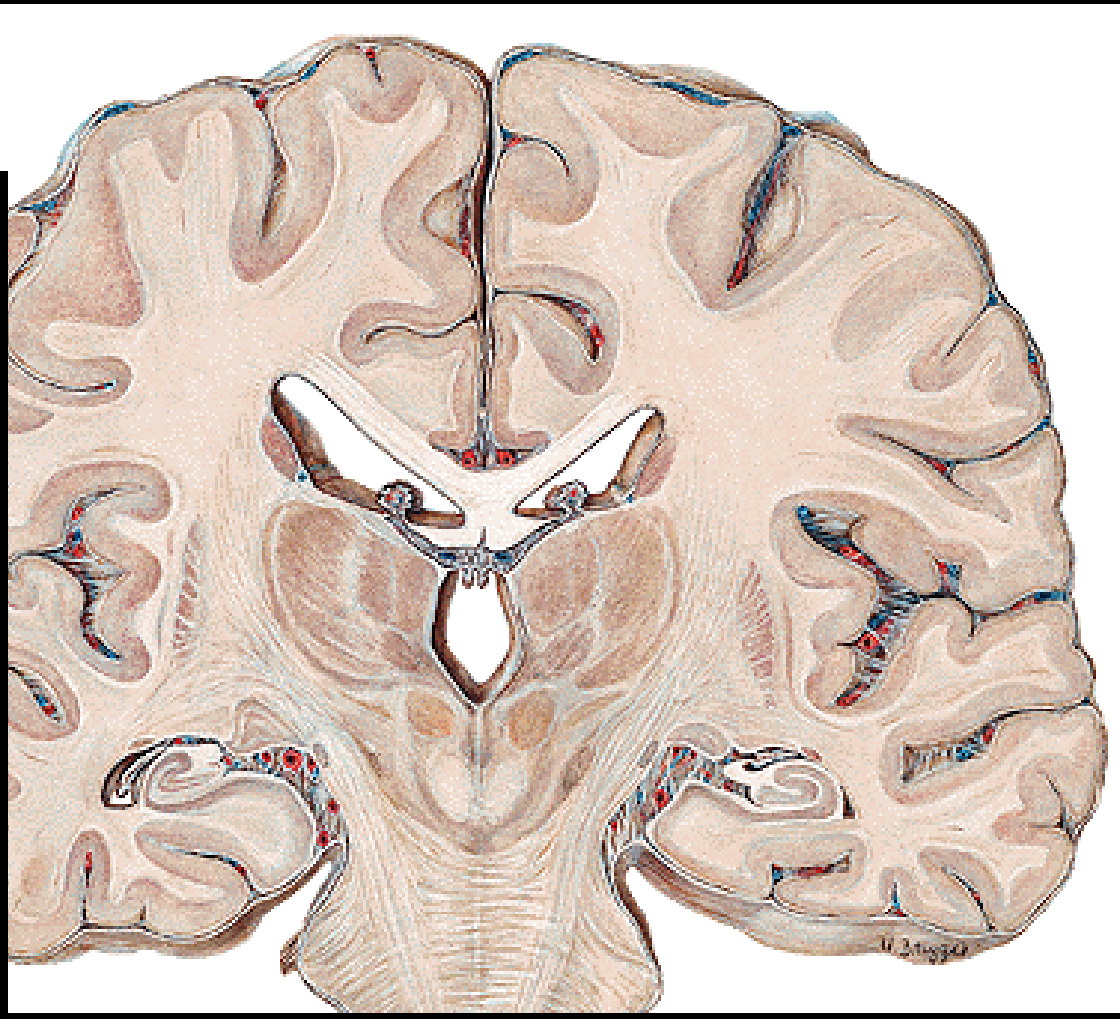


Cornu posterius



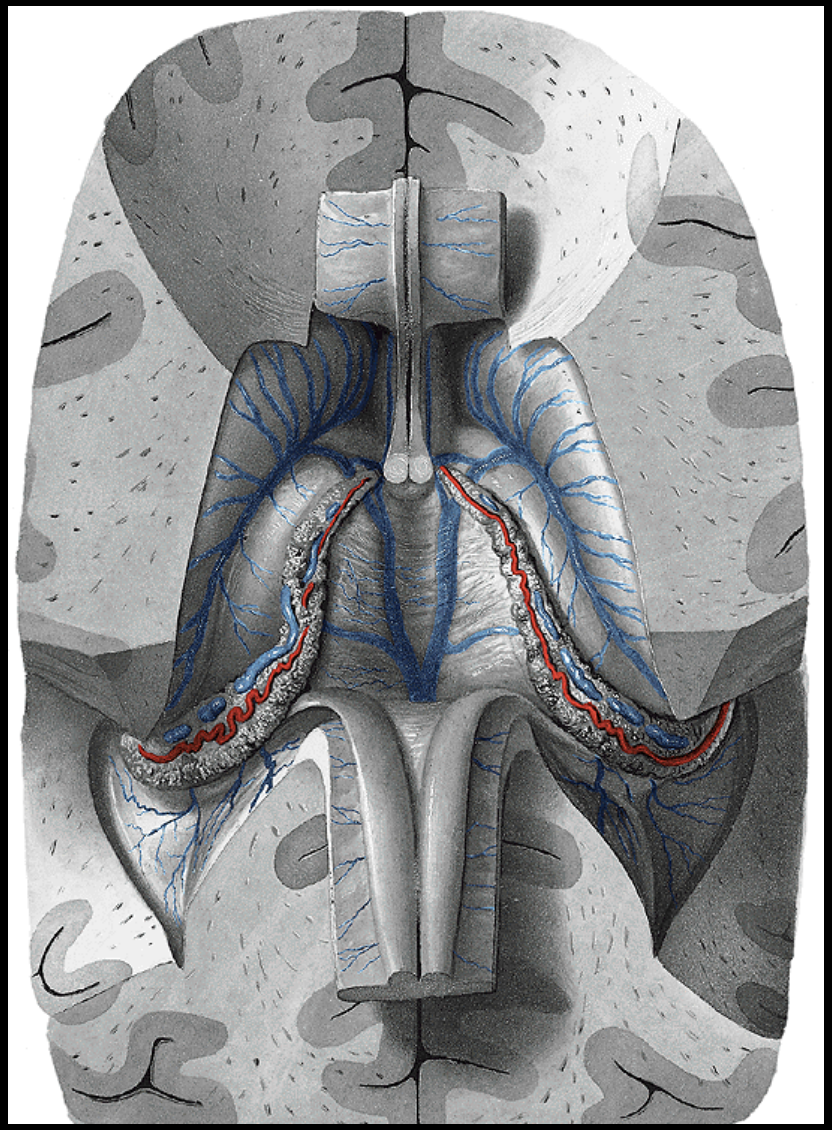


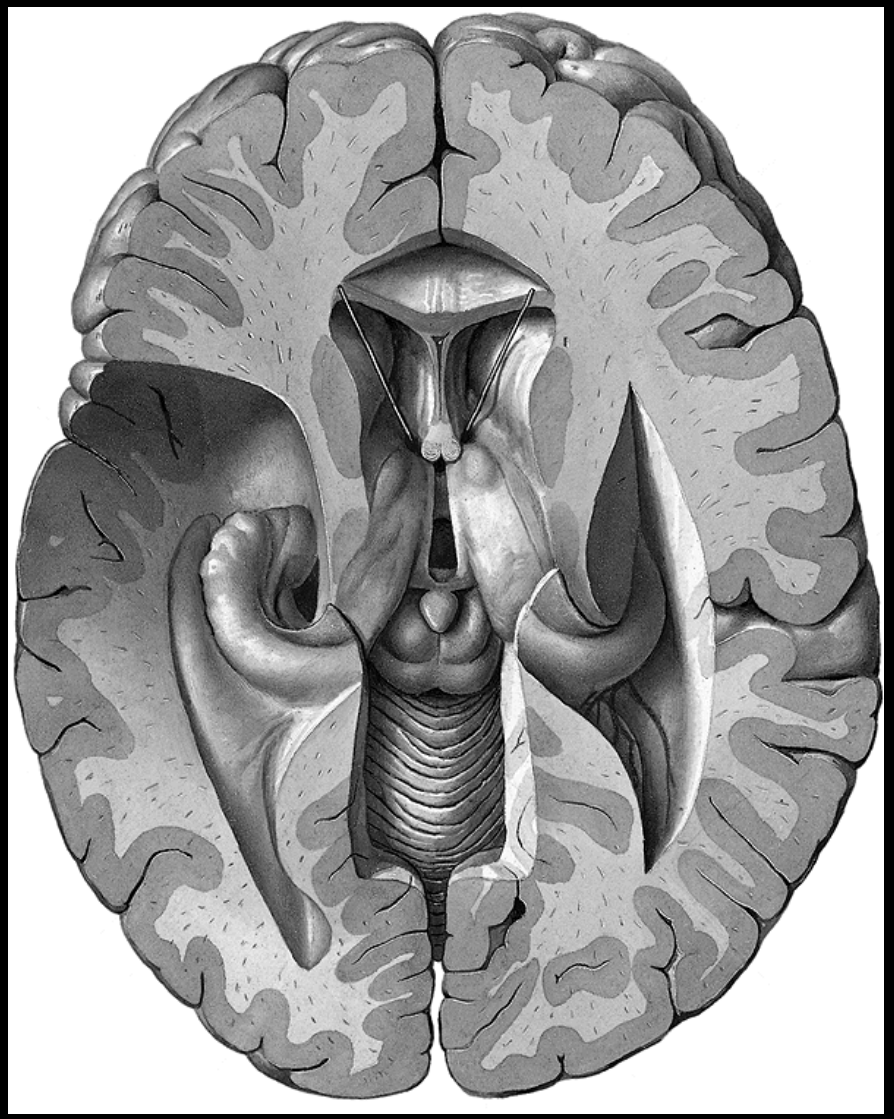
Cornu inferius

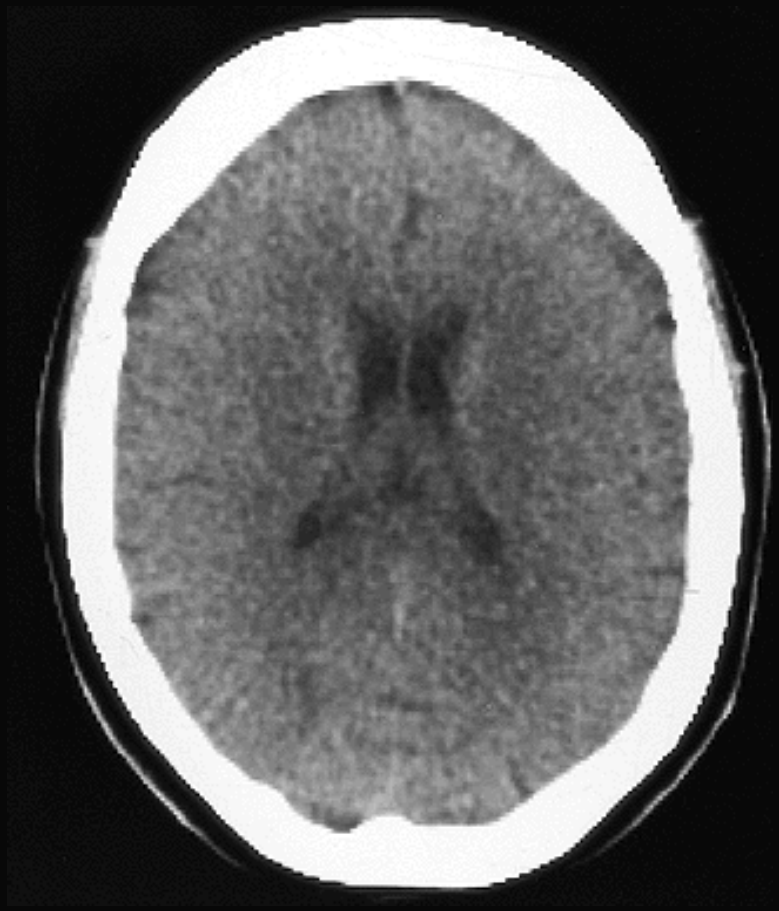


Roof:
Stria terminalis
Cauda ncl. caudati
Corpus callosum

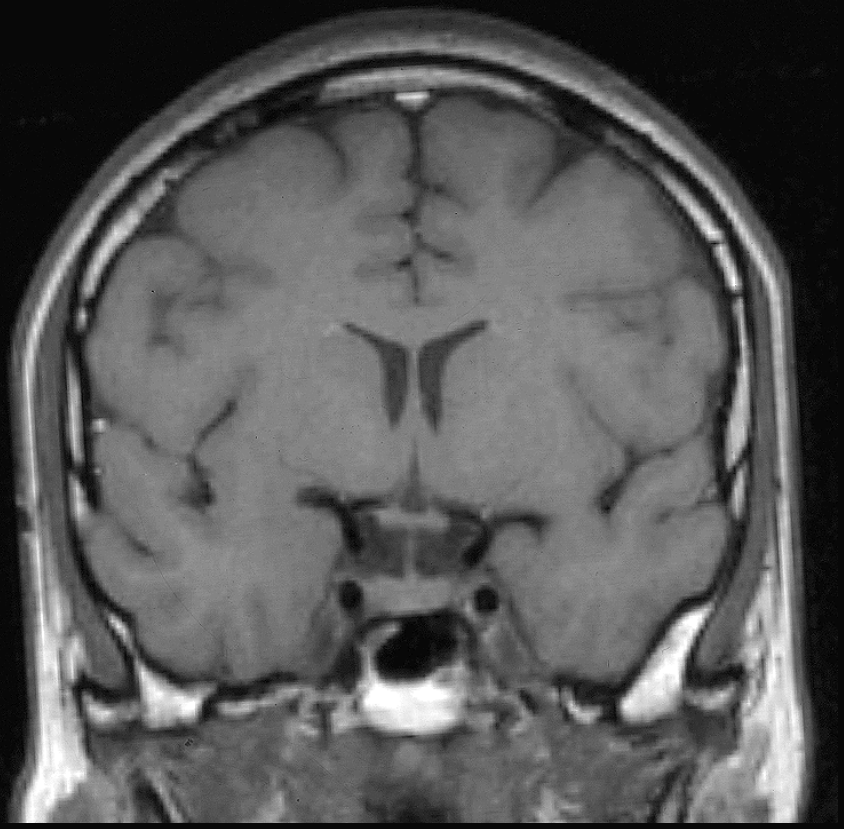
Floor:
Hippocampus
(fimbria hippocampi)
Plexus choroideus
Eminentia collateralis







CT



MRI

Meninges

Calvaria

Potential epidural space

Ektomeninx - dura mater: endosteal, meningeal layers (pachymeninx)

Potential subdural space

Endomeninx (leptomeninx)

arachnoid mater

Subarachnoid space(CSF)

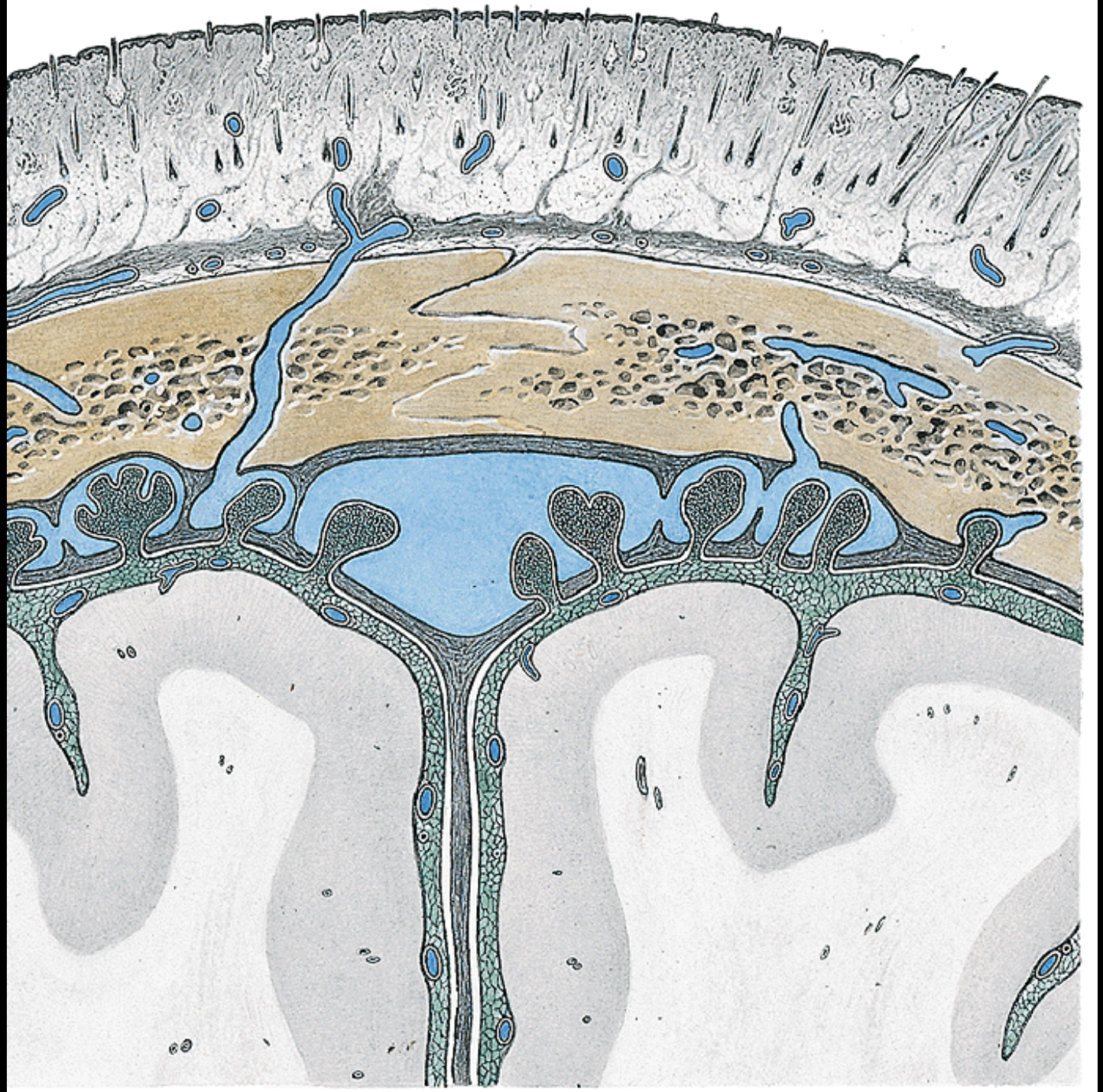
pia mater

Cranial meninges

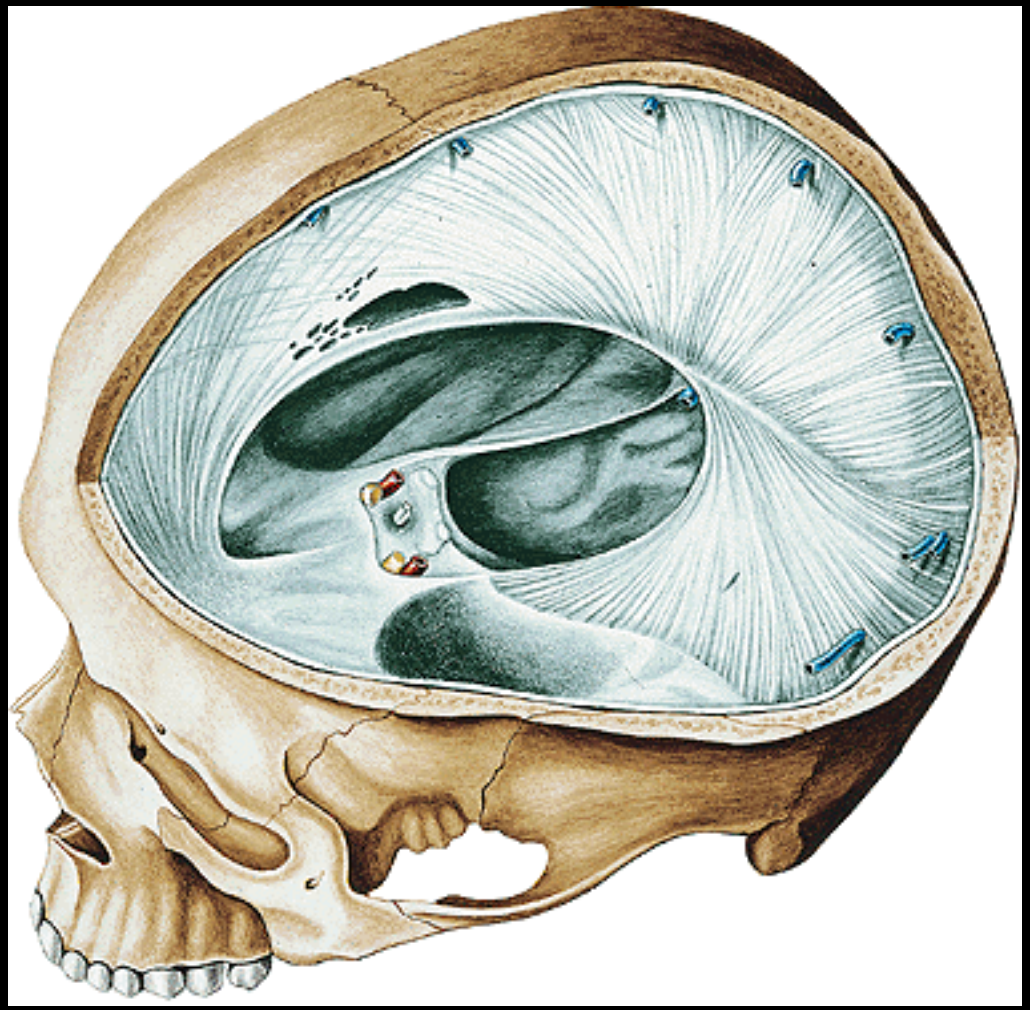
Dura mater

tough layer of fibrous tissue fused with the endosteum of the skull

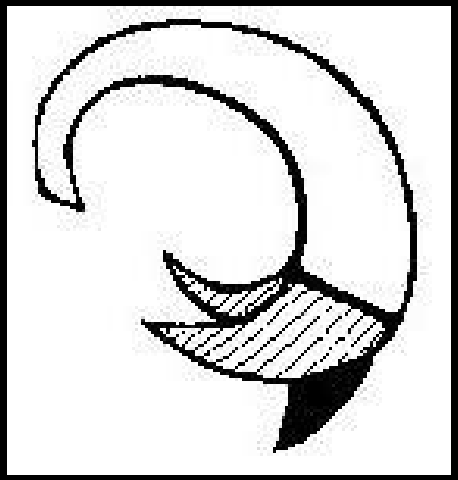
- contains venous sinuses
- dural folds extend into the cranial cavity and help stabilize the brain



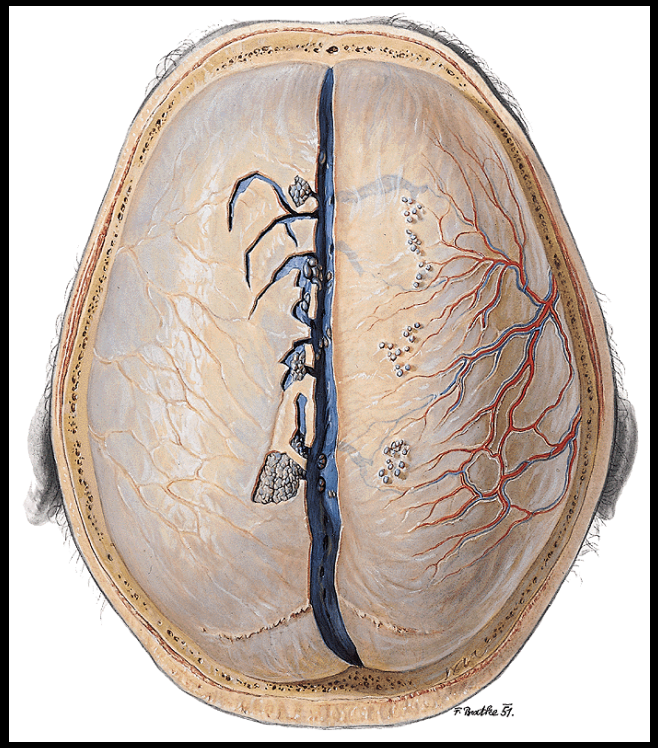
Dural folds



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



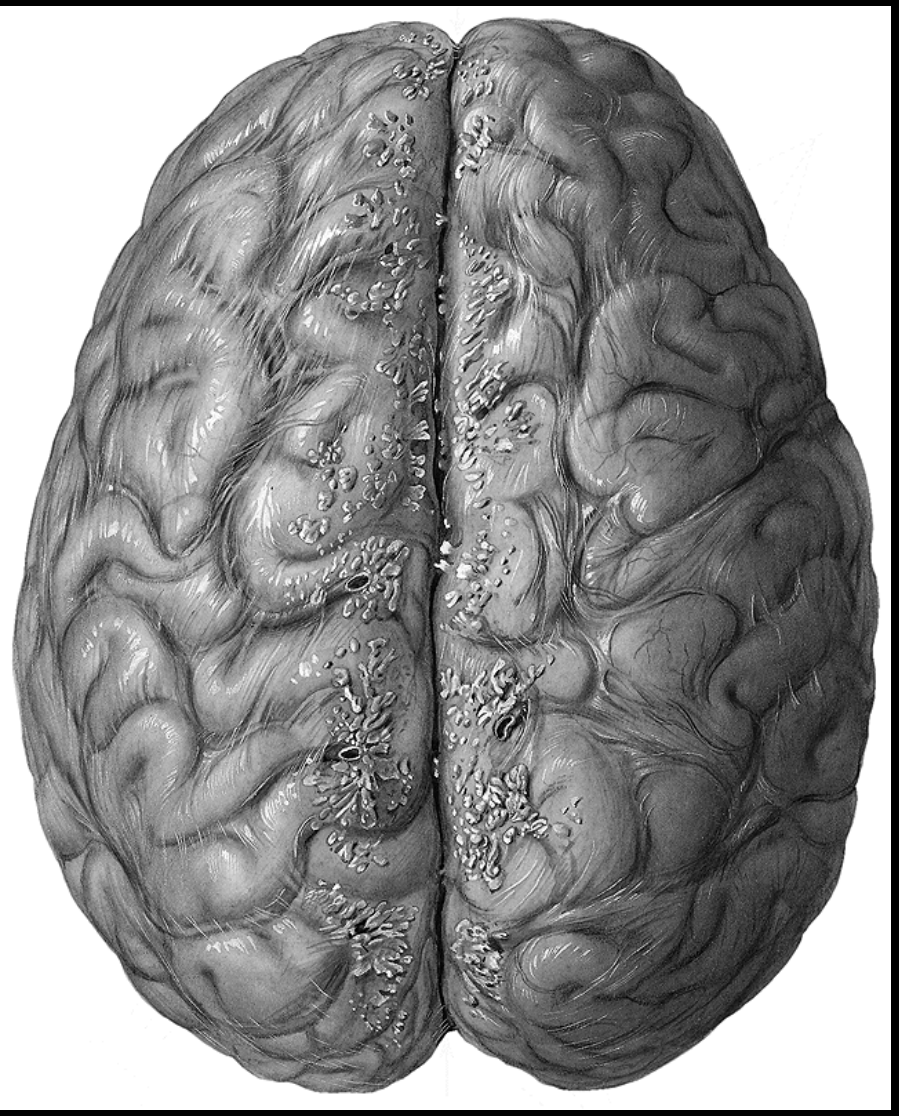
Blood and nerve supply of the dura mater



Aa. meningeae
From:
a. ethm. ant. – ant. fossa
a. maxillaris – middle fossa
a. phar. asc. – posterior fossa
Veins are tributaries of the dural sinuses

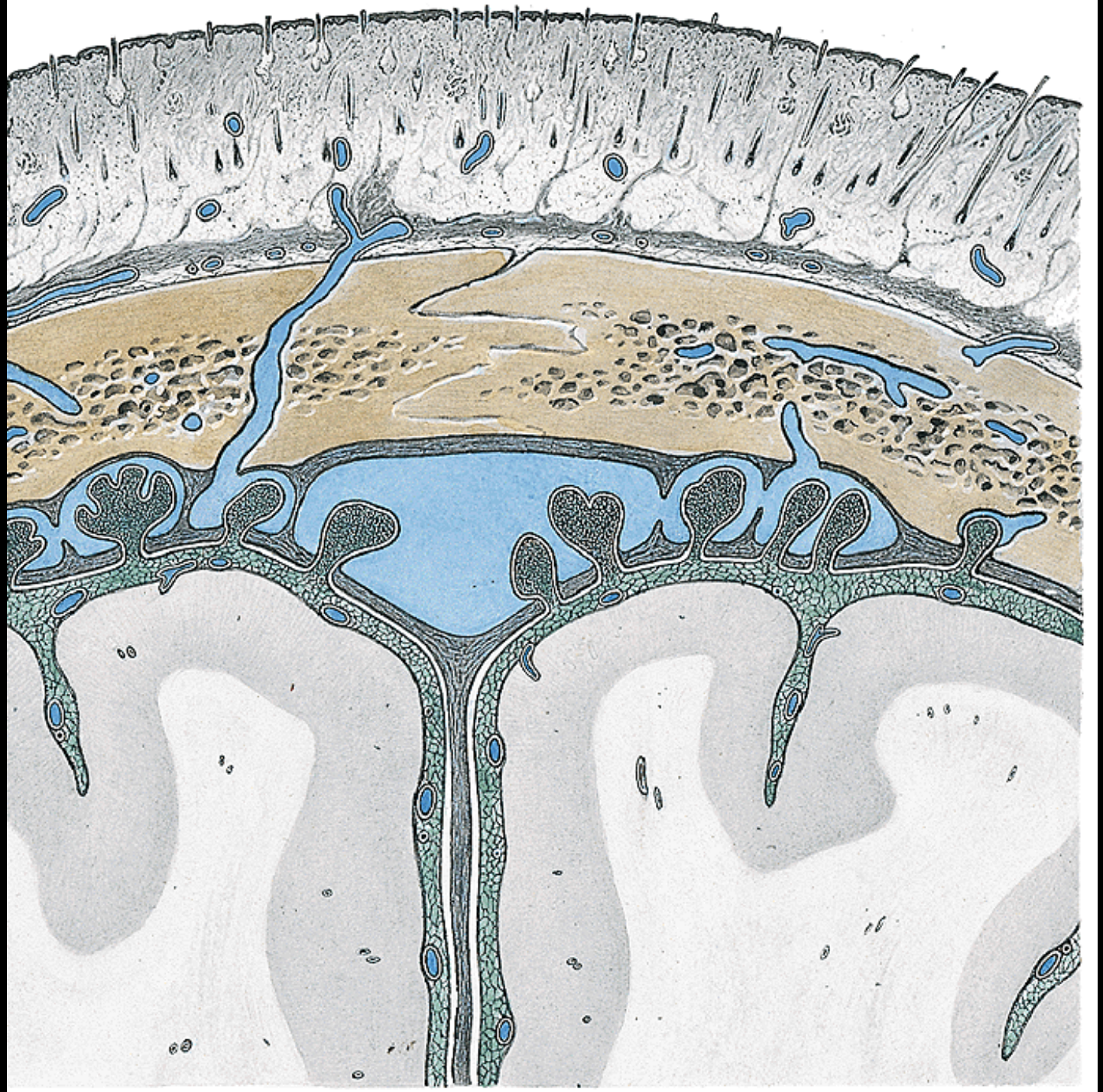
CN V:
supratentorial compartment
Spinal nerves (C1 - C3) **CN X:**
infratentorial compartment

Arachnoid mater

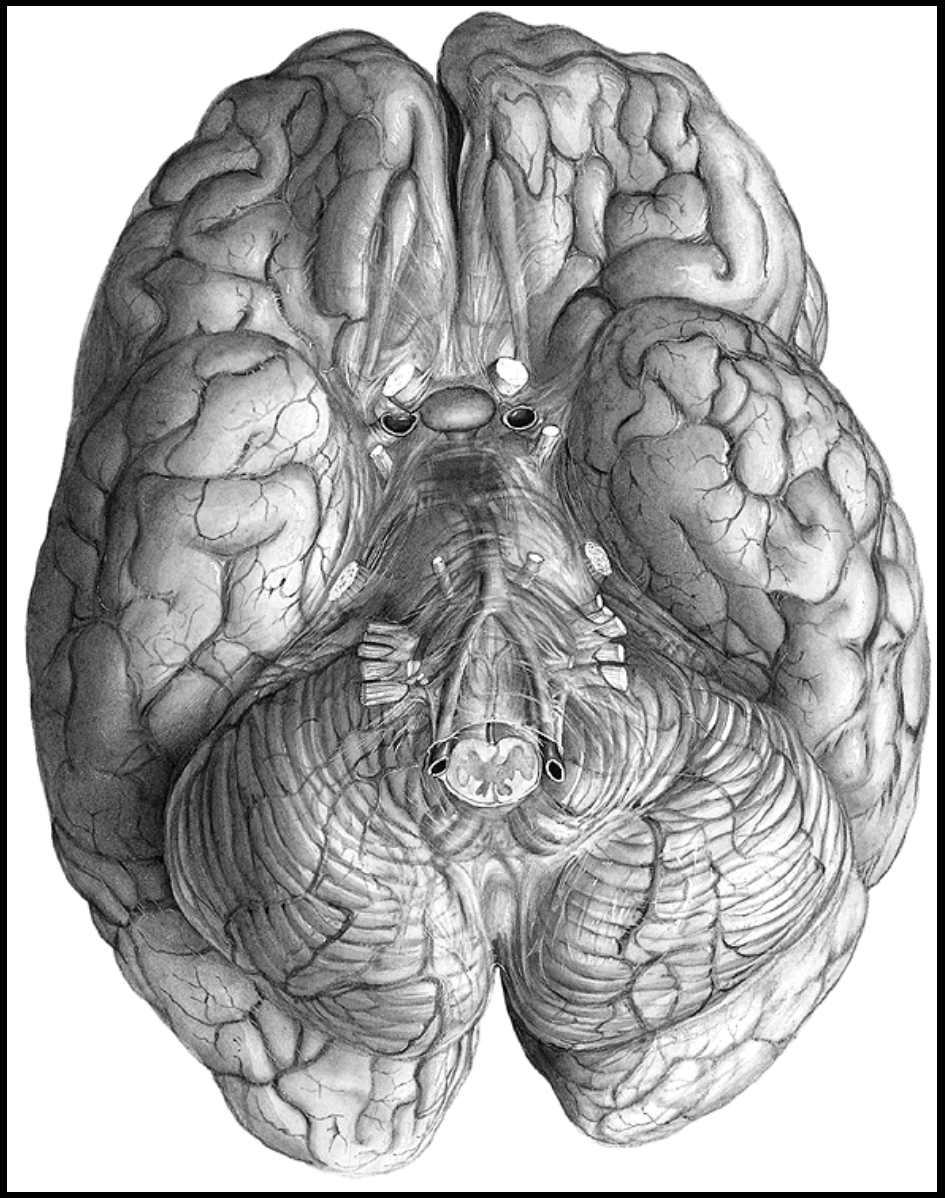


- Thin avascular delicate layer
- It passes over sulci of the brain
- Pinhead pouches project through the dural wall of the major venous sinuses -

Granulationes arachnoideales - transfer of CSF to the venous system



Pia mater

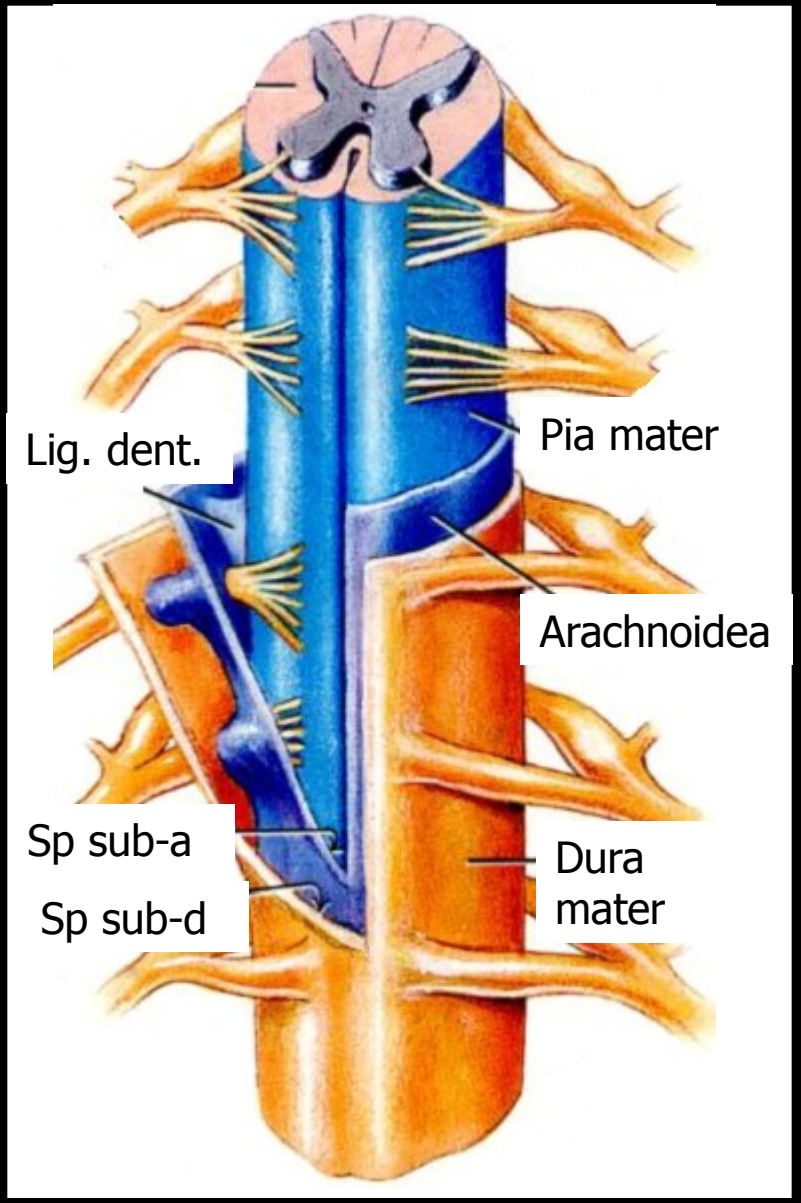


Vascular, enters sulci of the brain

Cisternae subarachnoideales:

- chiasmatis
- fossae lat. cerebri
- interpeduncularis
- cerebellomedullaris

Meninges of the spinal cord

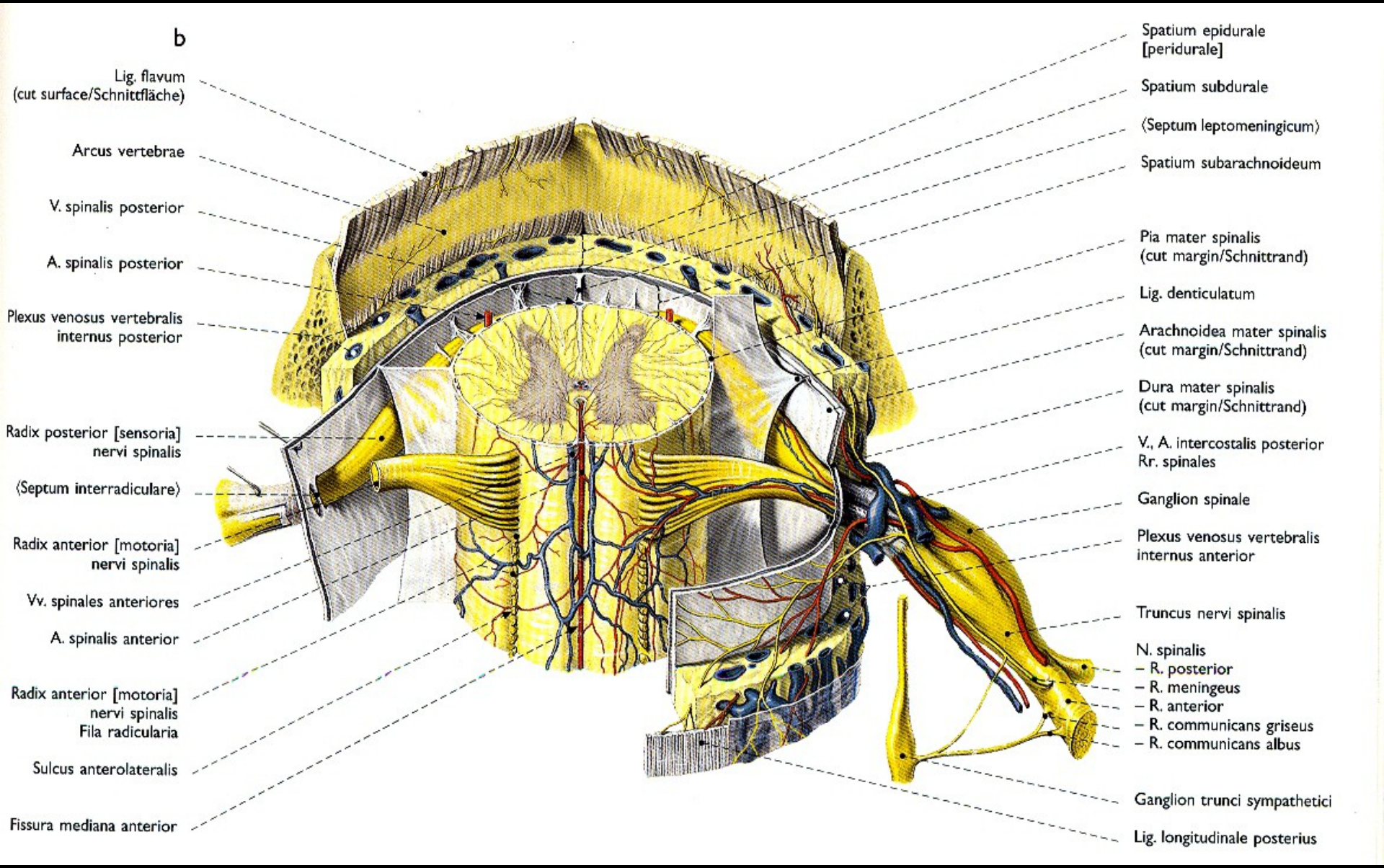


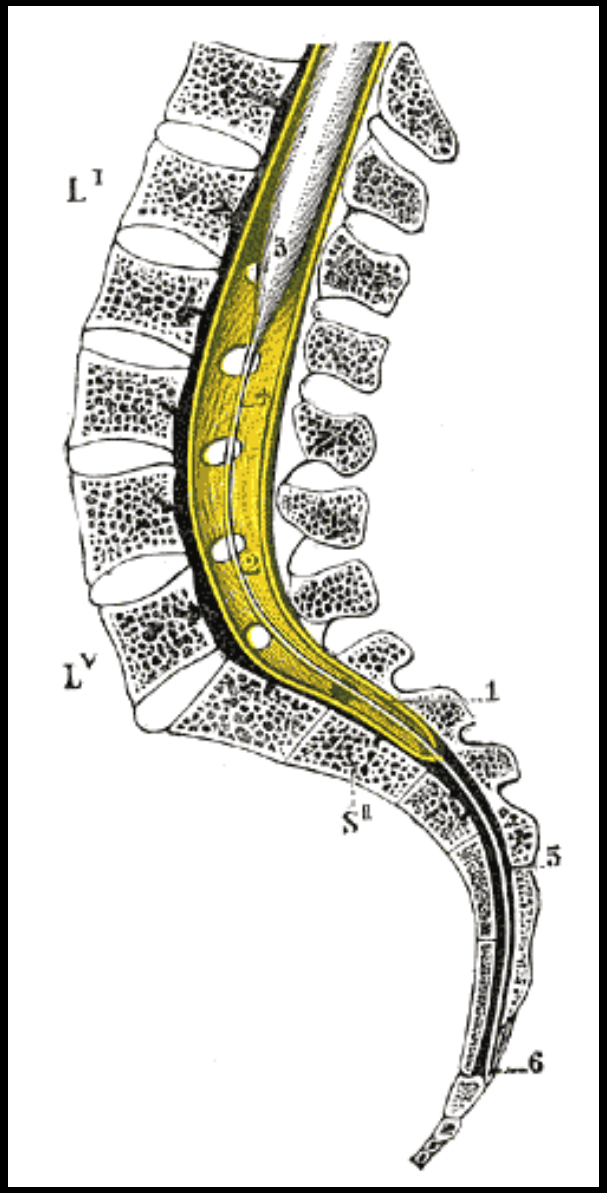
Epidural space (Spatium epidurale)
Dura mater spinalis

Subdural space (Spatium subdurale)
Arachnoidea spinalis

Subarachnoid space (Spatium subarachnoideum)
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/Schnittrand)
Lig. denticulatum
Arachnoidea mater spinalis (cut margin/Schnittrand)
Dura mater spinalis (cut margin/Schnittrand)
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)

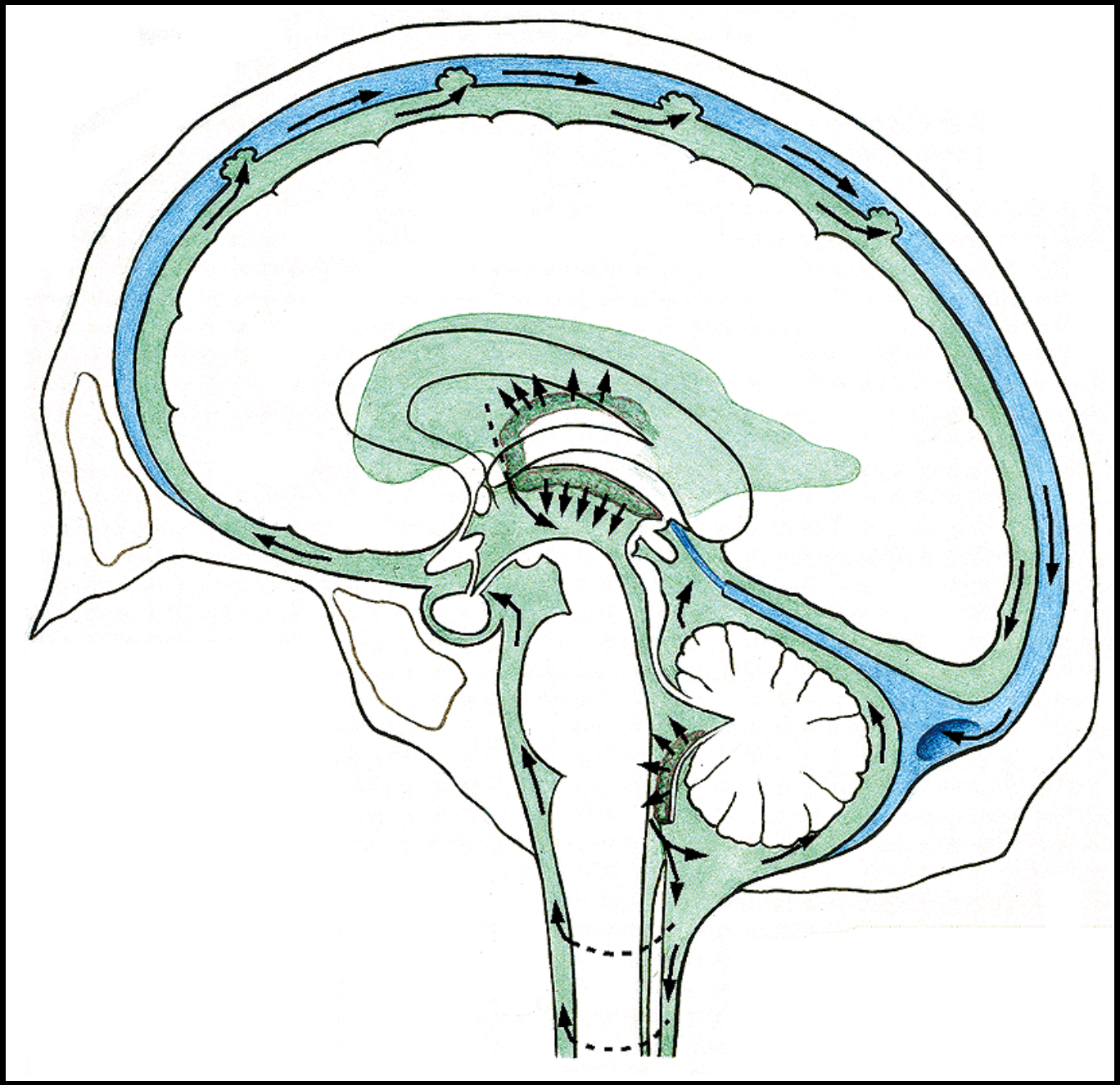
Clear, colorless fluid,150 mL, secreted at the rate of 400-500 mL daily

Produced by the choroid plexuses of ventricles

Supports the brain and spinal cord, maintains a uniform pressure around them.

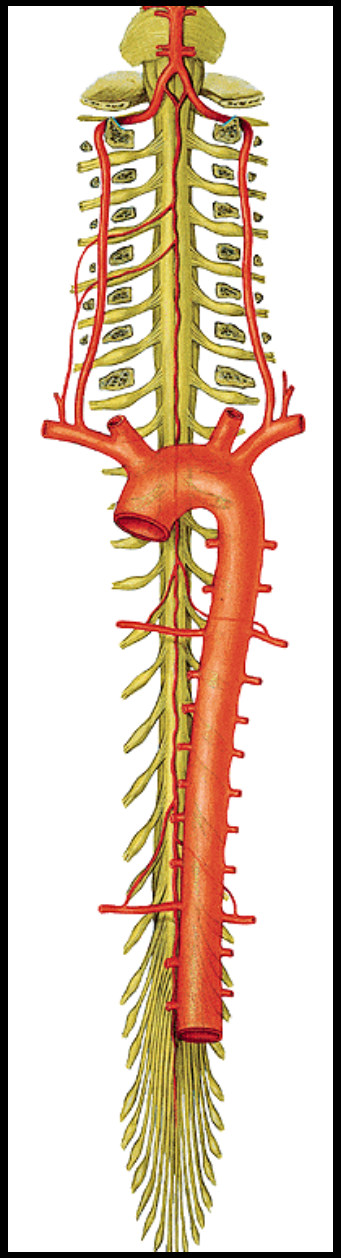
Circulation:

Lateral ventricles – for. interventriculare – 3rd ventricle – aquaeductus cerebri – 4th 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.

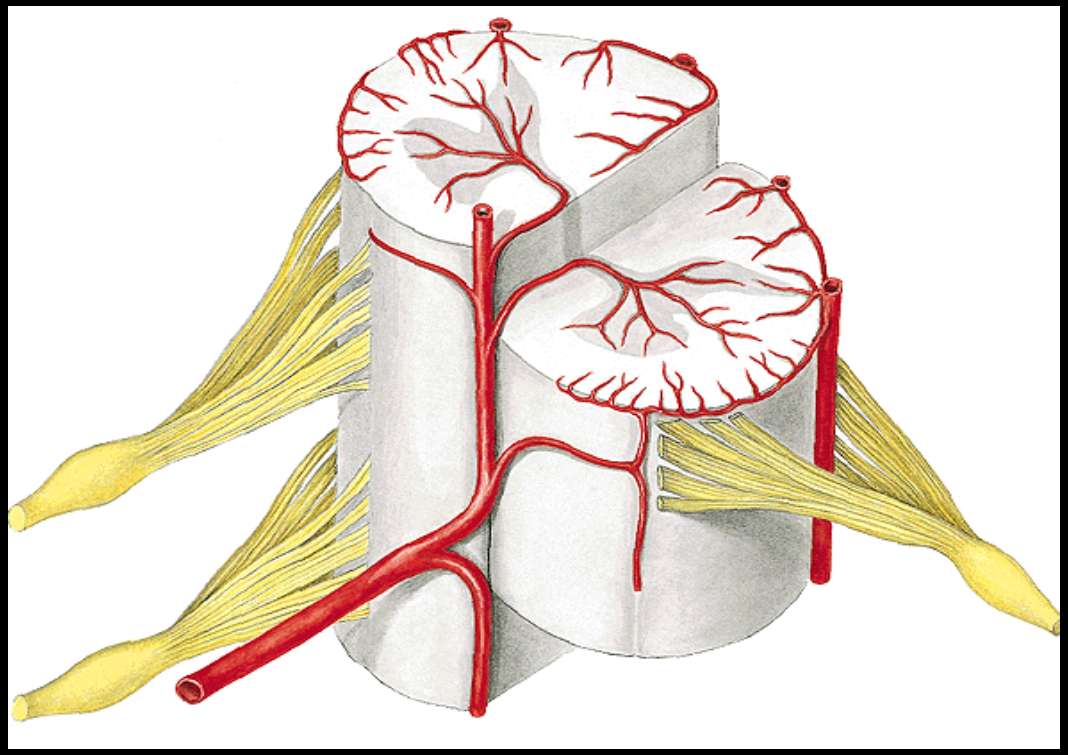
aa. intercostales post.

aa. lumbales

a. iliolumbalis

a. sacralis lat.

a. sacralis mediana



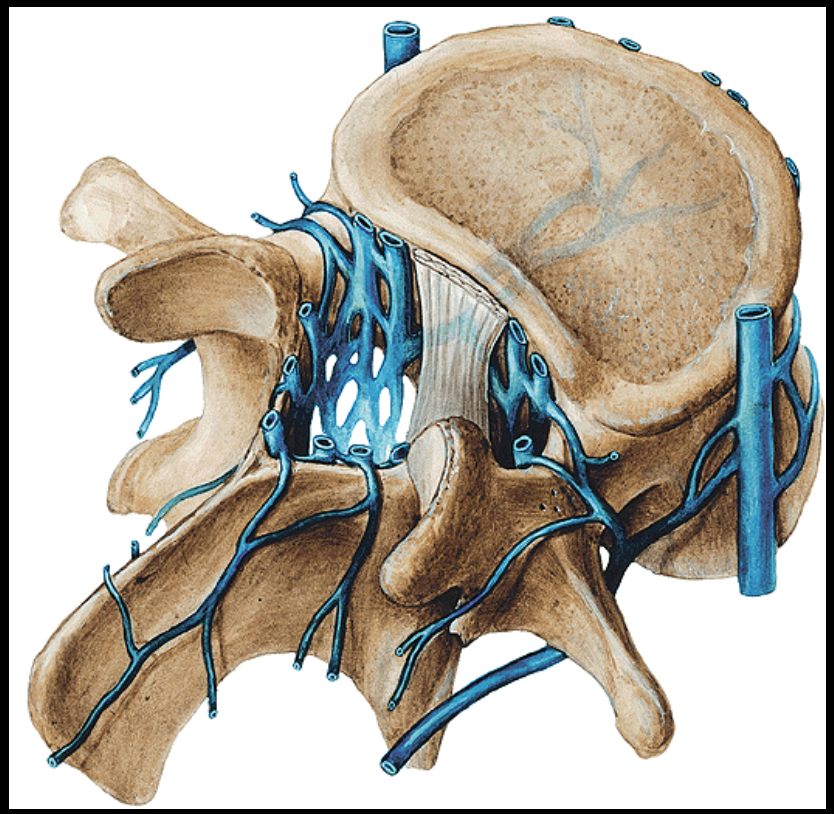
Rr. spinales:

aa. radiculares ant. et post.:

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

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

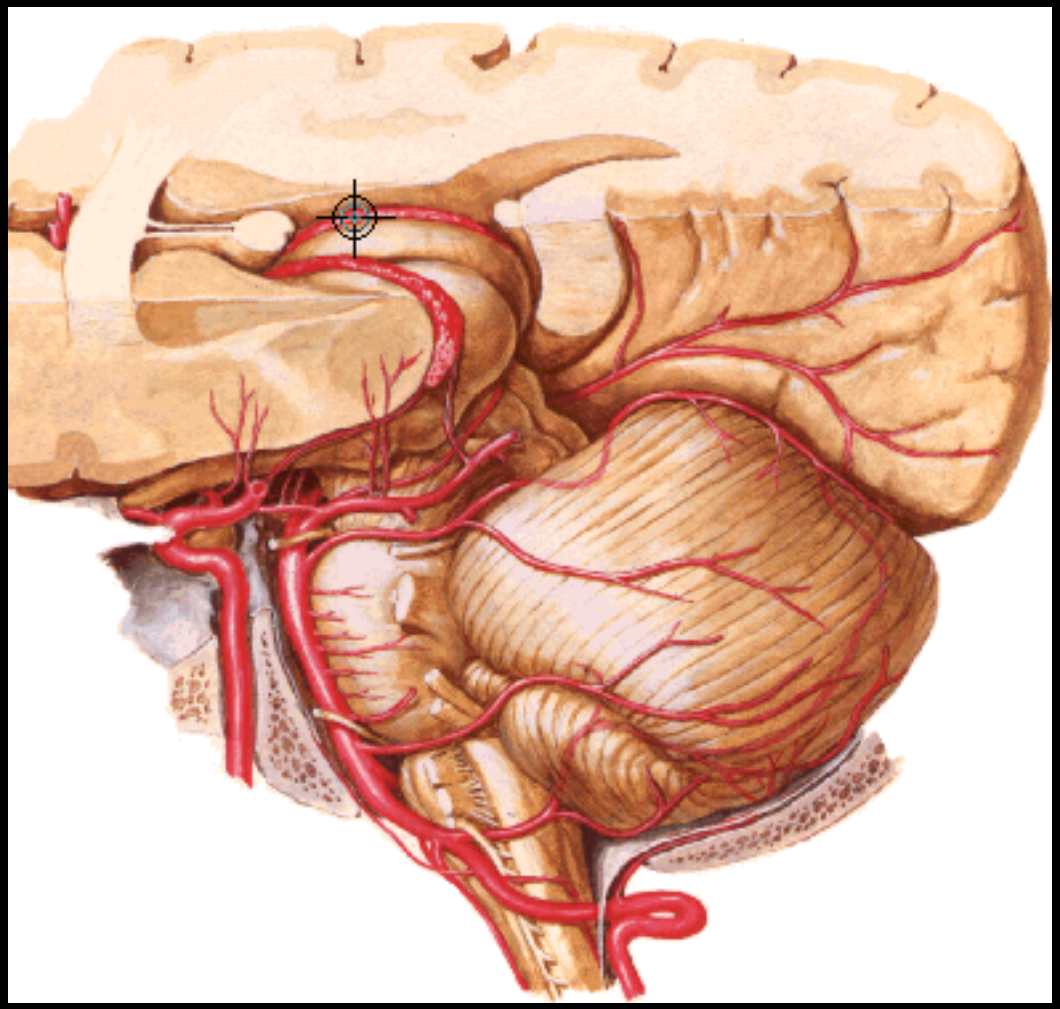
Vv. spinales



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

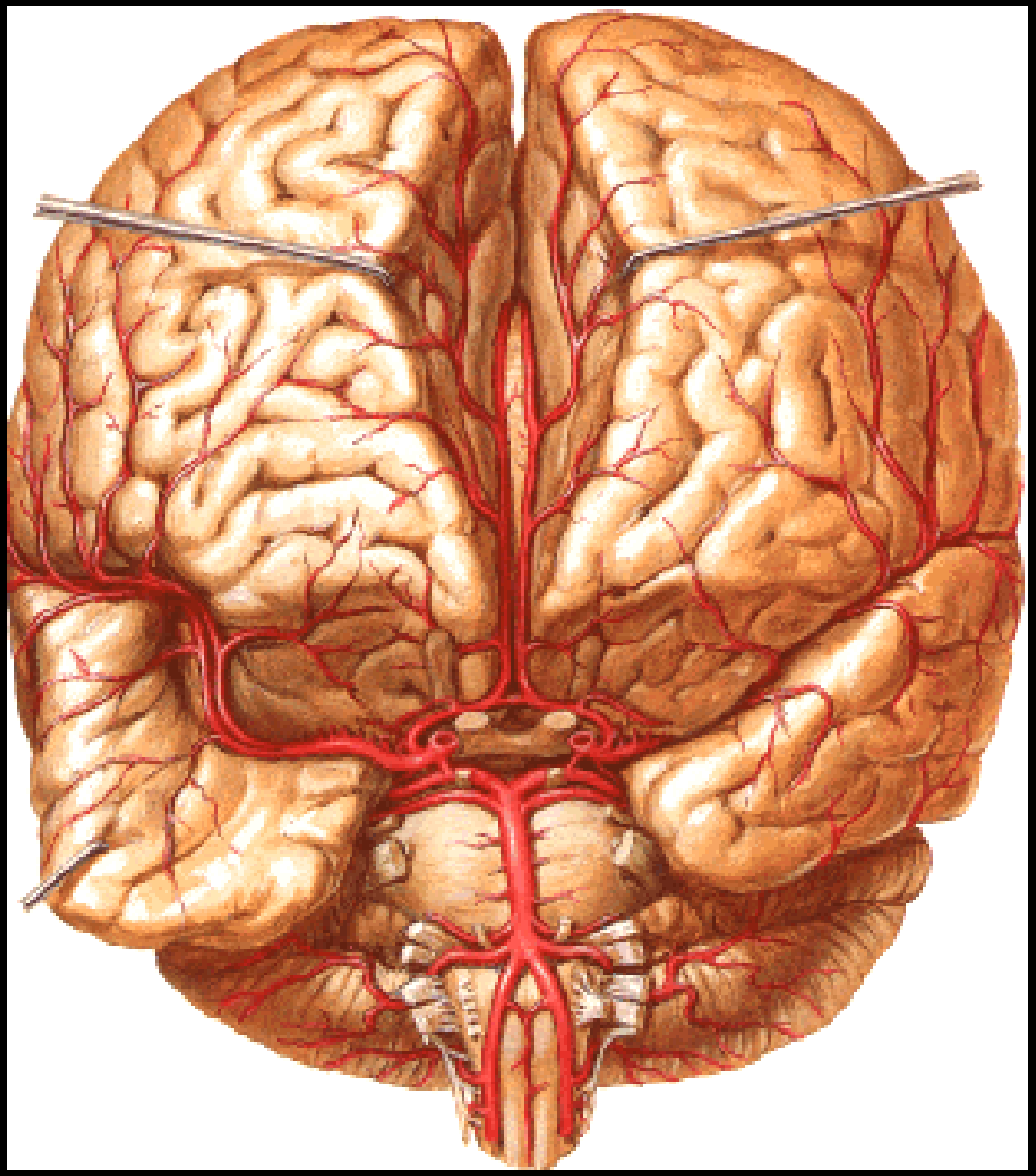


Aa. cerebri post.
Aa. cerebelli sup.
Aa. pontis
Aa. cerebelli inf. ant.
A. basilaris

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

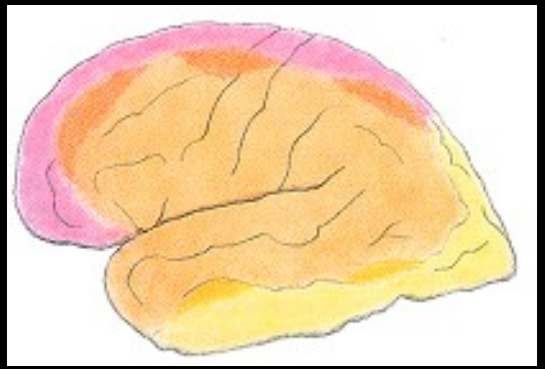
Aa. vertebrales

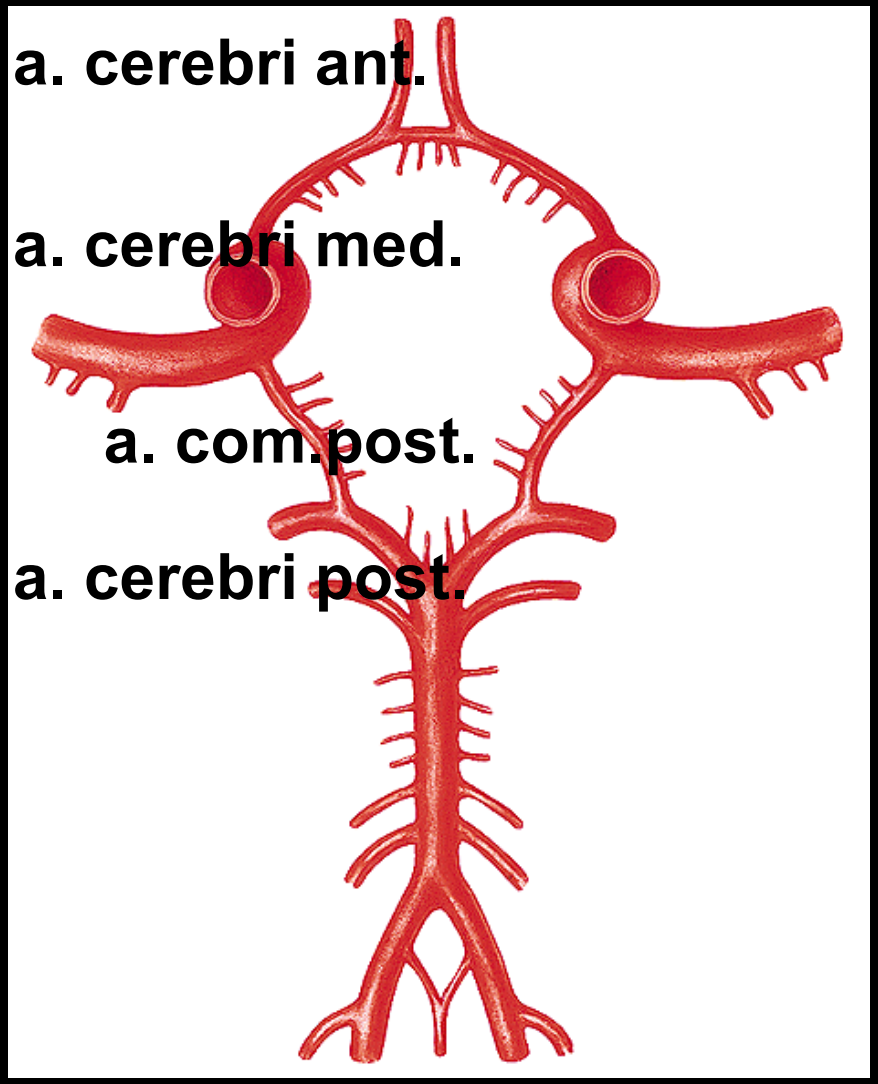
Brain

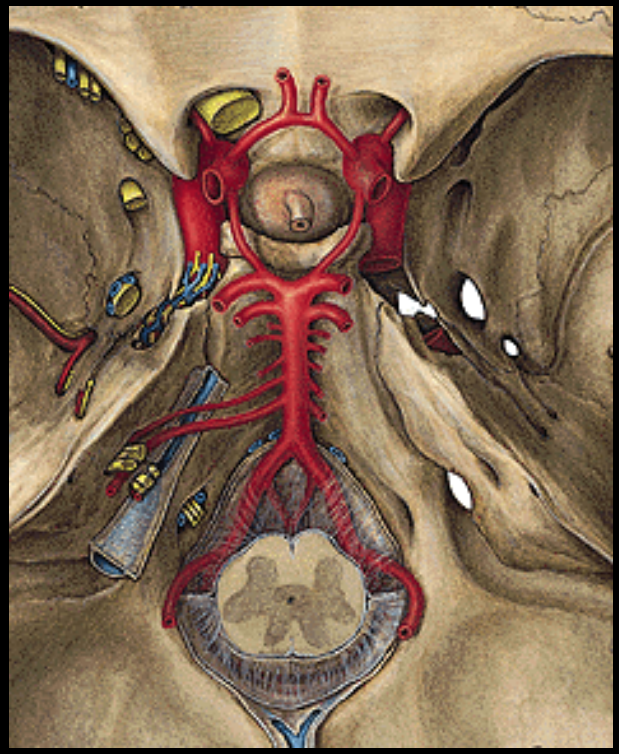


Aa. cerebri:

anterior (A. car. int.)
media (A. car. int.)
posterior (A. basil.)

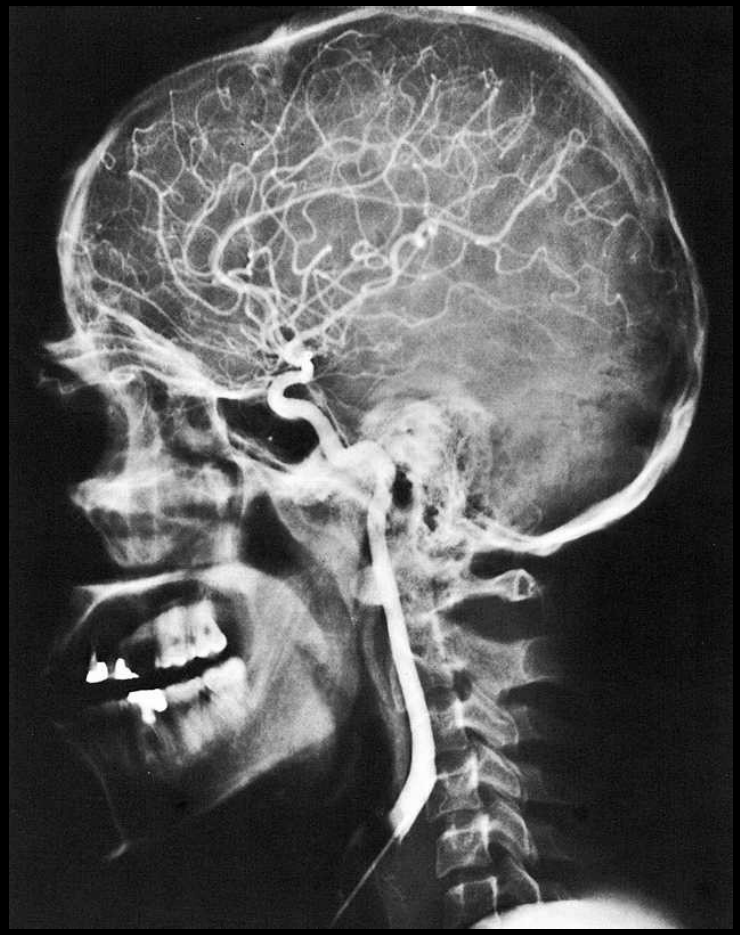


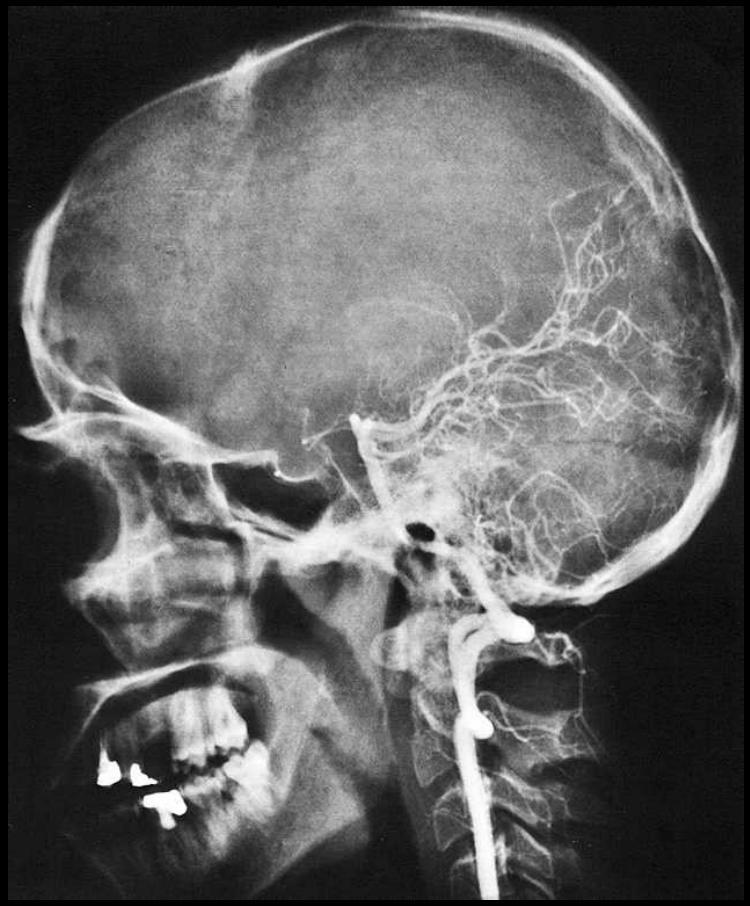


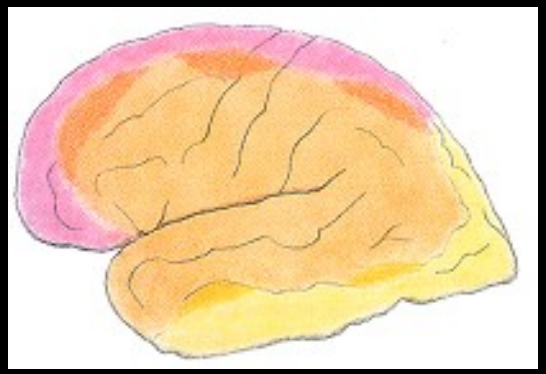


Circulus arteriosus

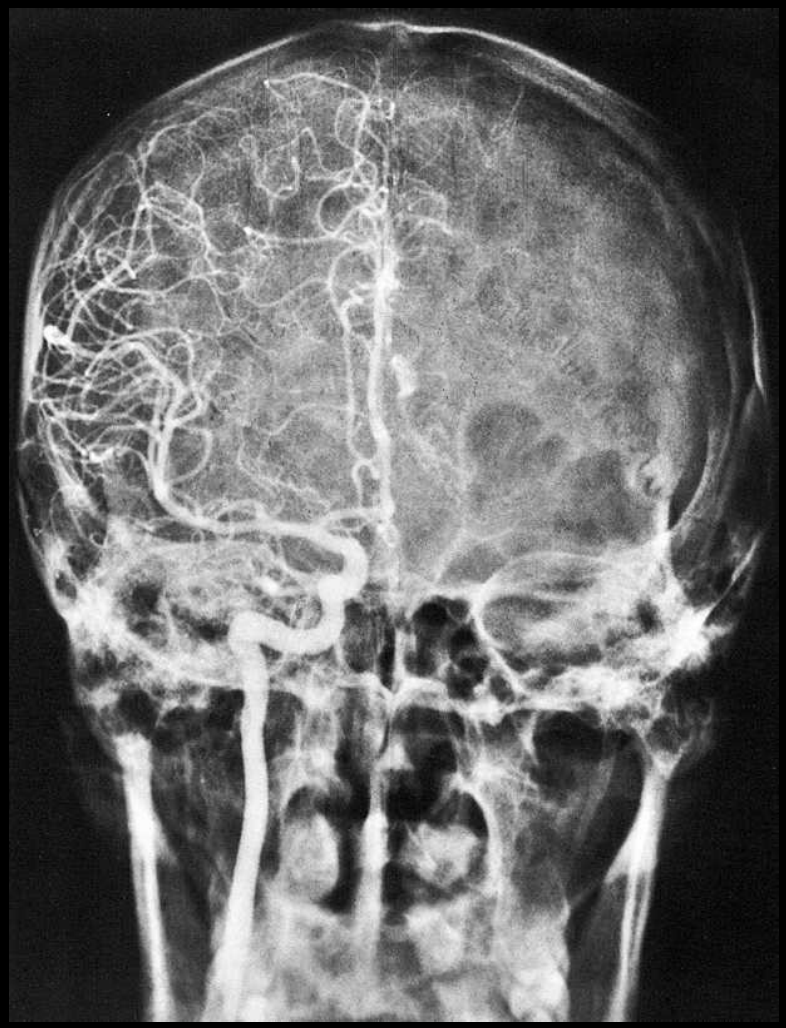
- Aa. corticales
- Aa. centrales
- Aa. choroideae

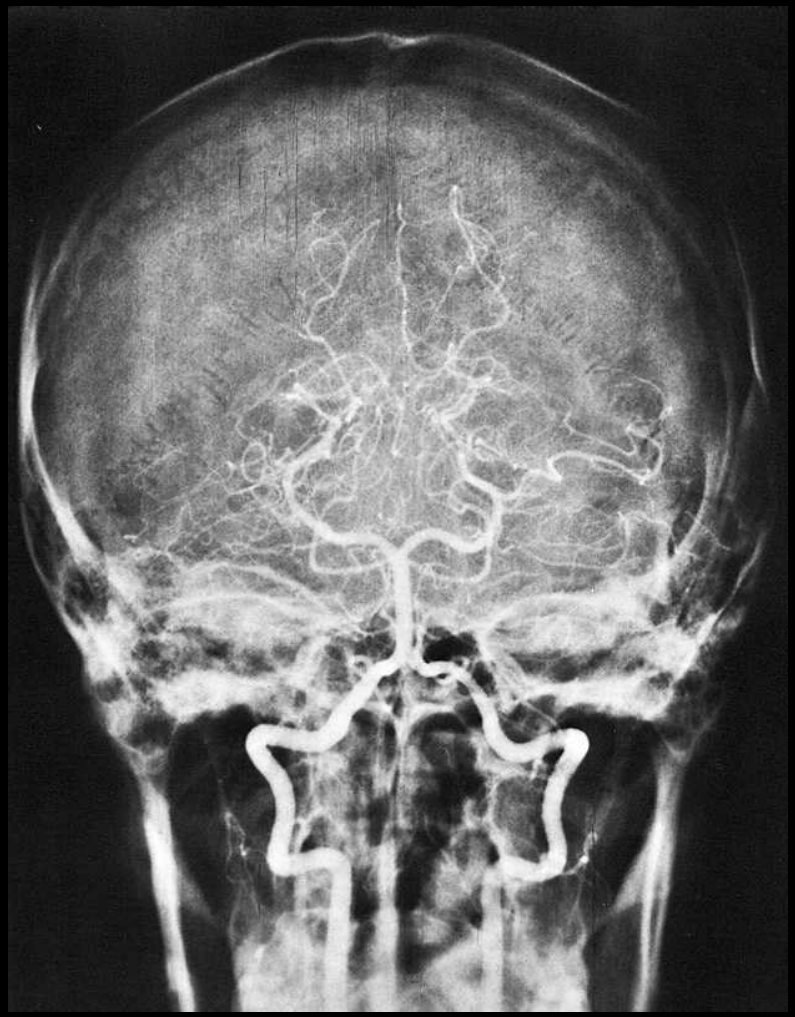






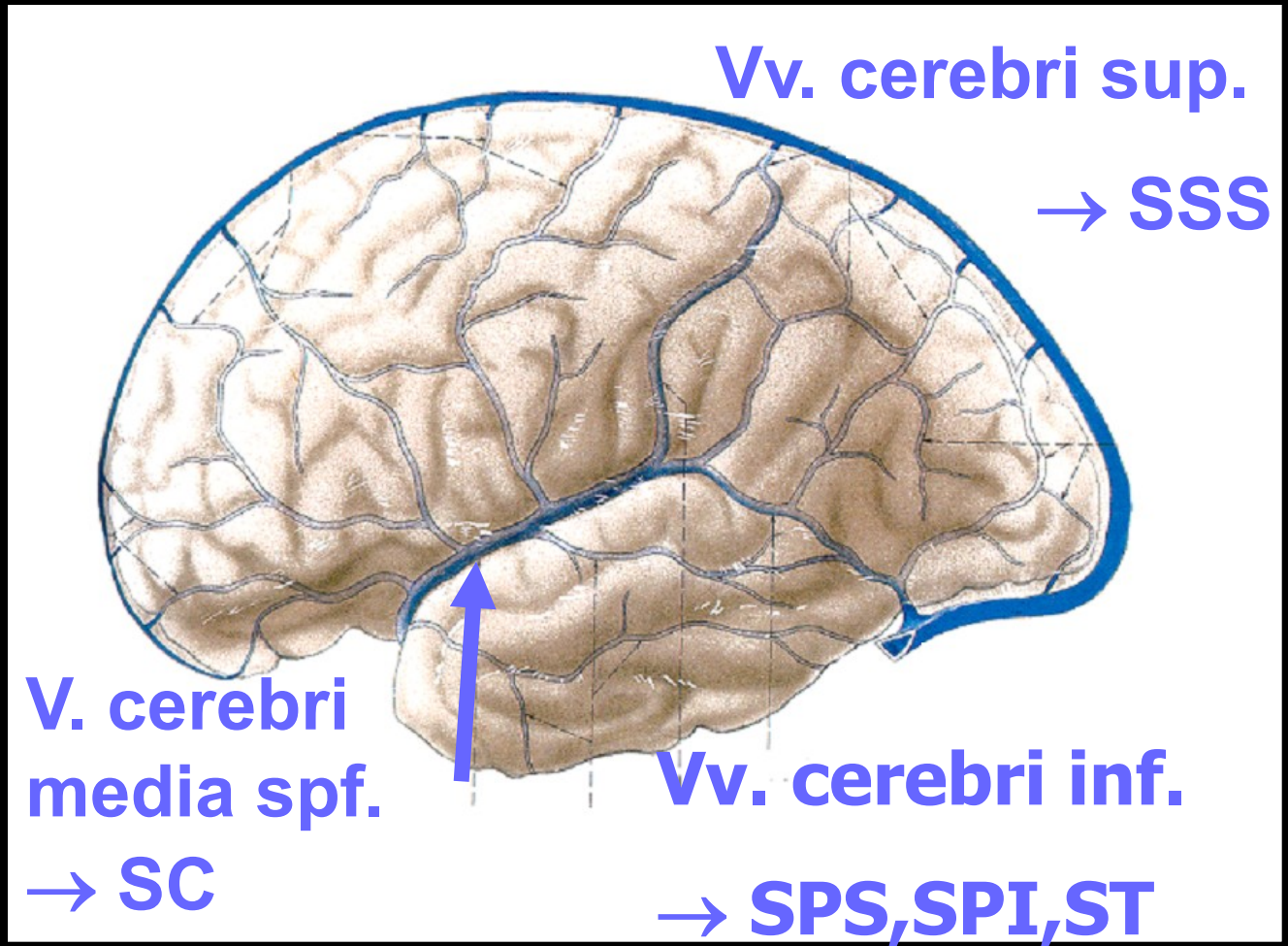
anterior
media
posterior

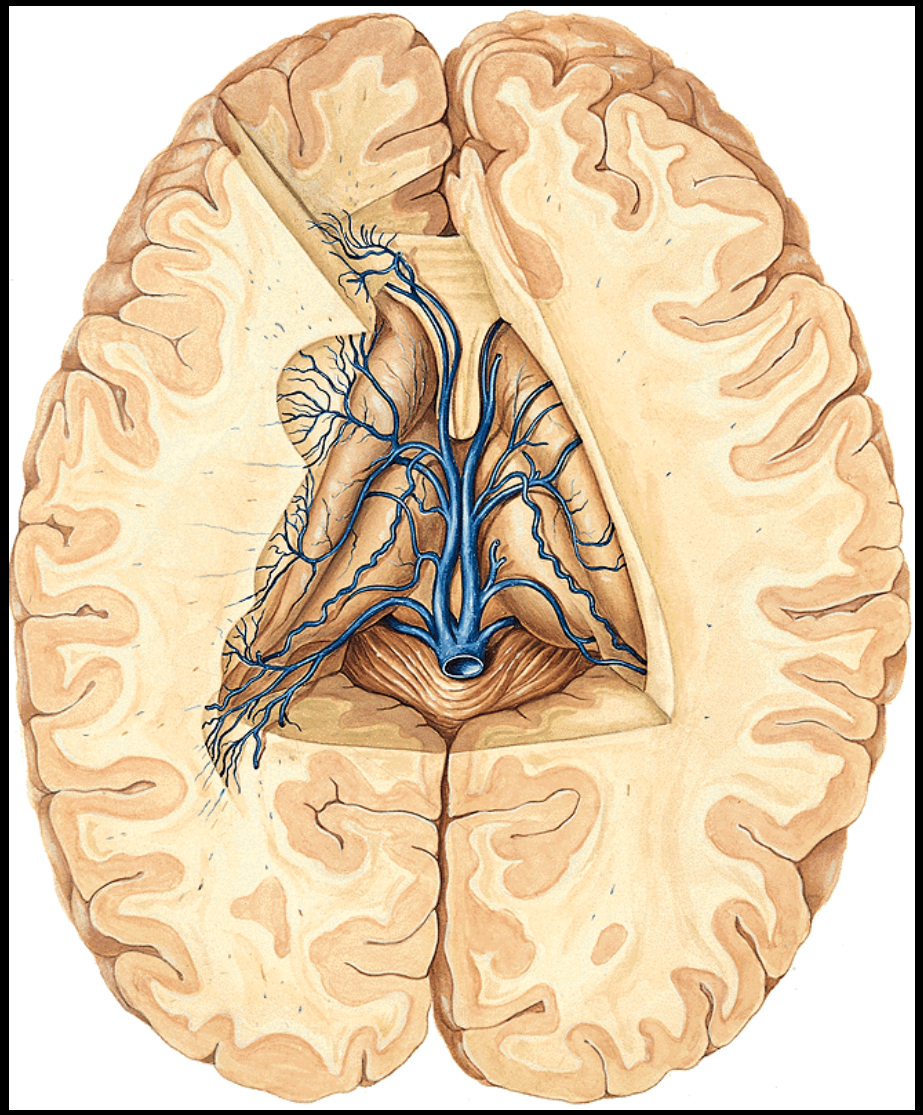




Veins of the brain

- superficial





deep veins

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

↓

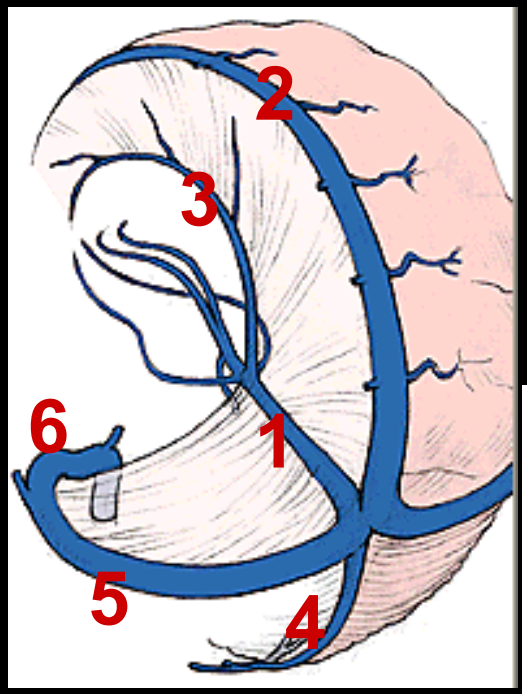
= Vv. cerebri int.
+ Vv. cer. med. prof.
+ Vv. basales

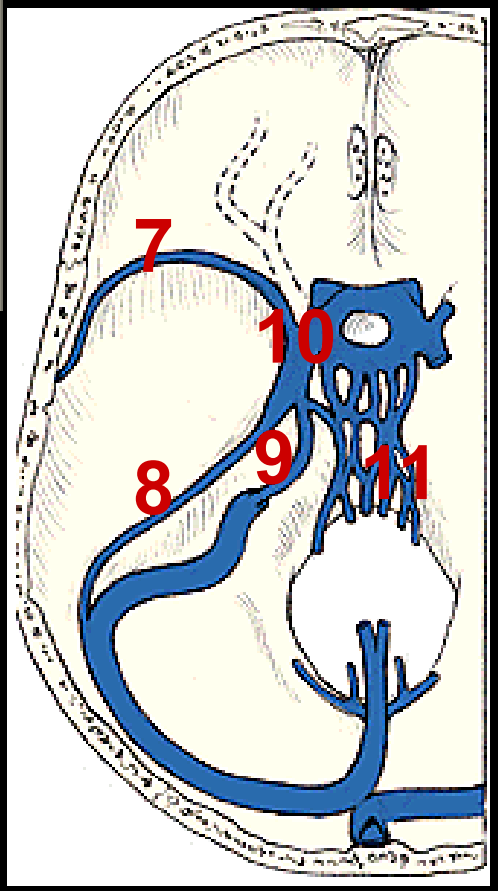
V. magna cerebri

↓

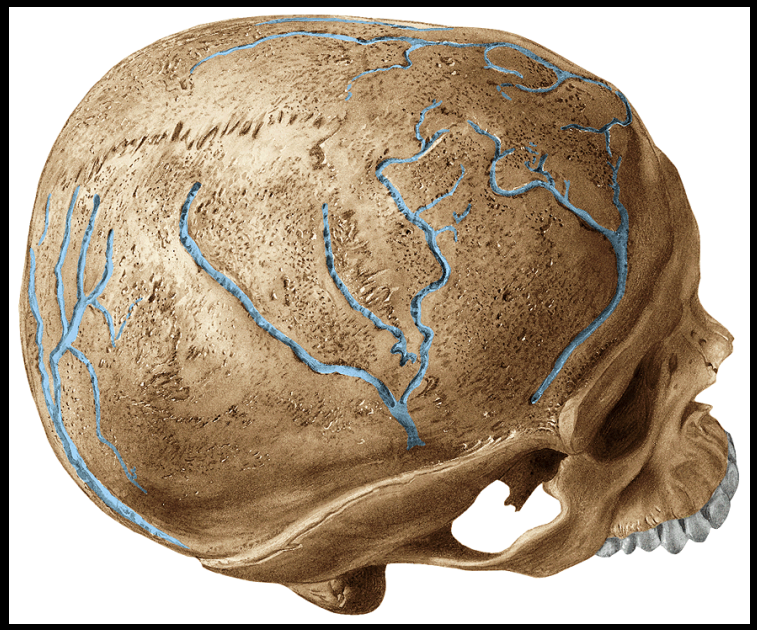
Sinus rectus

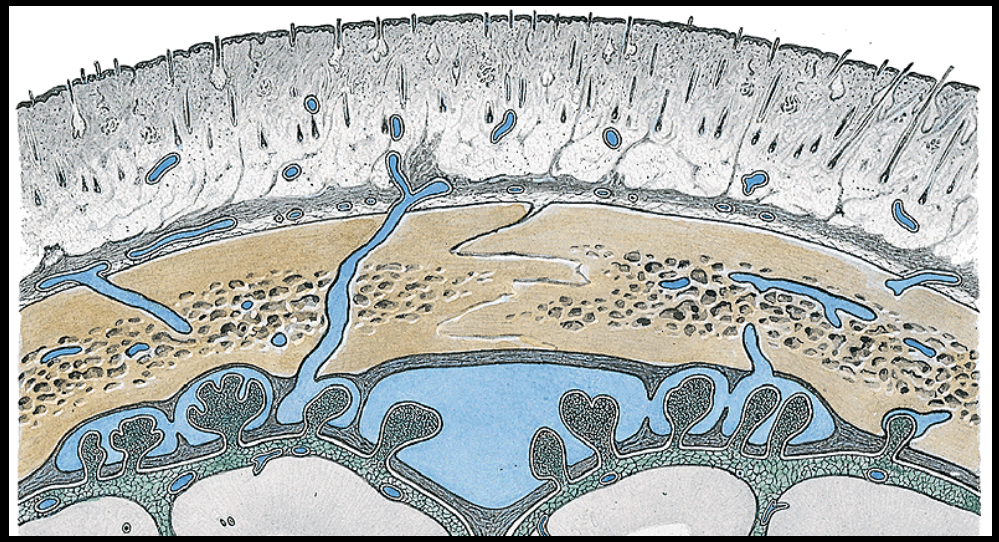
Sinus durae matris





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**