

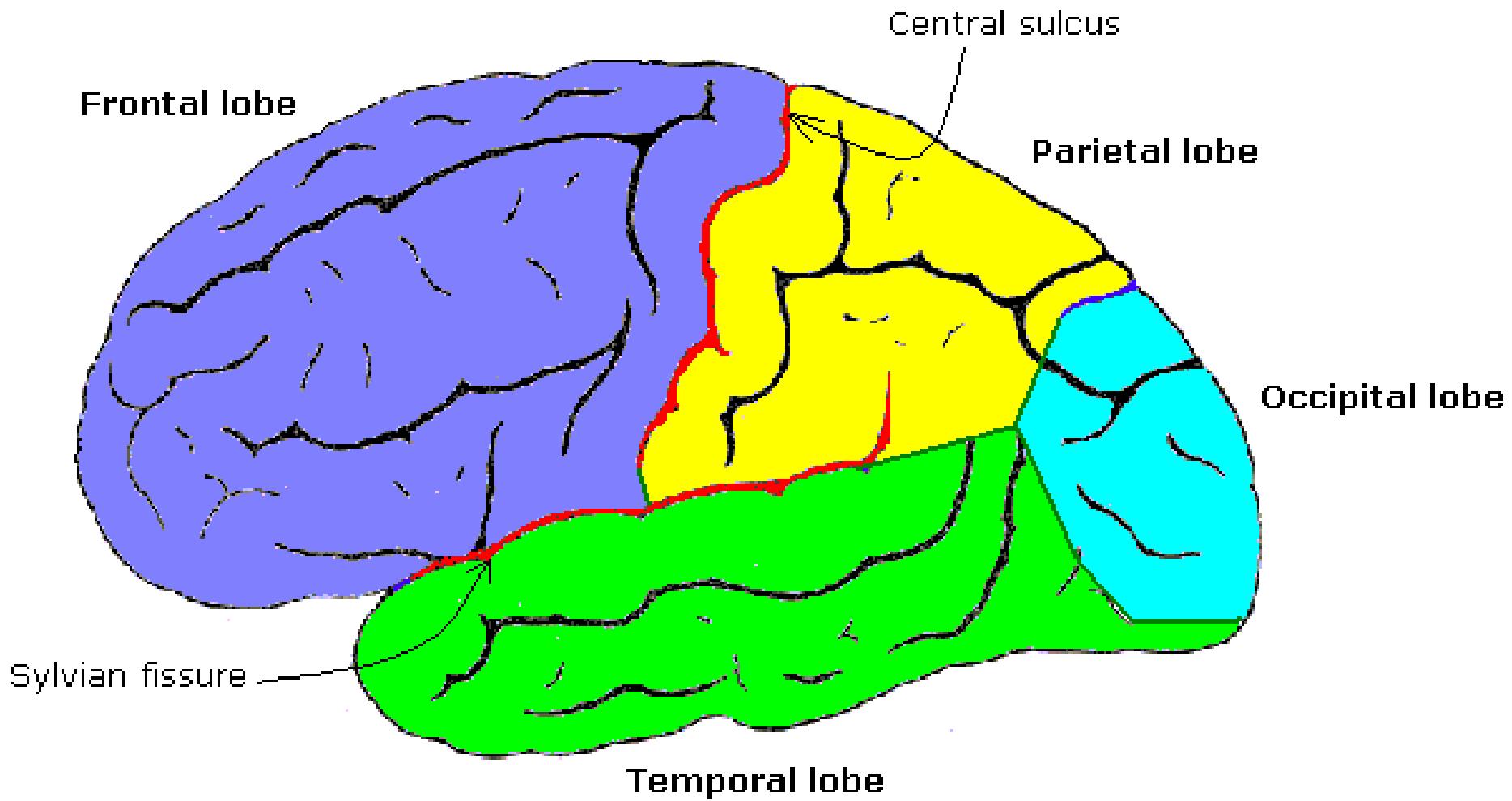
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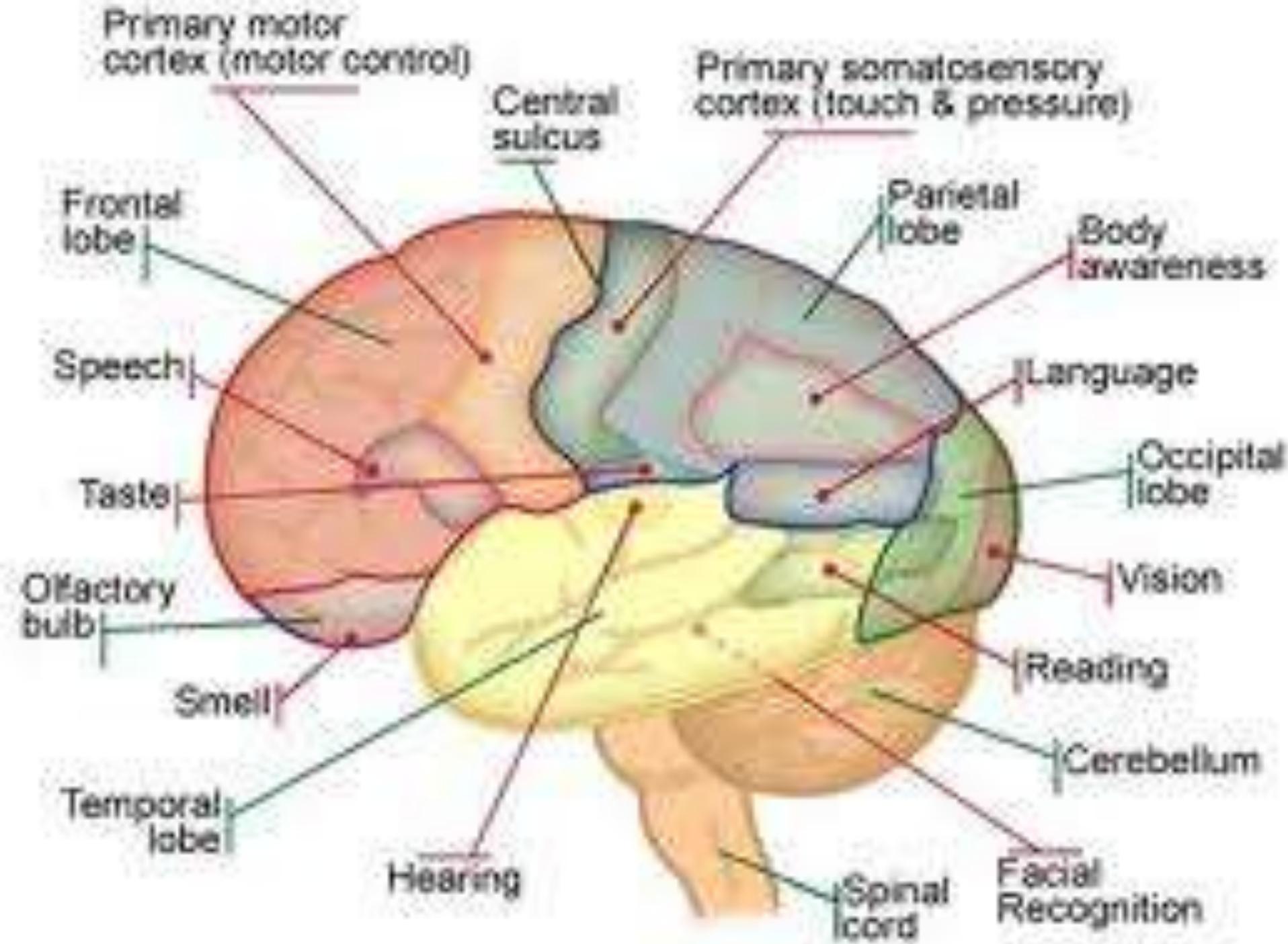
NORMAL FINDING OF CT & MR BRAIN

A. Mokhtar Abodahab

Ass. Lect. of Radiology

Lobes of the brain





Brain CT Densities:

- Air -1000 HU
- Fat -10 : -300
- CSF 0 : 15
- Edema 20
- Infarct 25
- Parenchyma → 30 : 40
- Recent blood → 60 : 90
- Calcification > more 100

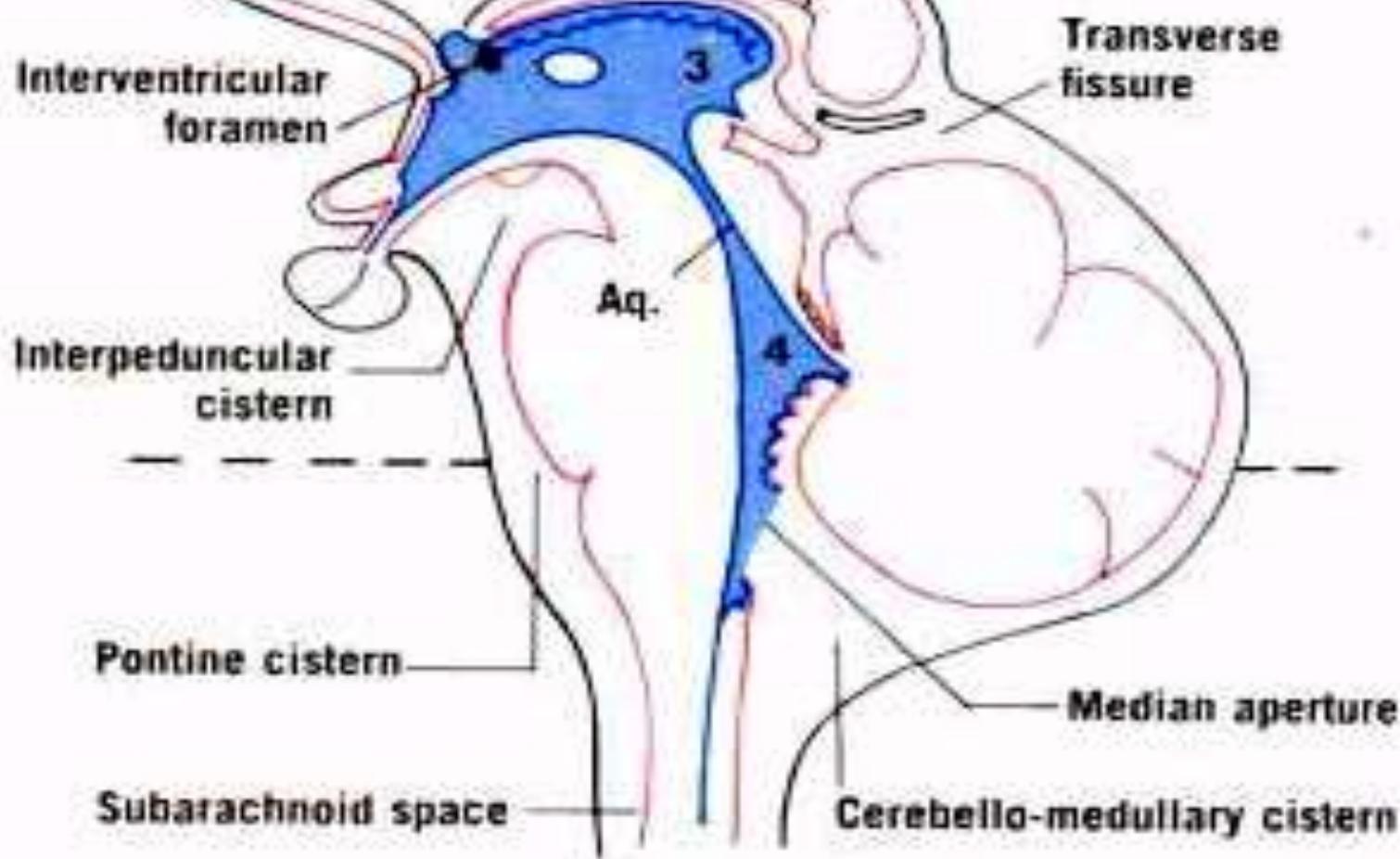
- Attenuation difference between cortex and white matter: approximately 7 HU

Cisterns

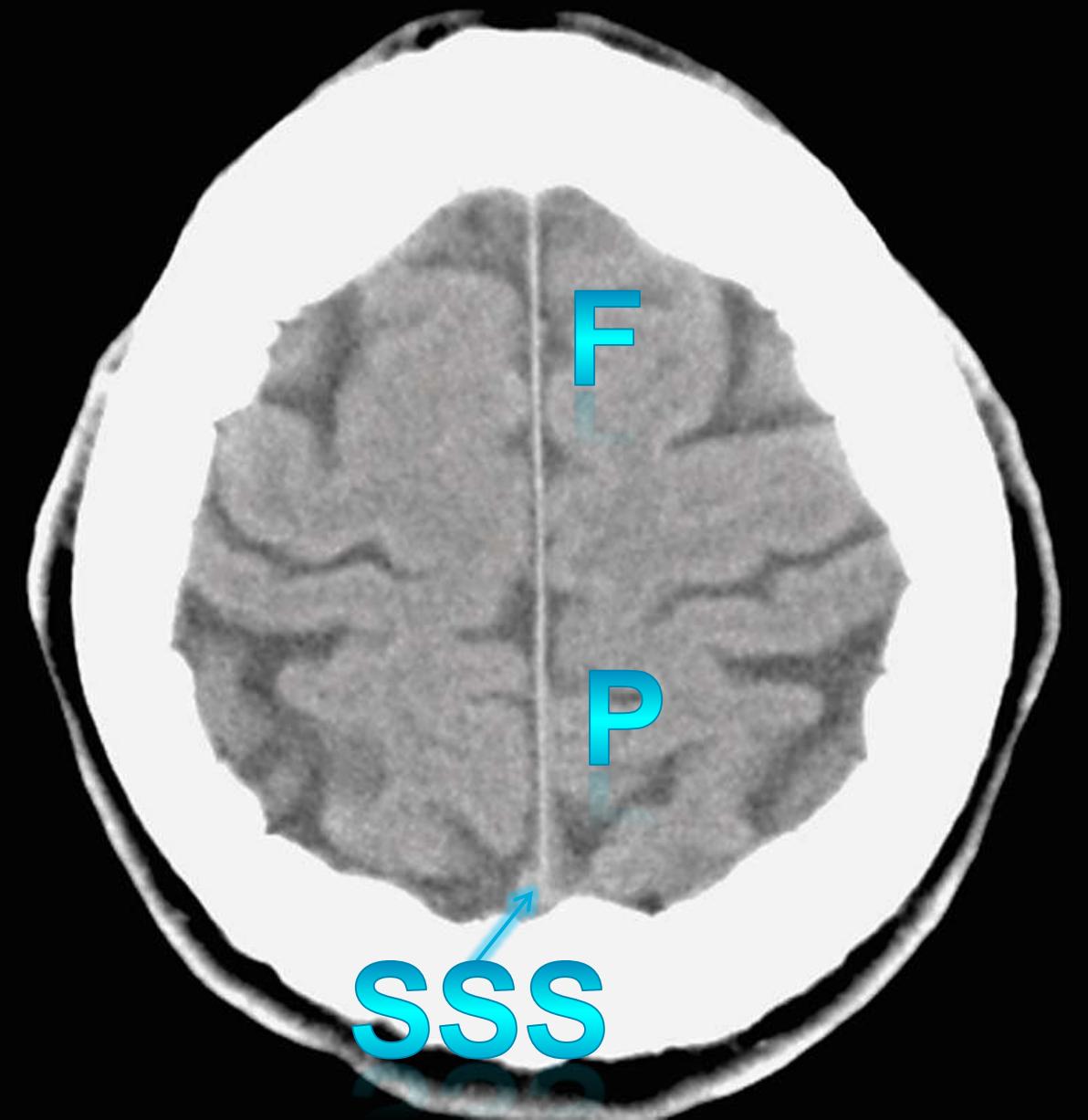
- A **cistern** (Latin) is any opening in the subarachnoid space of the brain.
- created by a separation of the arachnoid and pia mater.
- These spaces are filled with CSF.
- Many cisterns in the brain with several especially large, notable ones each with their own name.

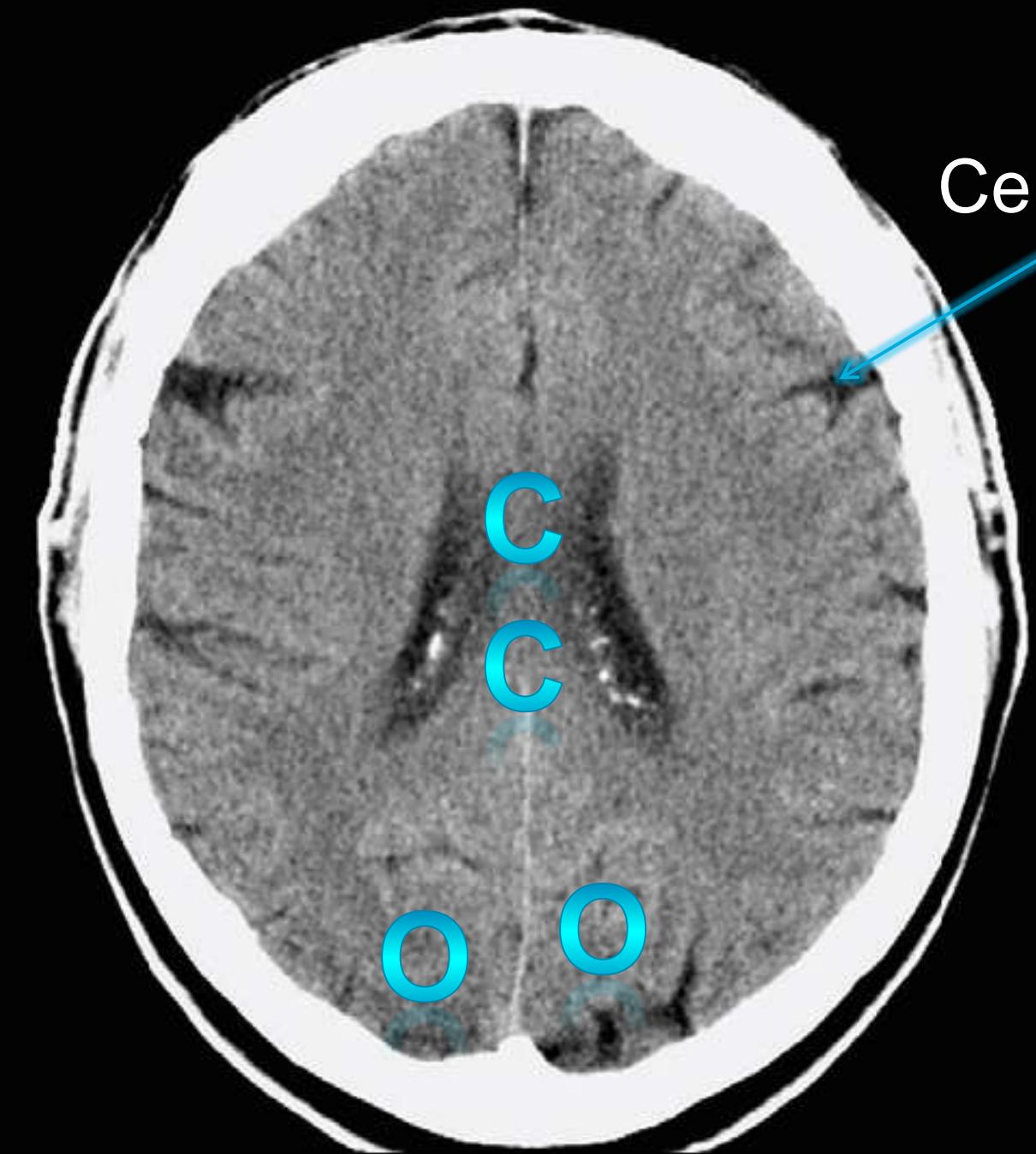
- Cerebello-medullary cistern (Cisterna magna)
- the largest of the subarachnoid cisterns.
- Pontine cistern (Prepontine cistern or cisterna pontis)
- Interpeduncular cistern (Cisterna interpeduncularis)

- Superior cistern (Quadrige^minal cistern or cistern of the great cerebral vein)
- Ambient cistern (Cisterna ambiens) - thin, sheet-like extensions of the superior cistern that extend laterally about the midbrain, connecting it to the interpeduncular cistern. Ambient cistern may also refer to the combination of these extensions and the superior cistern.

B

- Arachnoid
- Pia
- Ependyma

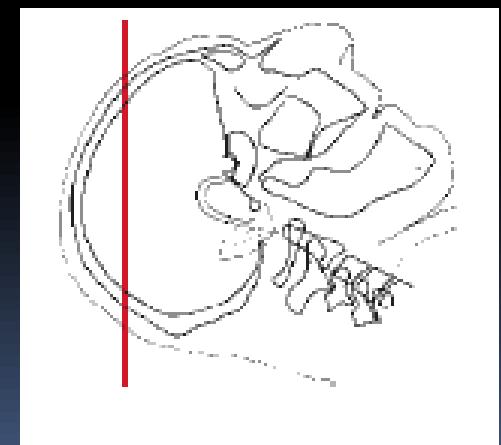


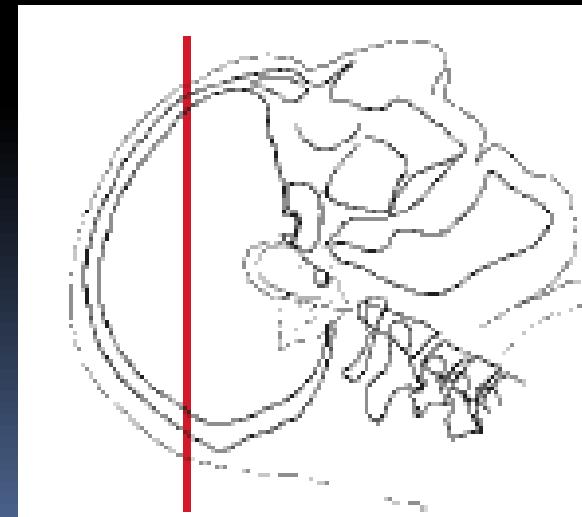
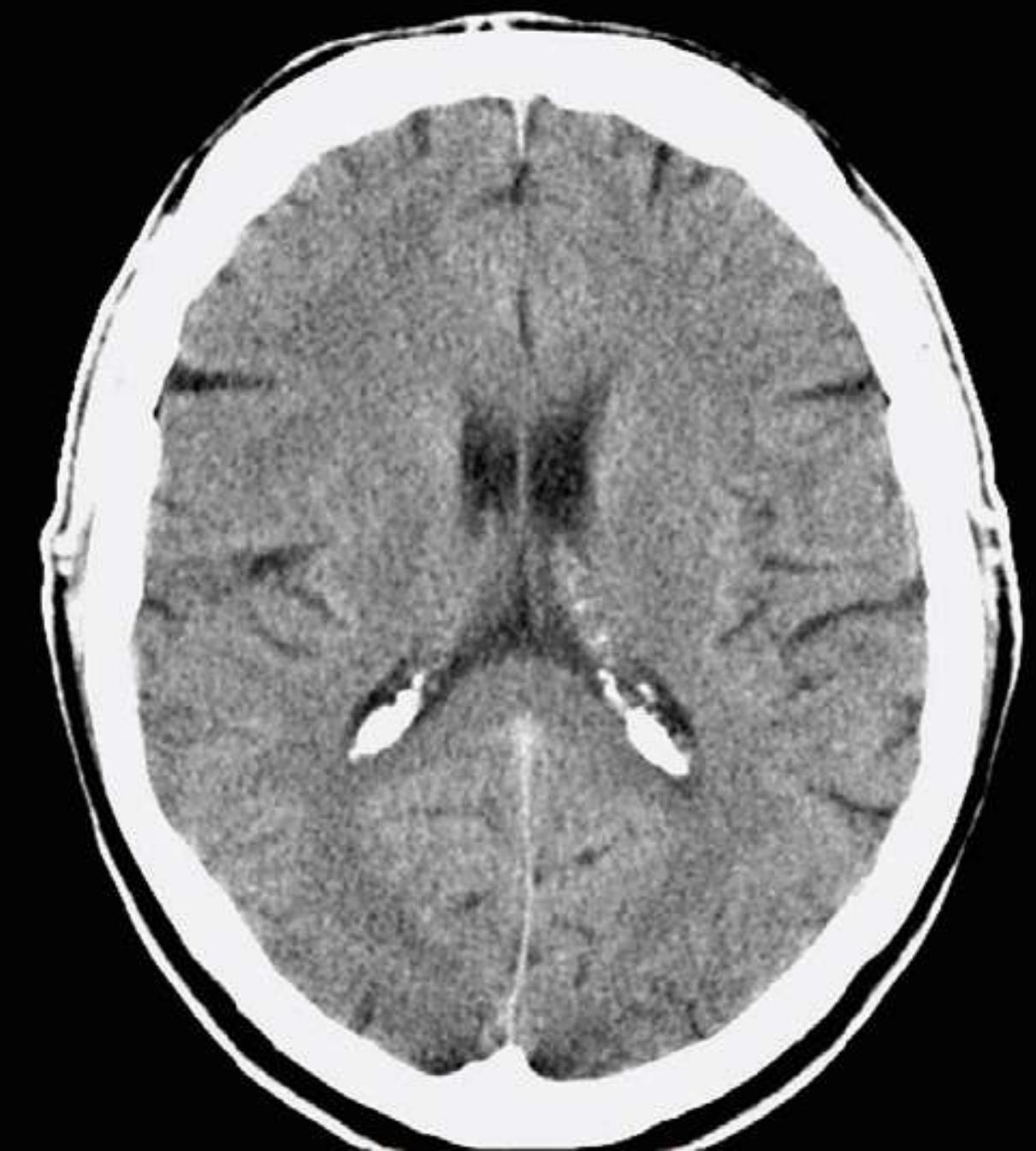


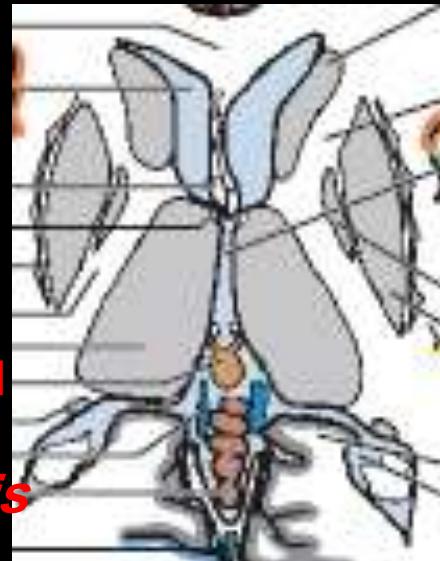
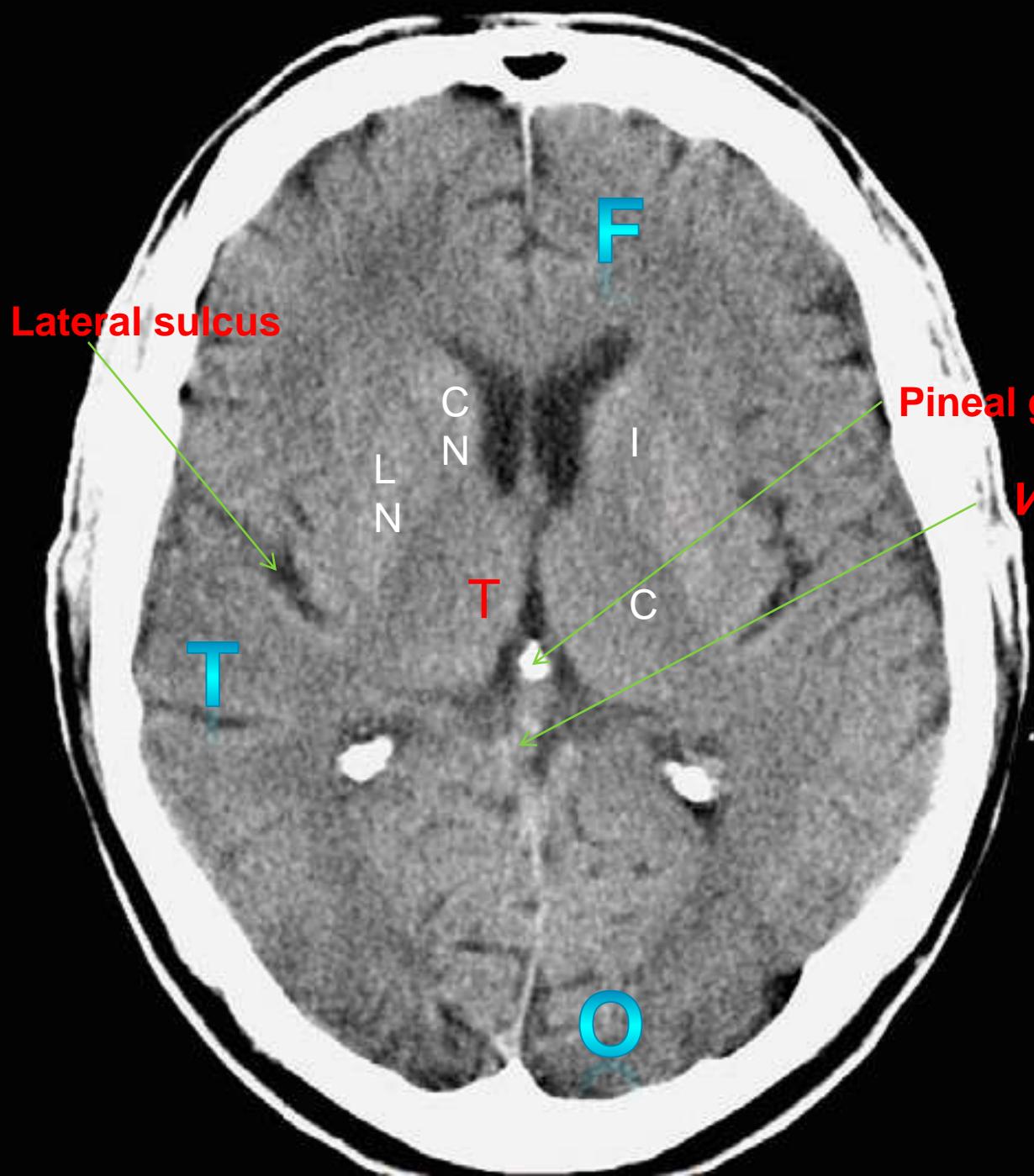
Central sulcus

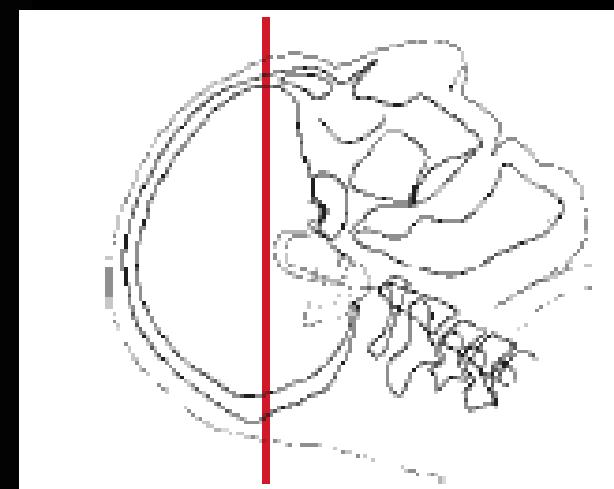
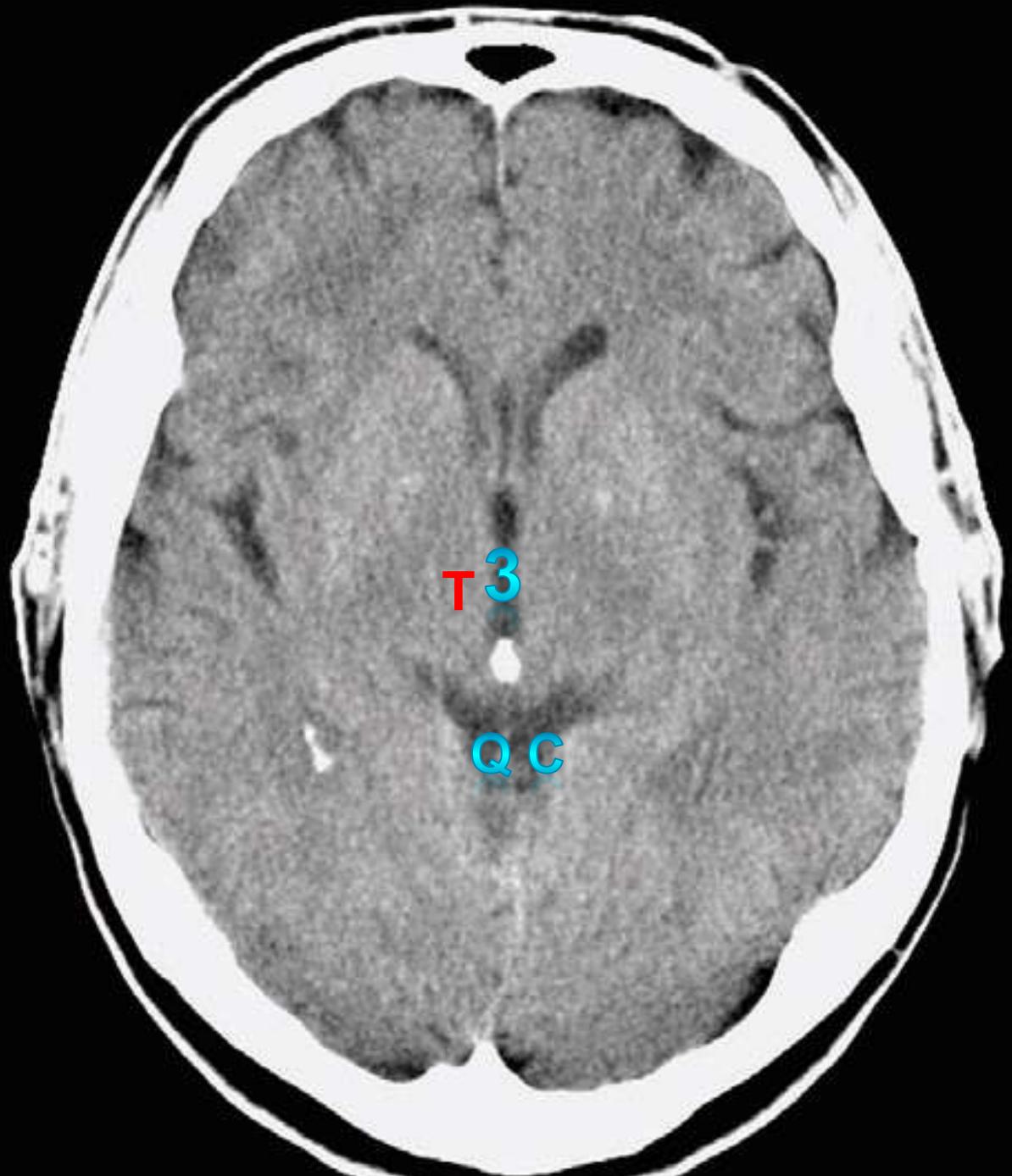
C
C

O
O









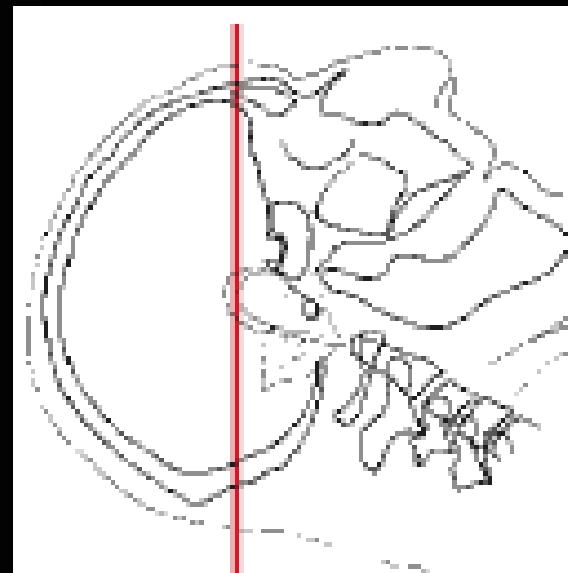
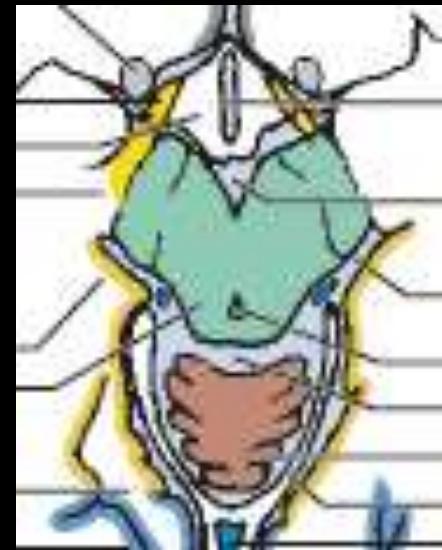
Inter
peduncular
cistern

Ambient
cistern

3

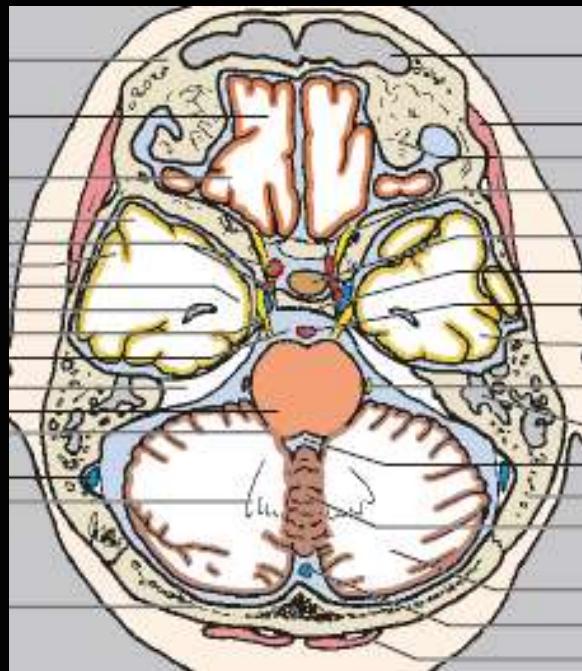
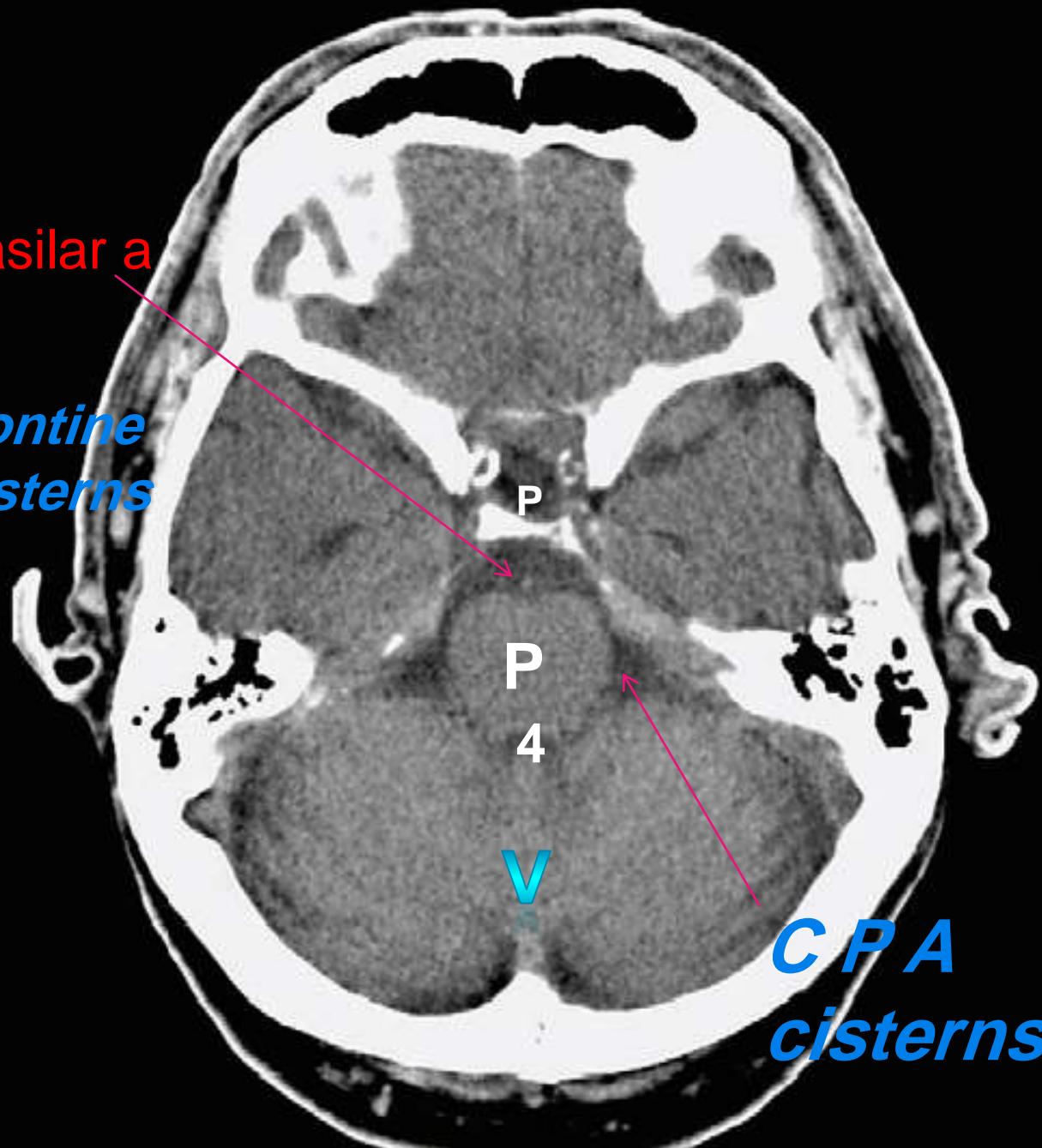
Q C

V

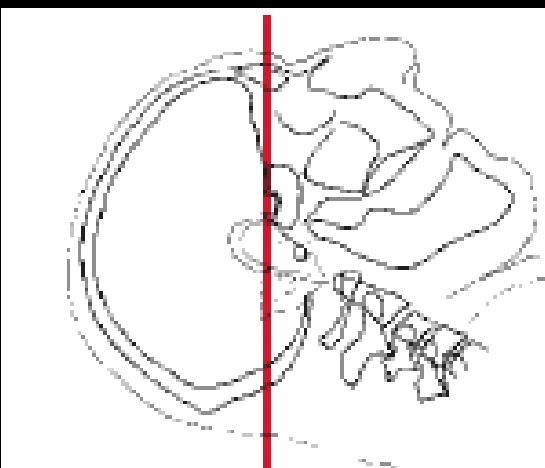


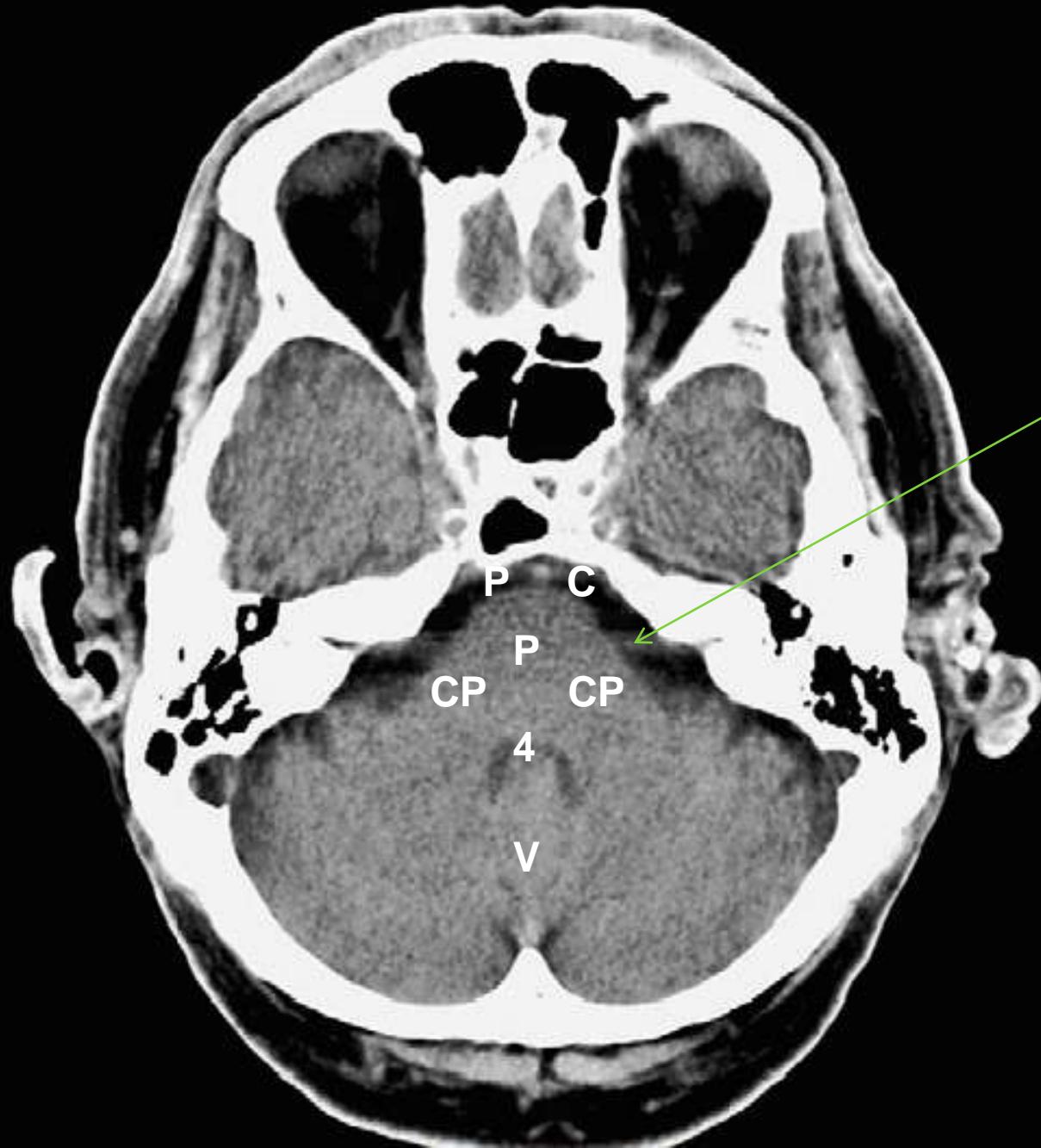
Ambi- = On Both sides

Basilar a
*In
Pontine
cisterns*

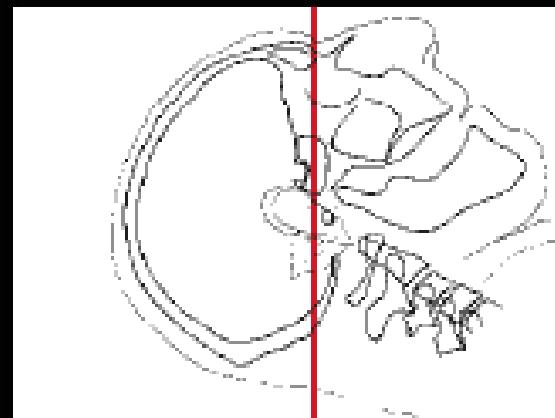


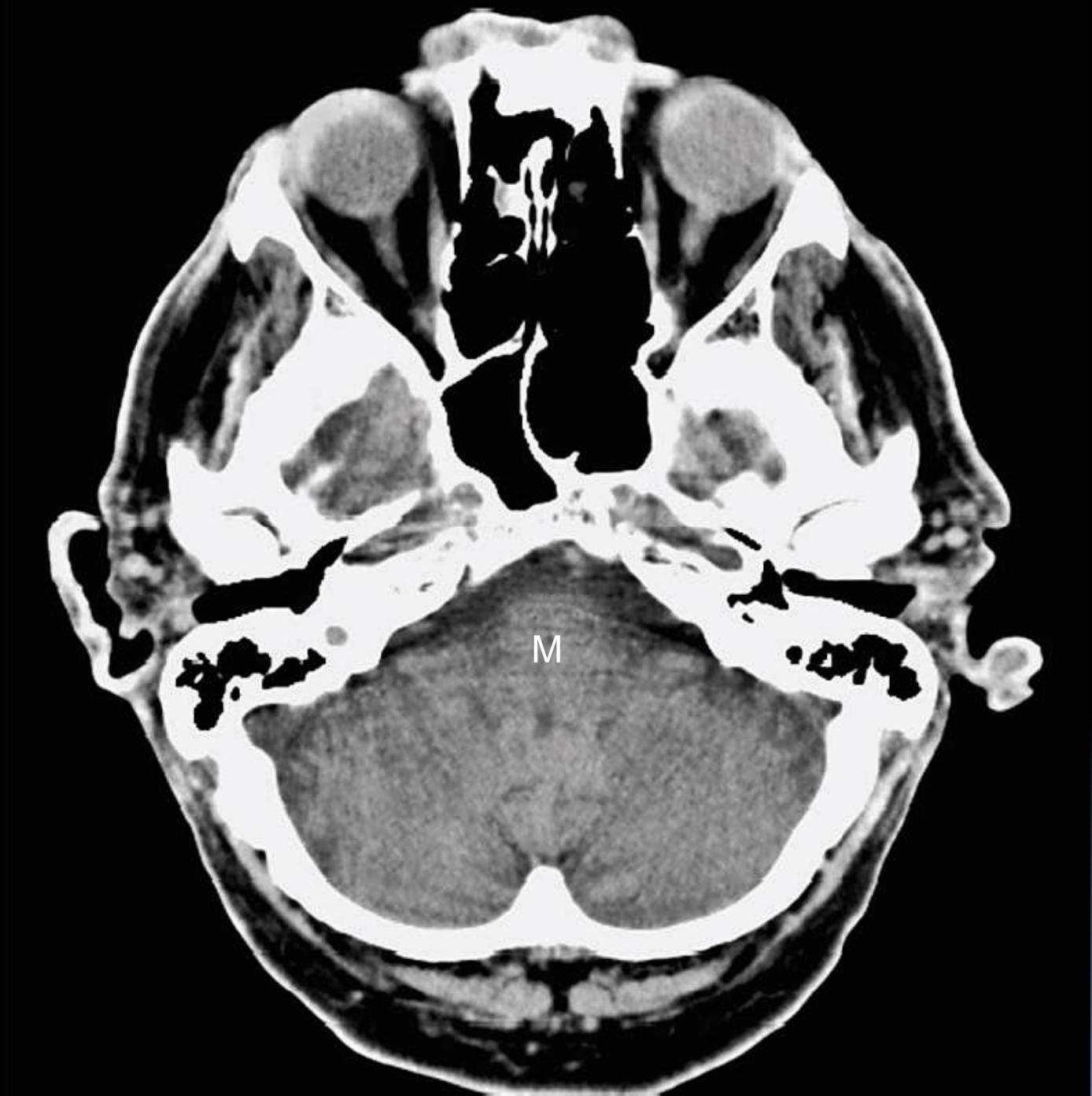
**CPA
cisterns**

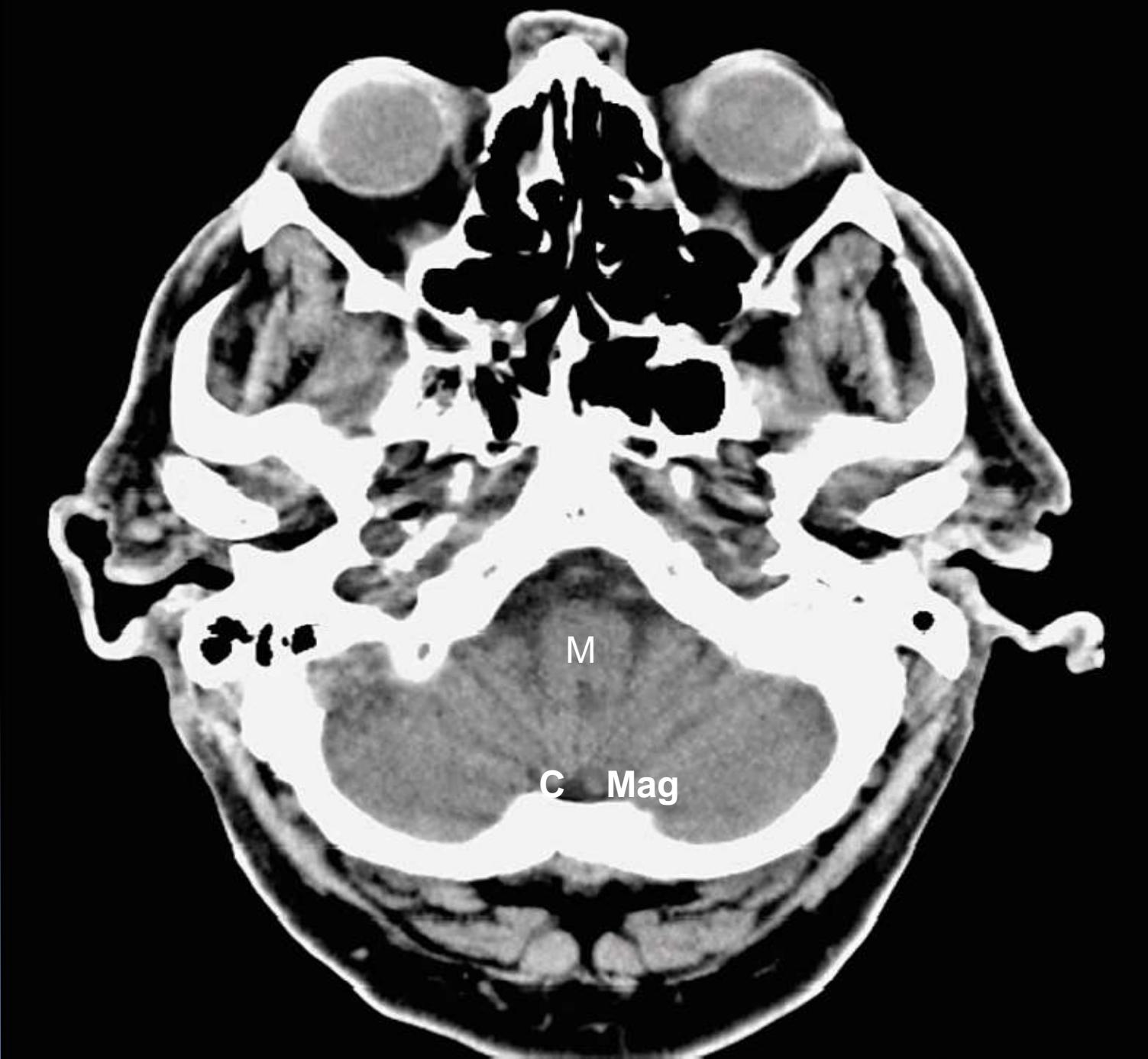


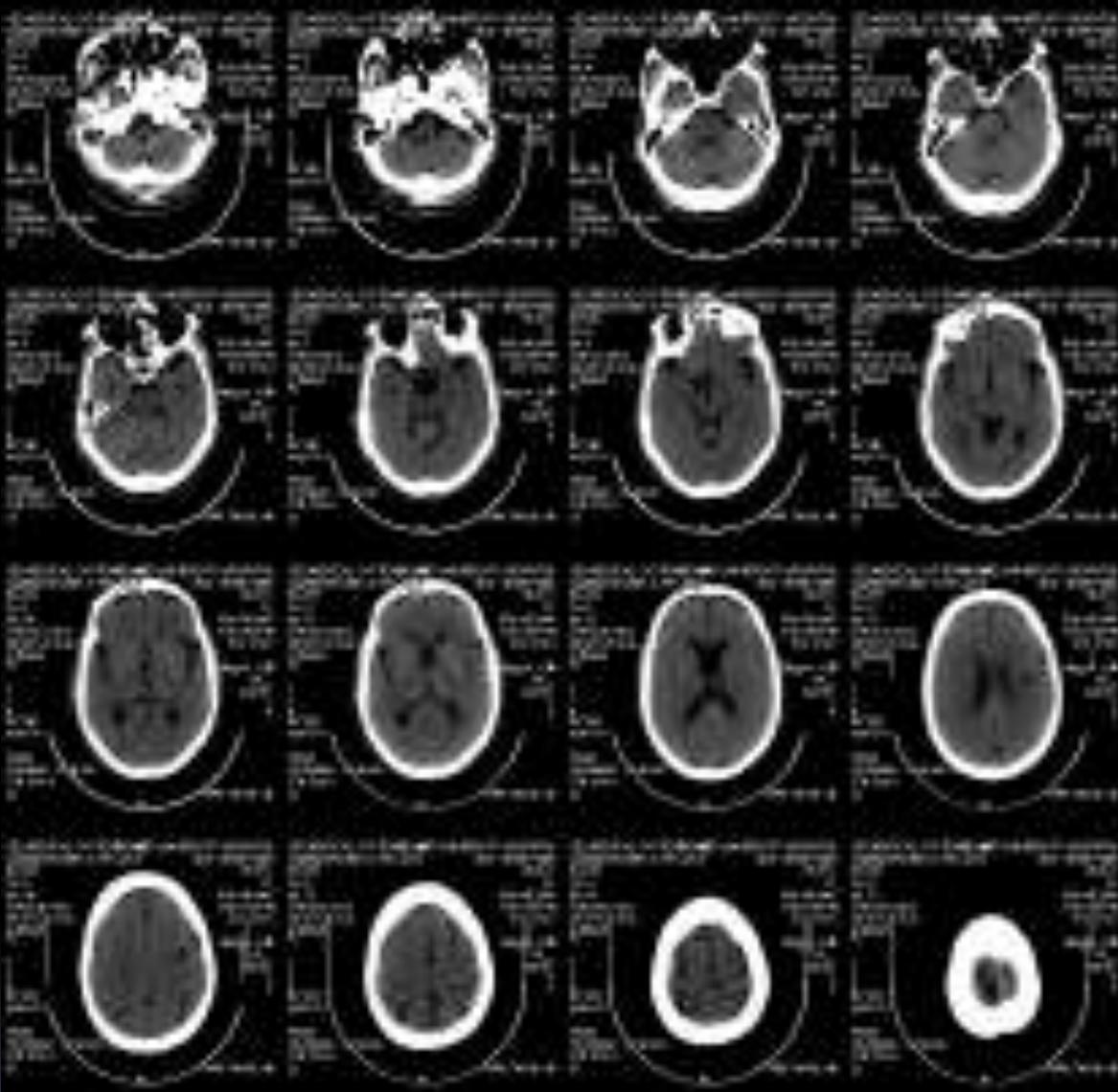


*facial
(VII) &
vestibulocochlear
(VIII) nerves*

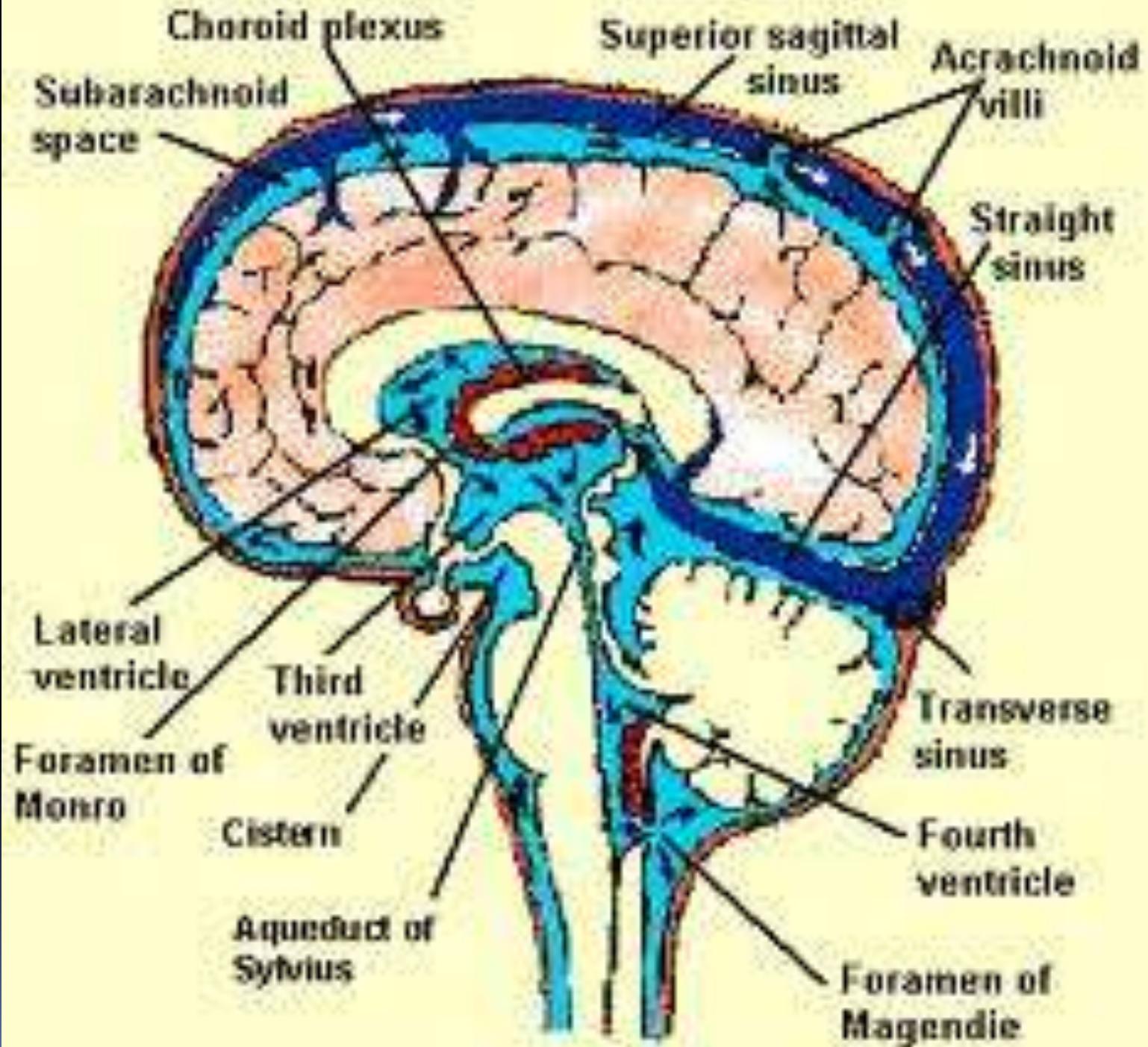






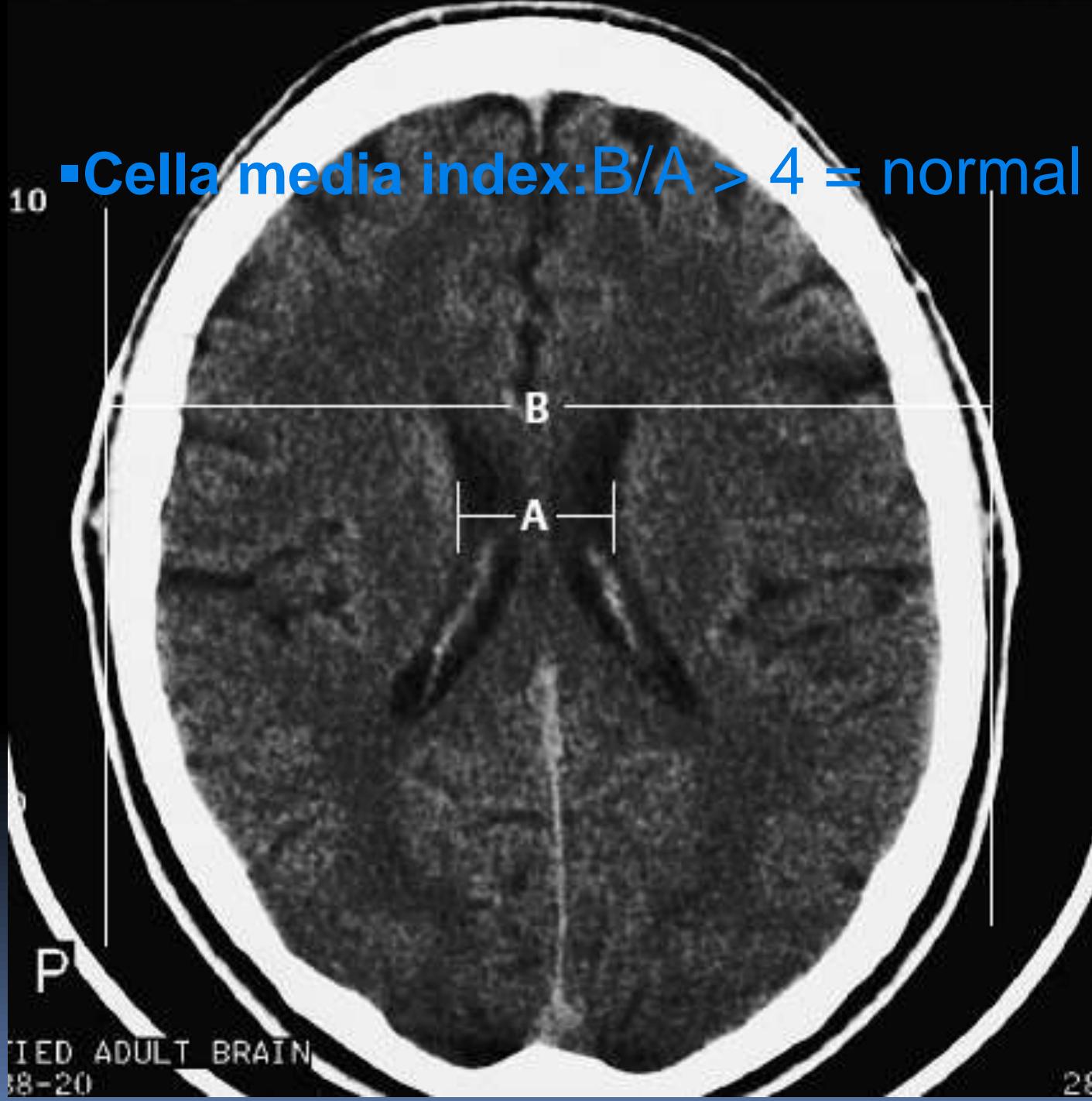


C.T. Film



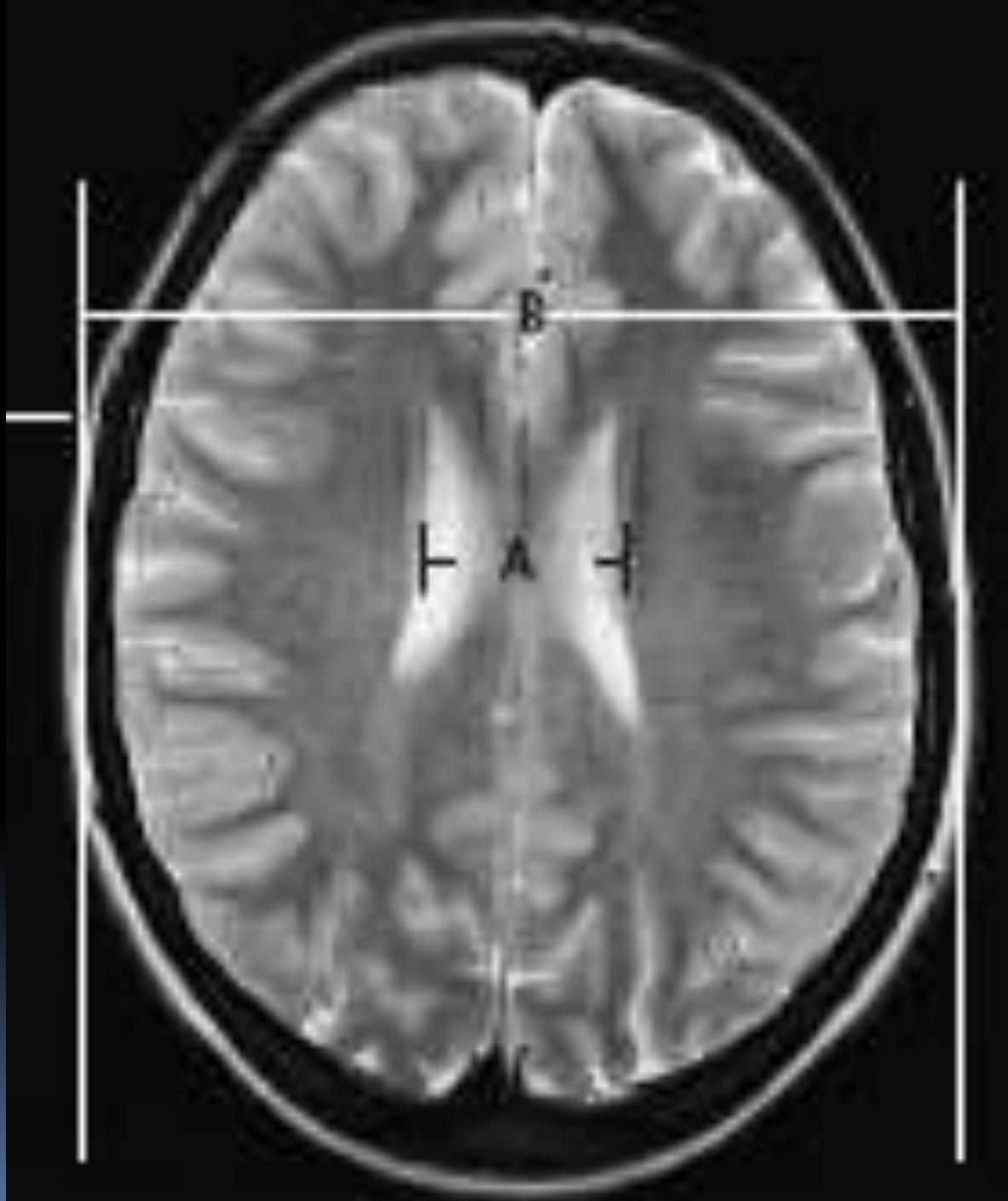
- **Ventricular dimensions**
 - Cella media index: $B/A > 4$ = normal
- **2 Frontal horn of lateral ventricle (at level of foramen of Monro):**
 - Under age 40: < 12 mm
 - Over age 40: < 15 mm
- **3 Width of third ventricle:**
 - < 5 mm in children (slightly more in infants)
 - < 7 mm in adults under age 60
 - < 9 mm in adults over age 60
- **4 Width of ophthalmic vein:**
 - 3-4 mm

▪**Cella media index:B/A > 4 = normal**



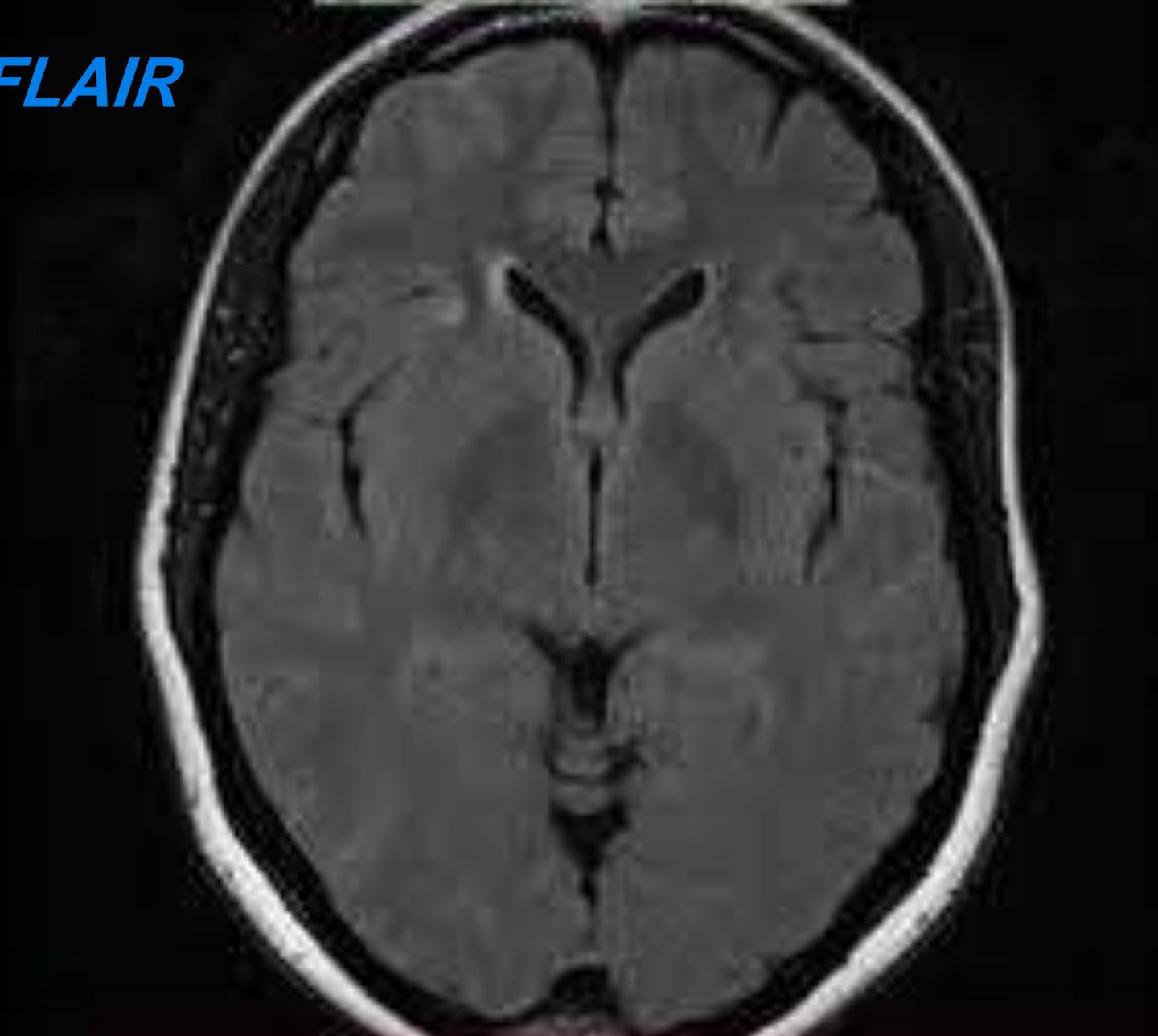
FIXED ADULT BRAIN
8-20

28

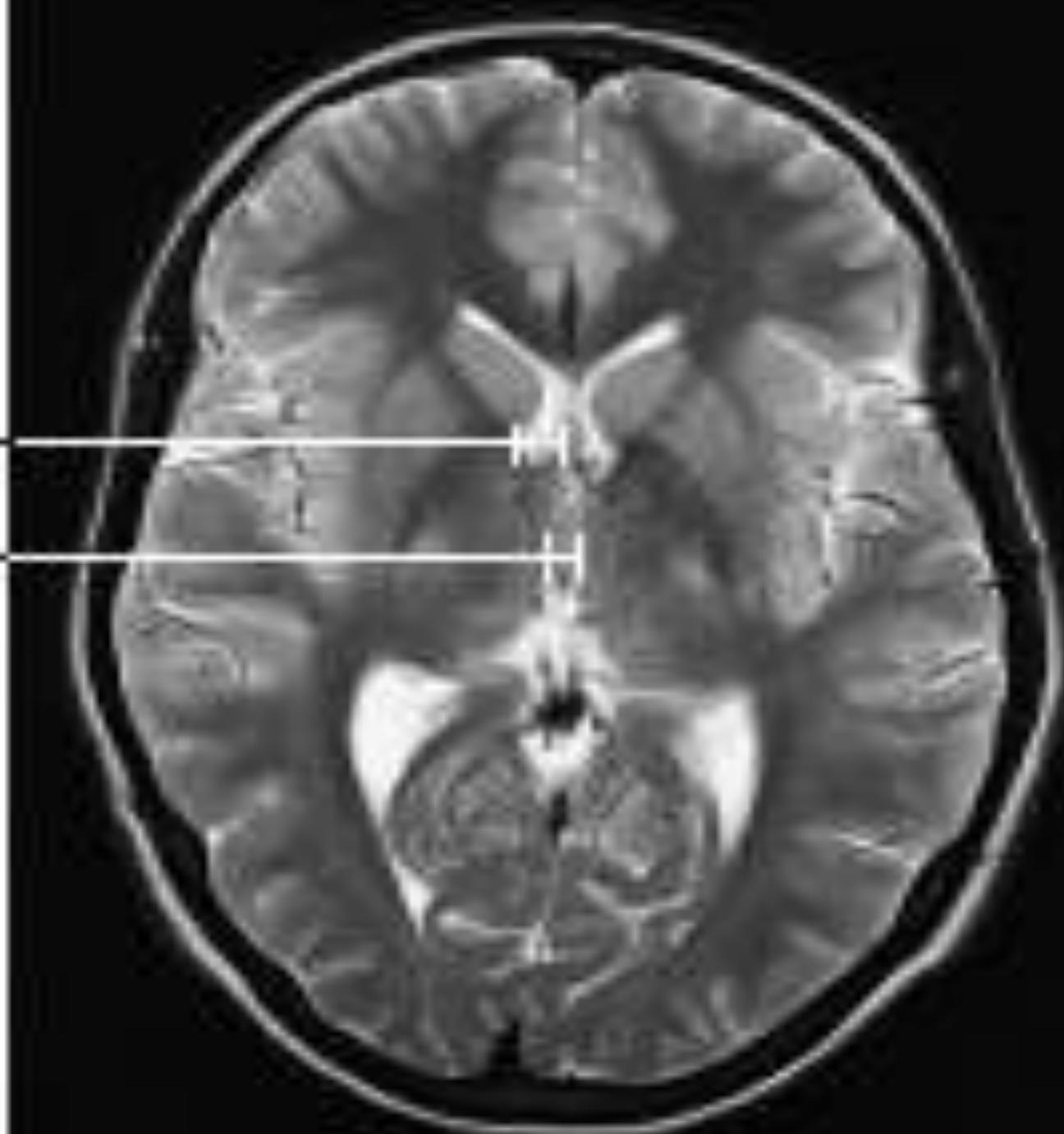




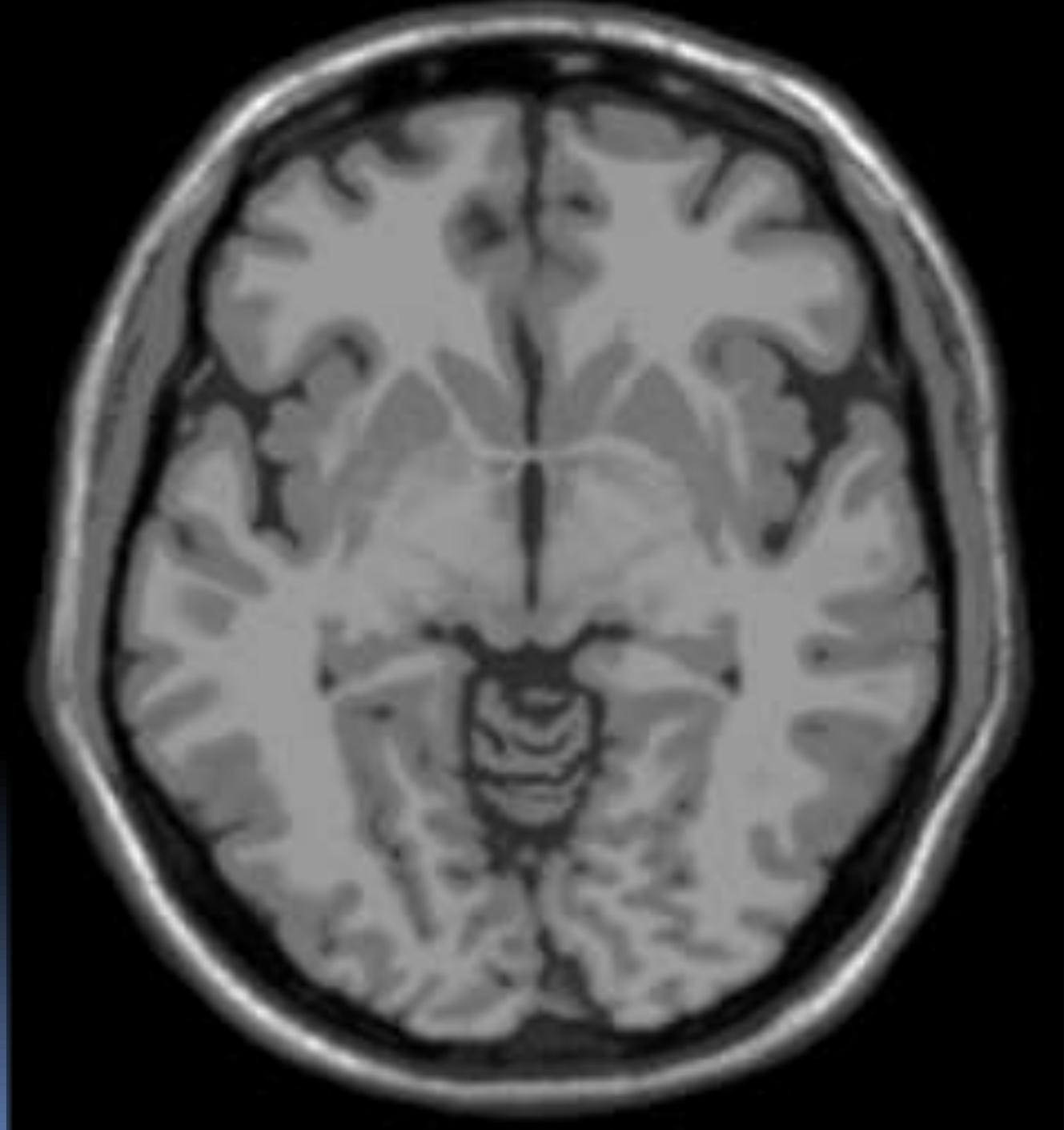
FLAIR

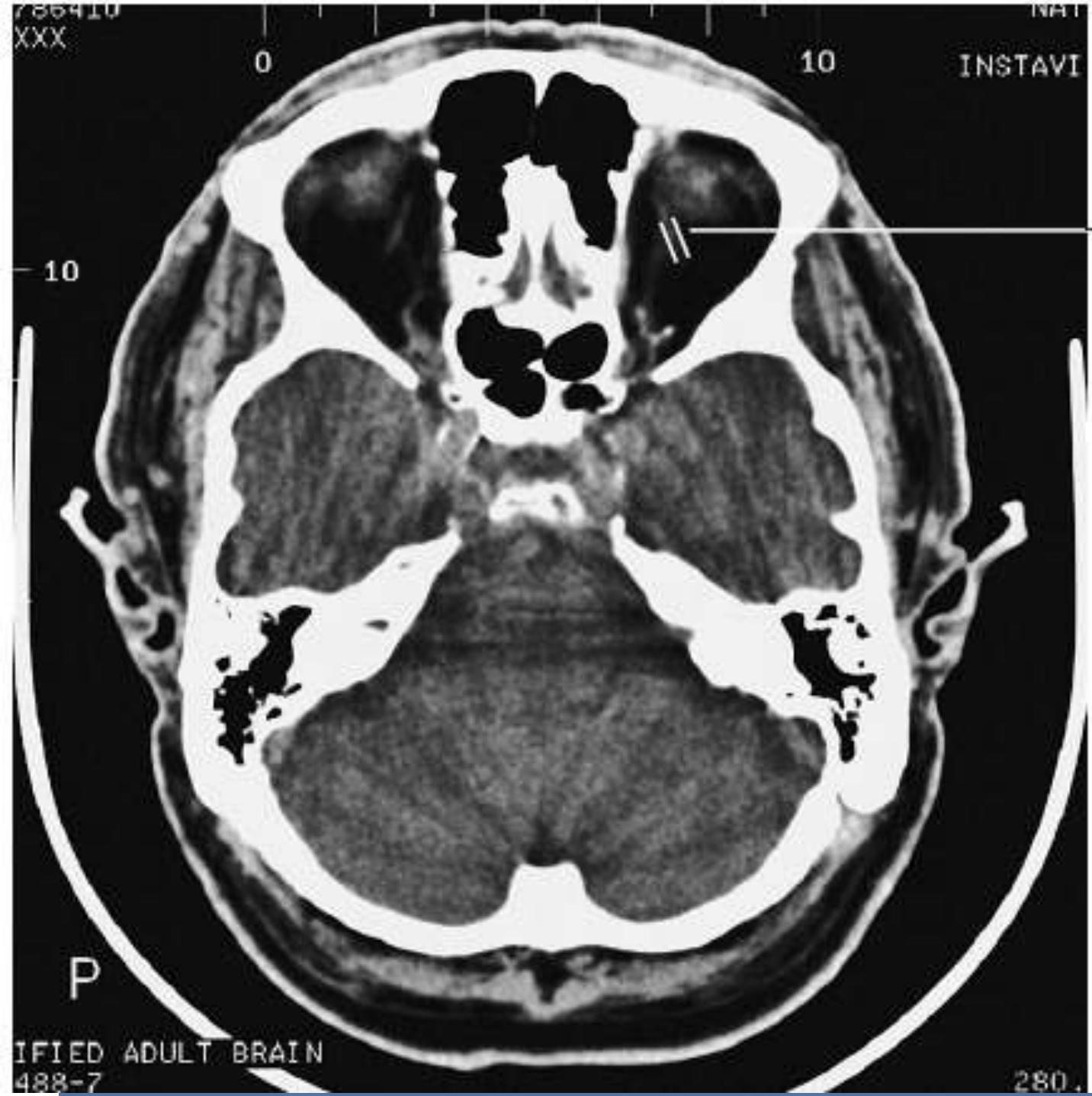


T2



T 1





ophthalmic
vein 3:4 mm

786410
XXX

0

10

-10

INSTAVI

→Optic nerve
(axial plane)
▪Retrobulbar
segment: 5.5
 $mm \pm 0.5$

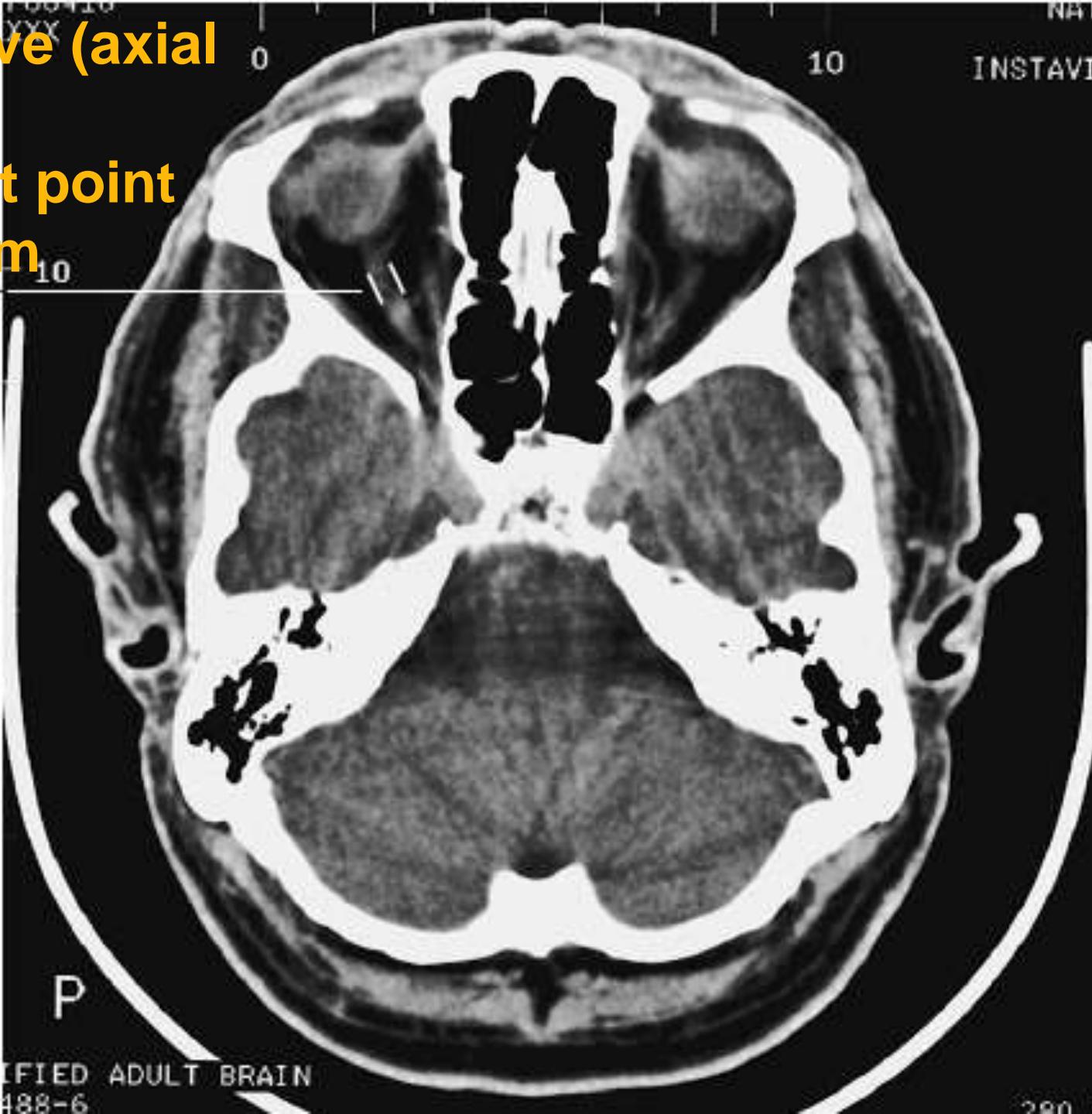


P

■ Optic nerve (axial plane):

■ Narrowest point

3.5 : 4.5 mm



IDENTIFIED ADULT BRAIN
488-6



Position of globe:
Posterior margin of globe is $10\text{ mm} \pm 2$ mm
behind the inter-zygomatic line

Diameter
of globe:

Axial plane: 1

Rt: 28.5 ± 1.1 mm

Lt: 29.5 ± 1.5 mm



Eye muscles

- a -Superior rectus: $3.8 \text{ mm} \pm 0.7 \text{ mm}$
- b -Oblique: $2.4 \text{ mm} \pm 0.4 \text{ mm}$
- C- Lateral rectus: $2.9 \text{ mm} \pm 0.6 \text{ mm}$
- d -Medial rectus: $4.1 \text{ mm} \pm 0.5 \text{ mm}$
- e -Inferior rectus: $\underline{4.9 \text{ mm}} \pm 0.8 \text{ mm}$



STEREOLITHOGRAPHIC

- **Pituitary:**

→ a Height (in the midcoronal plane): 2–7 mm

Caution: allow for normal size variations during:

- Pregnancy: up to 12 mm

- Puberty:

- up to 10 mm ← girls,

- up to 8 mm ← boys

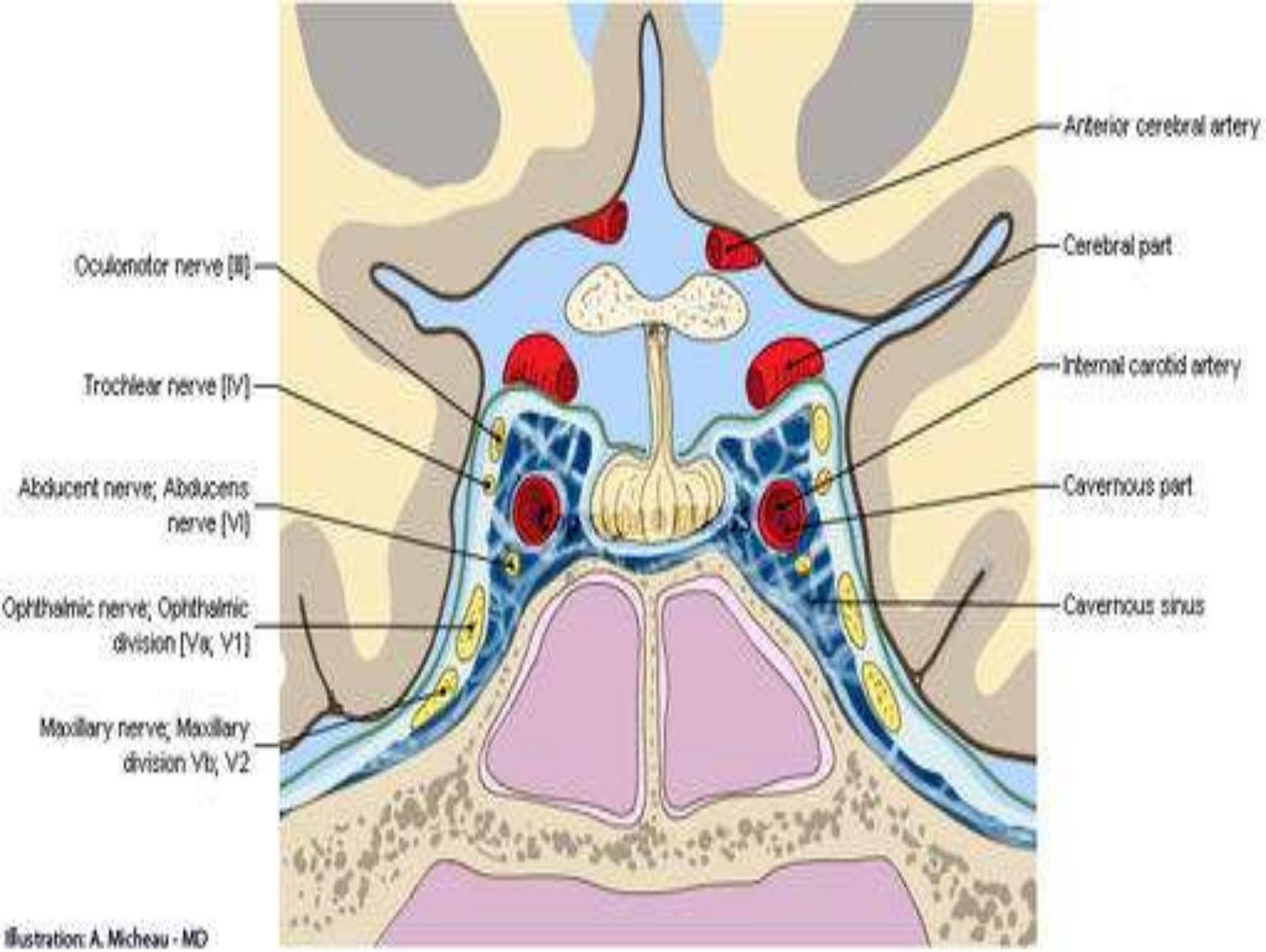
→ b Width (transverse extent in coronal plane, women of childbearing age): 13 mm ± 1.5 mm

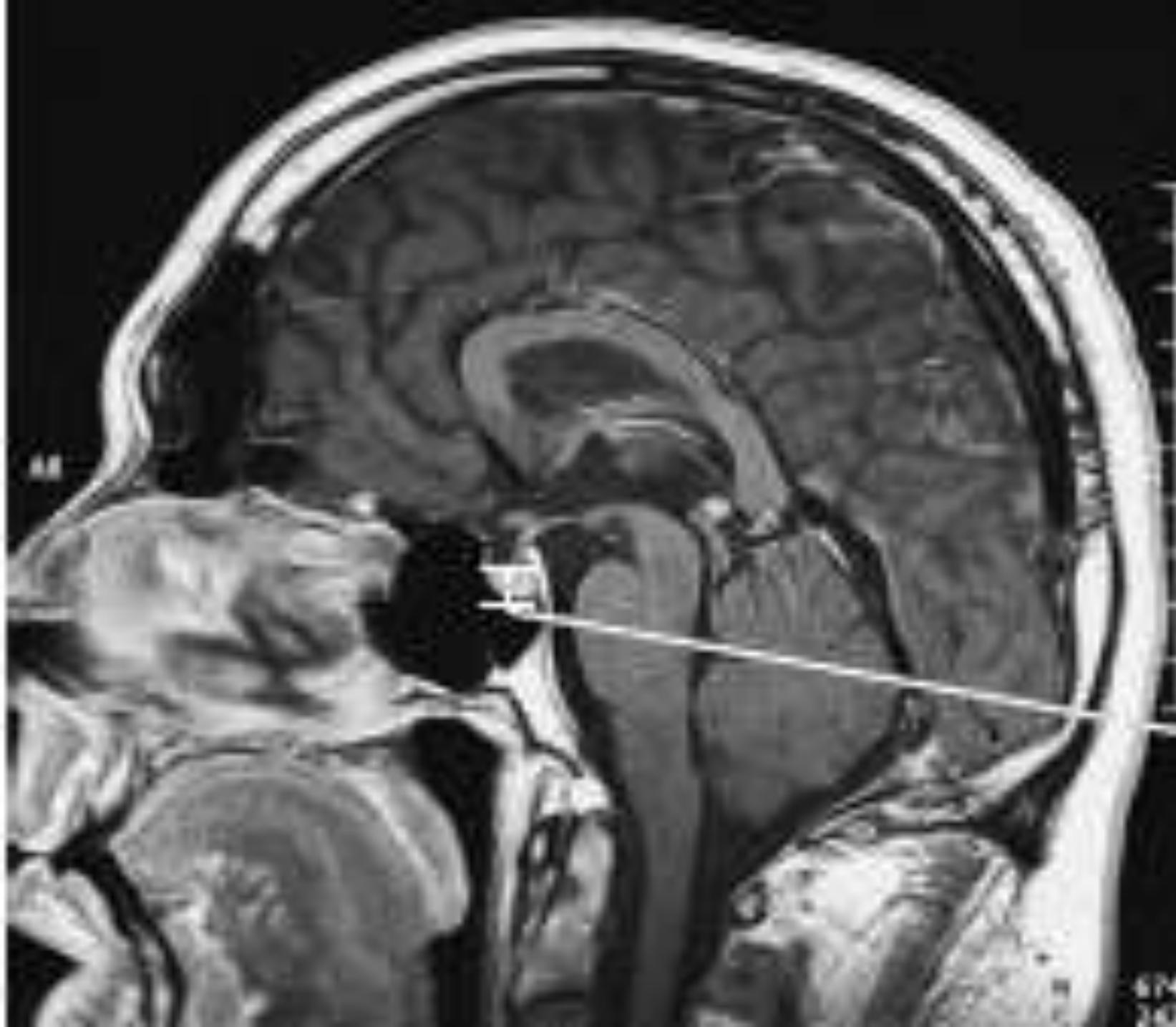
- *Area of the pituitary in the coronal plane (height x width, women of childbearing age): 93 mm² ± 1.6 mm²*

→ Pituitary stalk: < 4 mm



FIXED ADULT BRAIN
25-5-A



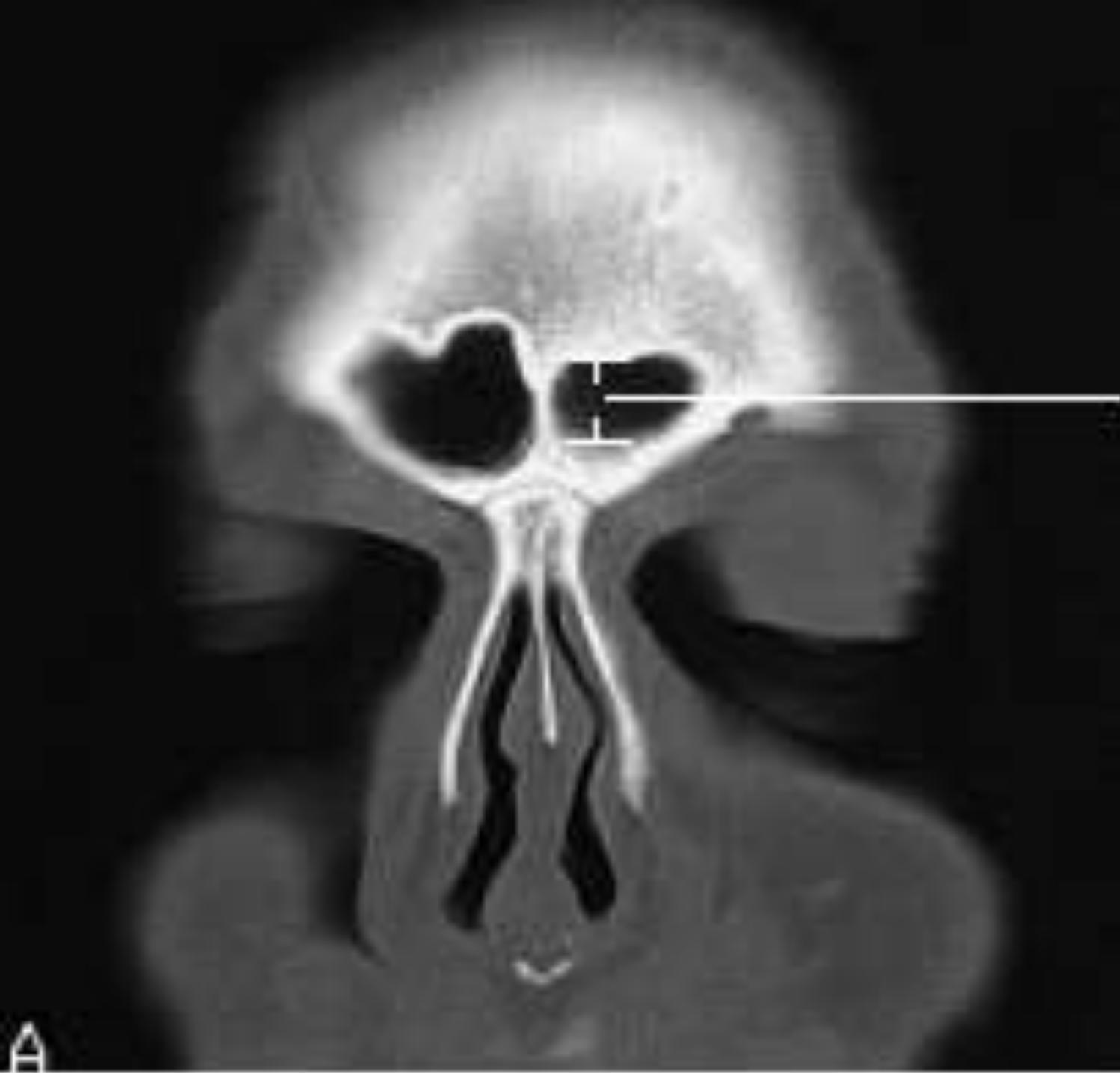




**Internal
auditory
canal:**
5–10 mm,
with 1 mm
difference
between
Rt & Lt
sides

P N S

- **1 Sphenoid sinus:**
 - Width 1-1.5 cm
- **2 Frontal sinus:**
 - Height 1.5-2 cm
- **2 3 Maxillary sinuses:**
 - Width 2 cm
 - Height 2 cm



A

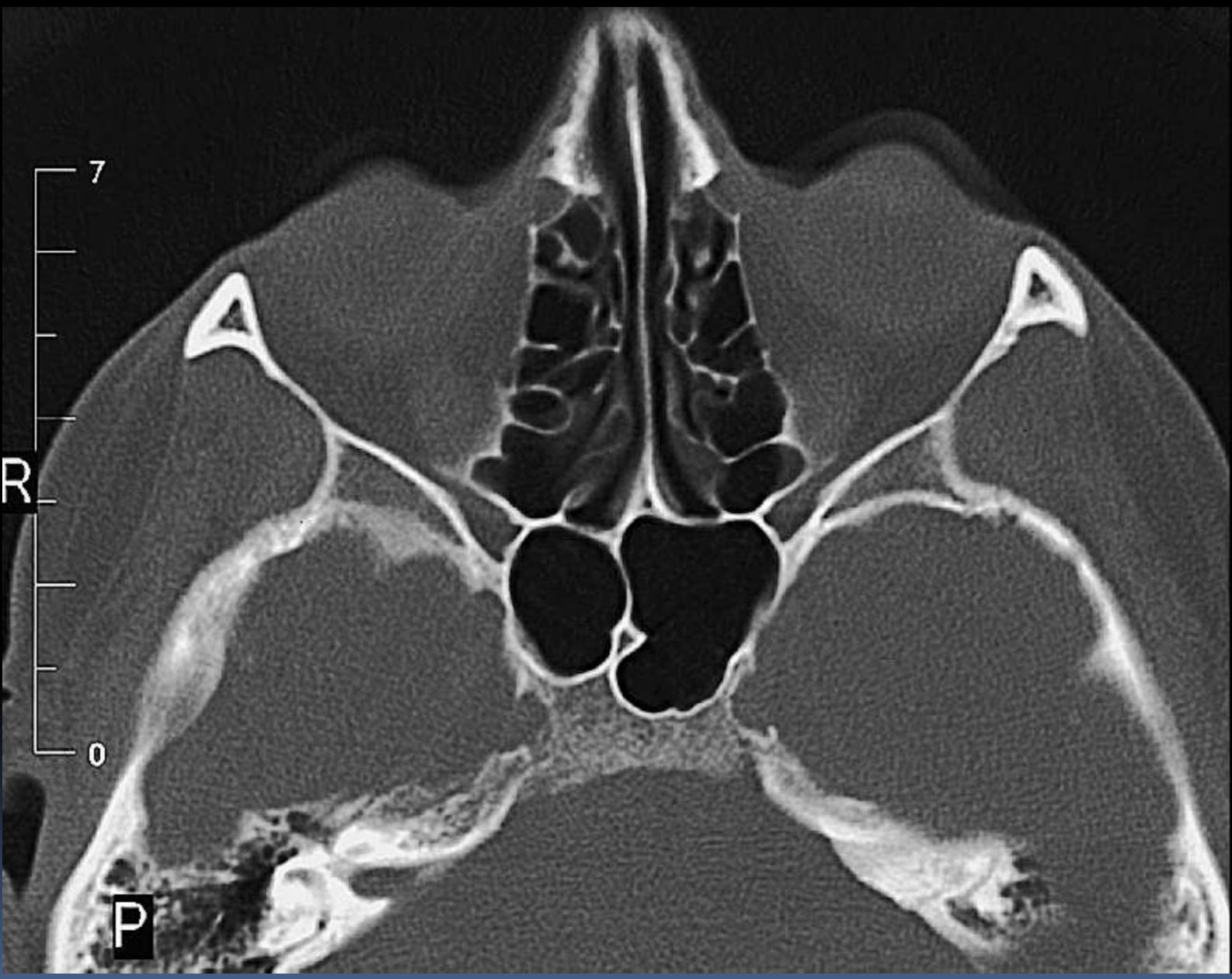




7
R
0

P

PICKER -
PQ6000

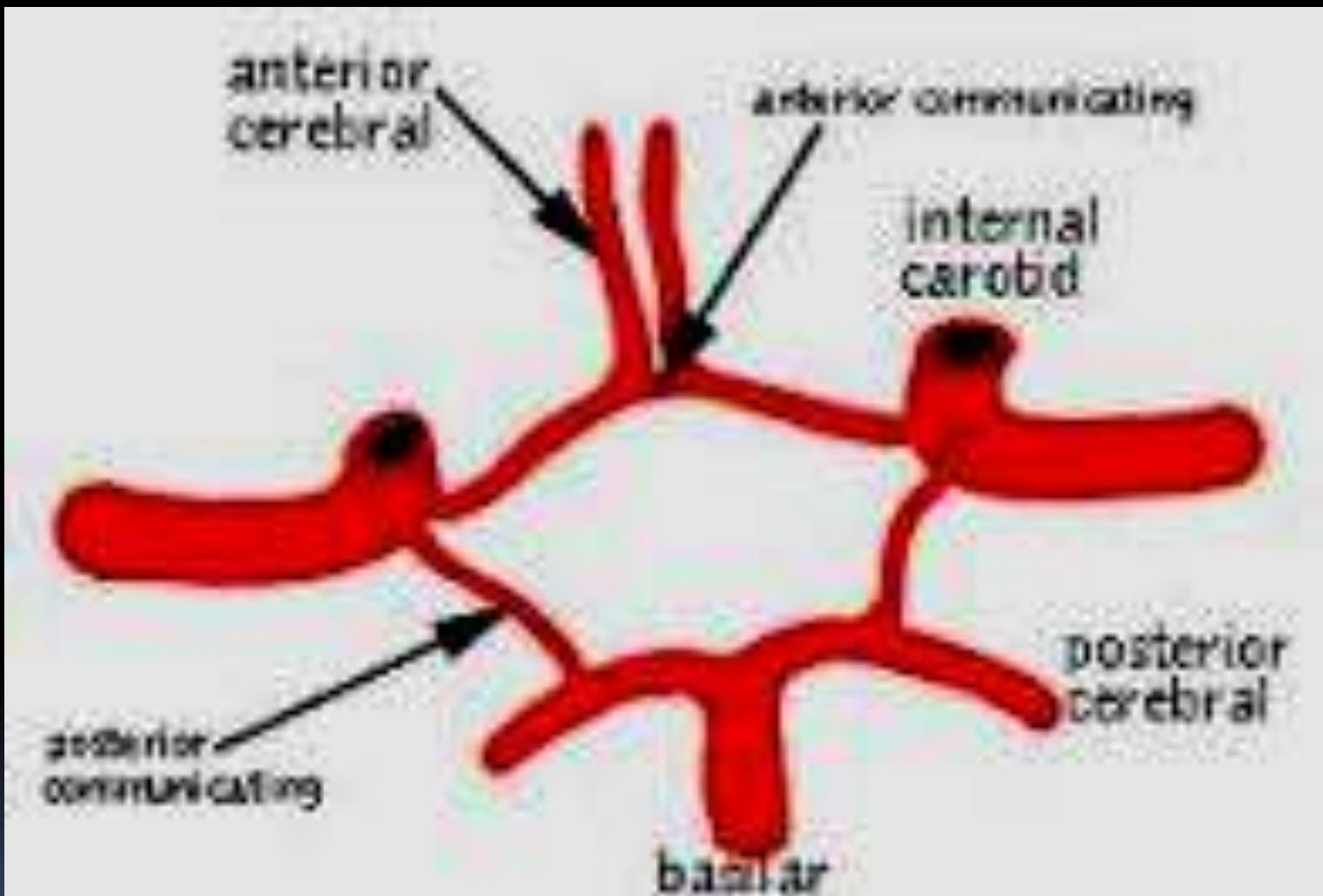


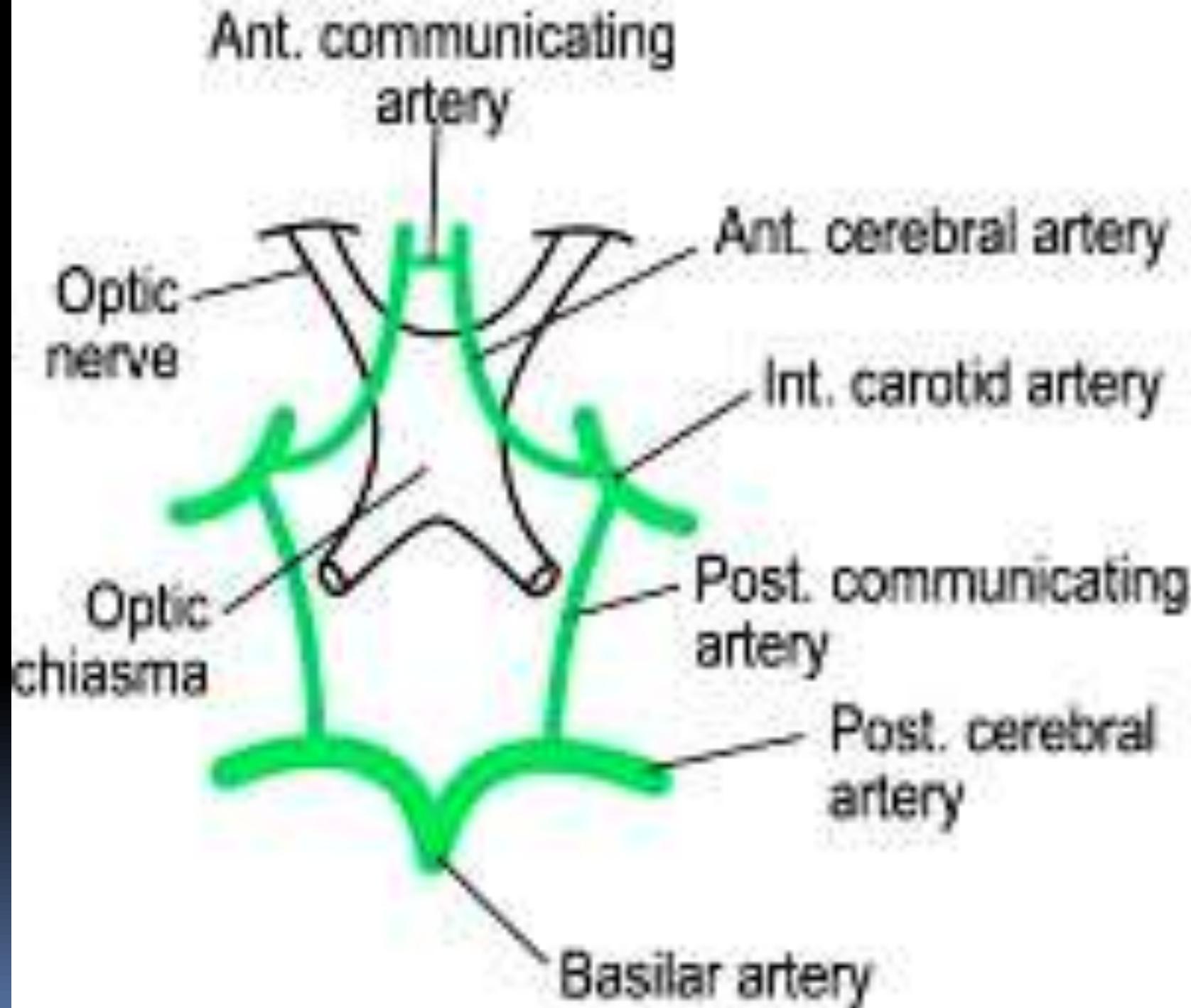
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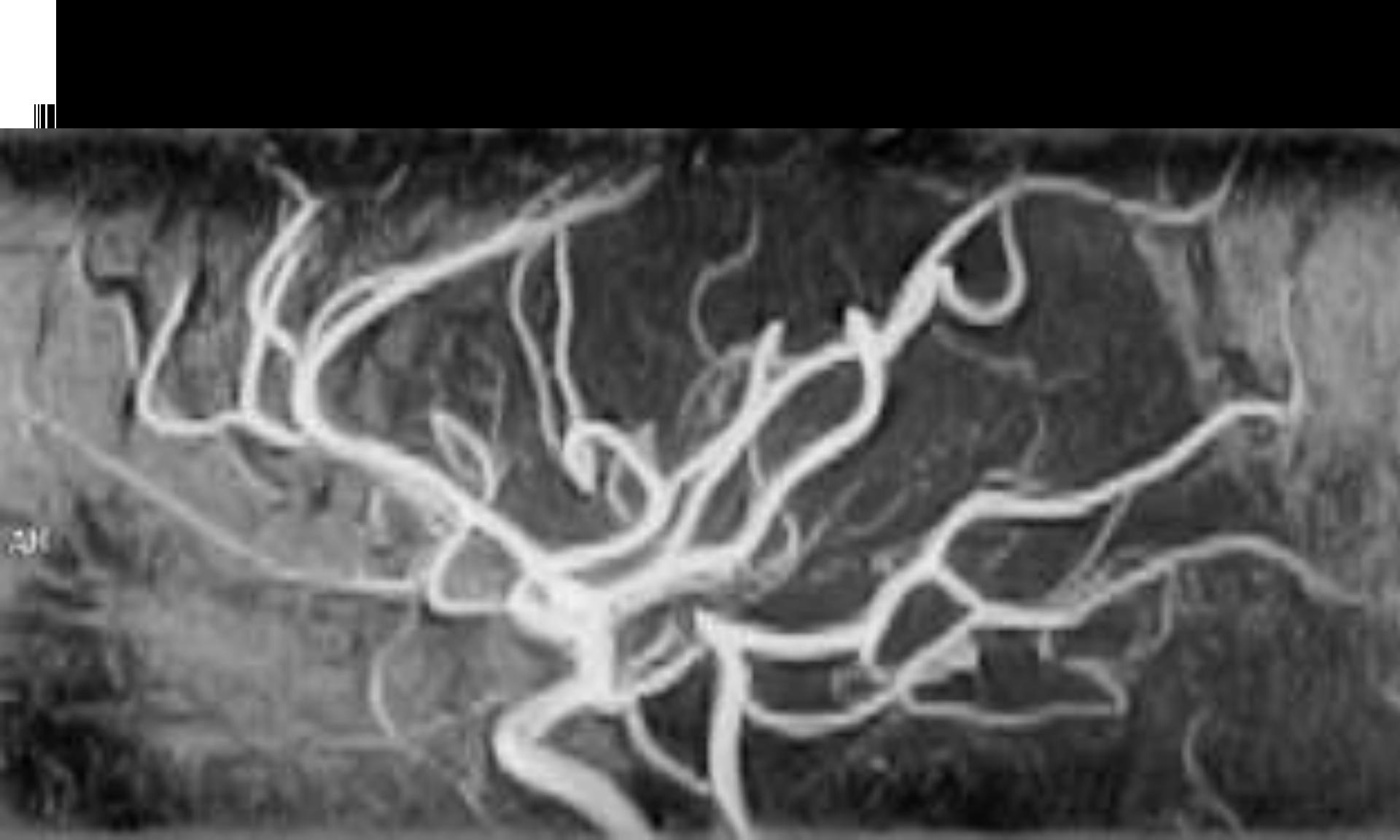
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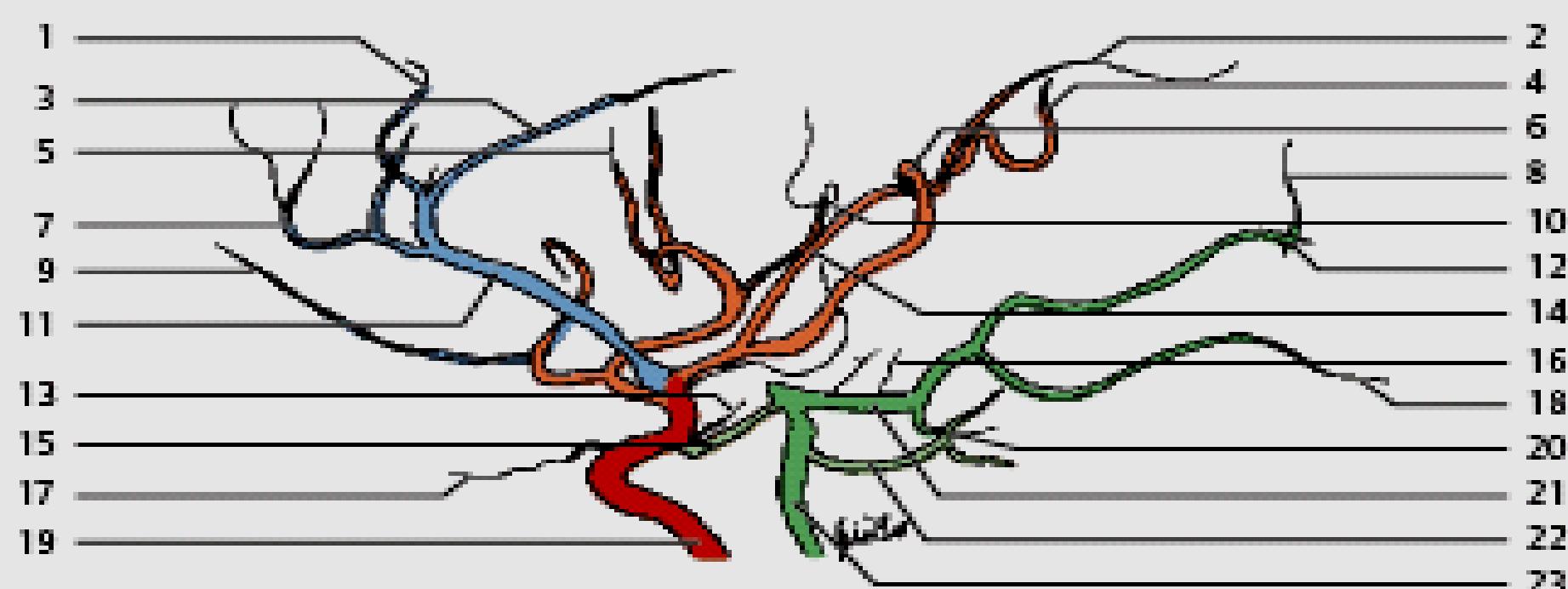
SCIENCEphotOLIBRARY



Anterior cerebral artery

Middle cerebral artery

Posterior cerebral artery



- 1 Callosomarginal artery
- 2 Parietal artery
- 3 Pericallosal artery
- 4 Artery of angular gyrus
- 5 Artery of precentral sulcus
- 6 Middle cerebral artery (opercular part)
- 7 Polar frontal artery
- 8 Parieto-occipital artery
- 9 Medial frontobasal artery
- 10 Artery of central sulcus
- 11 Anterior cerebral artery (postcommunicating segment, A2 segment)

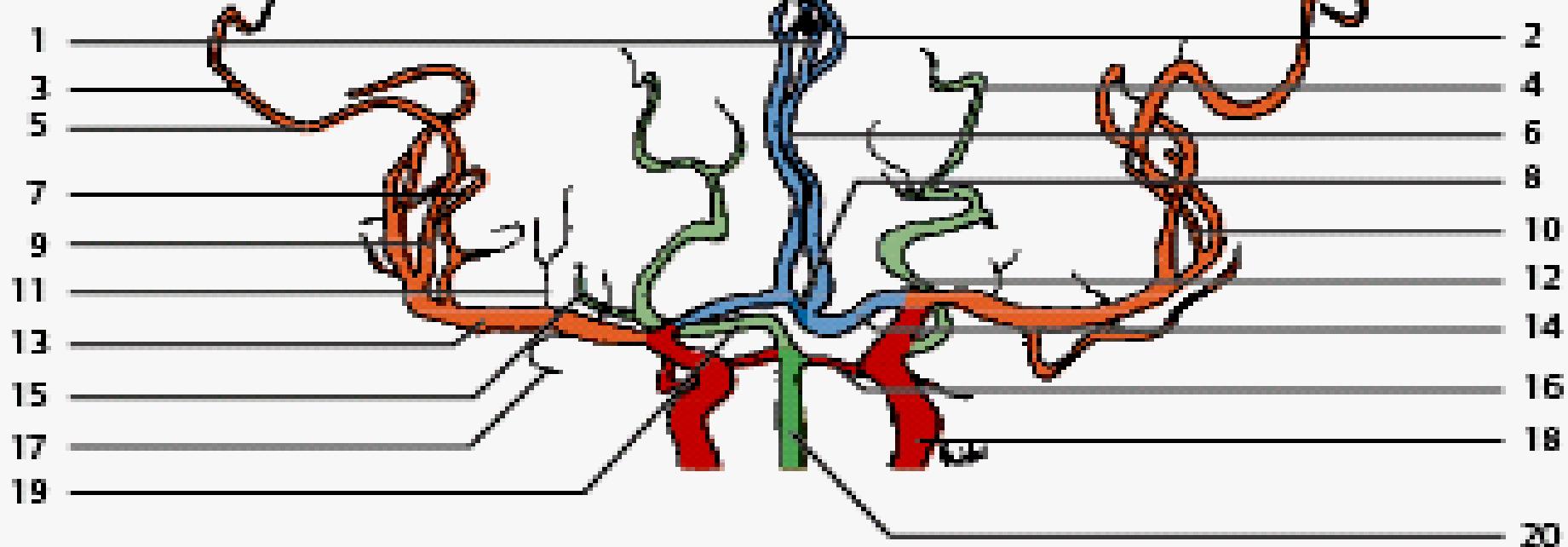
- 12 Medial occipital artery
- 13 Anterior choroidal artery
- 14 Middle cerebral artery (M2 segment)
- 15 Posterior communicating artery
- 16 Posterior medial central arteries
- 17 Ophthalmic artery
- 18 Oculotemporal branch
- 19 Internal carotid artery
- 20 Posterior temporal artery
- 21 Posterior cerebral artery
- 22 Superior cerebellar artery
- 23 Basilar artery



Anterior cerebral artery

Middle cerebral artery

Posterior cerebral artery



- 1 Callosom marginal artery
- 2 Pericallosal artery
- 3 Superior parietal artery
- 4 Posterior cerebral artery (parieto-occipital ramus)
- 5 Middle cerebral artery (opercular part, M3 segment)
- 6 Anterior cerebral artery (postcommunicating part)
- 7 Insular arteries
- 8 Anterior communicating artery
- 9 Middle cerebral artery (insular part, M2 segment)
- 10 Anterior temporal artery and middle temporal artery
- 11 Striate artery
- 12 Left posterior cerebral artery (from internal carotid artery, variant)
- 13 Middle cerebral artery (sphenoid part, M1 segment)
- 14 Anterior cerebral artery (precommunicating part)
- 15 Posterior cerebral artery (temporal and occipitotemporal branches)
- 16 Superior cerebellar artery
- 17 Polar temporal artery
- 18 Internal carotid artery
- 19 Right posterior cerebral artery
- 20 Basilar artery

