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NEUROANATOMY

Complete Study Notes — Brain, Ventricular System & Cranial Nerves

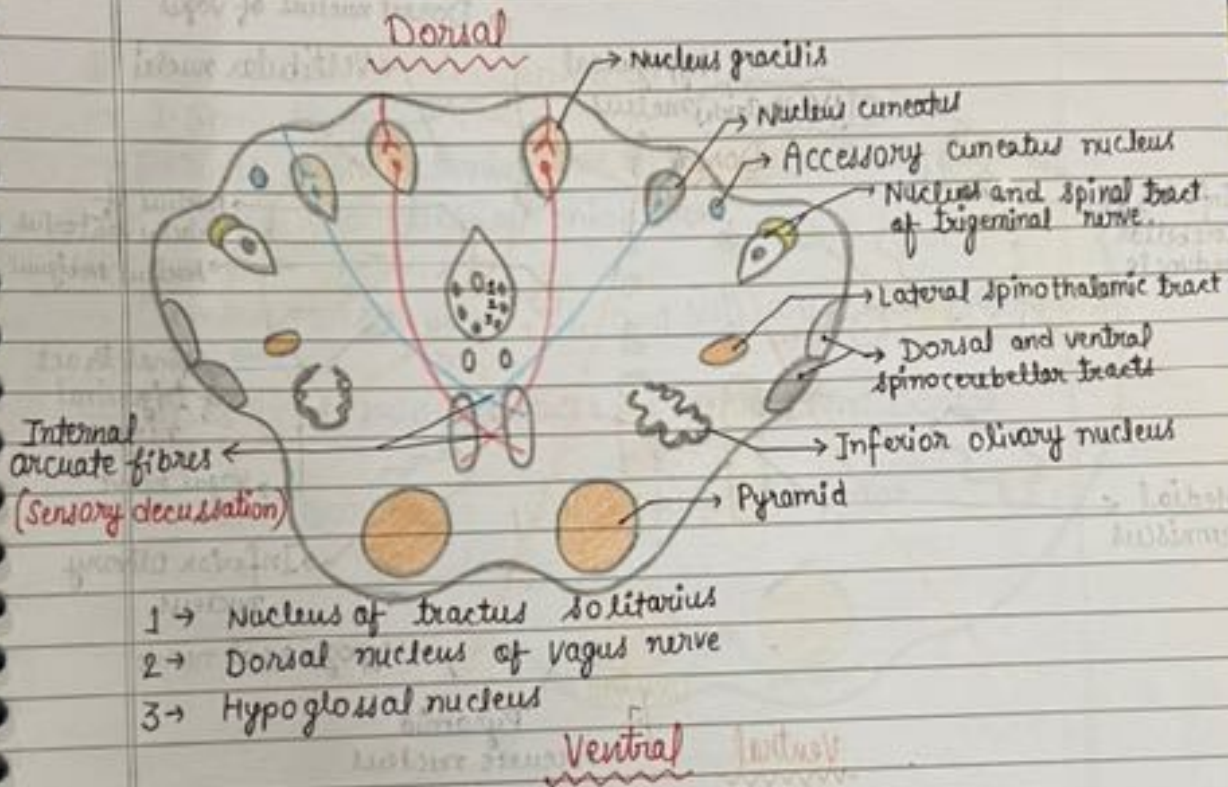
MBBS Second Year · MB2019 Curriculum

Hand-illustrated diagrams · Clinical correlations · Exam-ready format

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Transverse section of medulla Oblongata at the level of Sensory decussation.



#

BASICS

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- CNS develops from hollow neural tube.
- Developmentally, brain consists of forebrain, midbrain, Hindbrain.

Forebrain :-

- Consists of Cerebrum and Diencephalon.

Midbrain :-

- Small region which connects forebrain with hindbrain.

Hindbrain

- Consists of Pons, medulla Oblongata and Cerebellum.

①. ② Midbrain, Pons and medulla collectively forms "Brainstem"

Parts of brain	Cavity
Forebrain { Cerebrum (right and left cerebral hemisphere)	Right and left lateral Ventricles
Diencephalon (thalamus and hypothalamus)	Third ventricle
Midbrain	Cerebral aqueduct
Hindbrain (Pons, medulla and Cerebellum)	Fourth ventricle

M. Imp. ~~2020~~

BASAL Nuclei/Ganglion :-

→ Basal ganglia are large subcortical masses of grey matter located inside the white matter in basal part of cerebral hemisphere.

→ Basal ganglia include:-

- (1) Corpus striatum
- (2) Claustrum
- (3) Amygdaloid body.

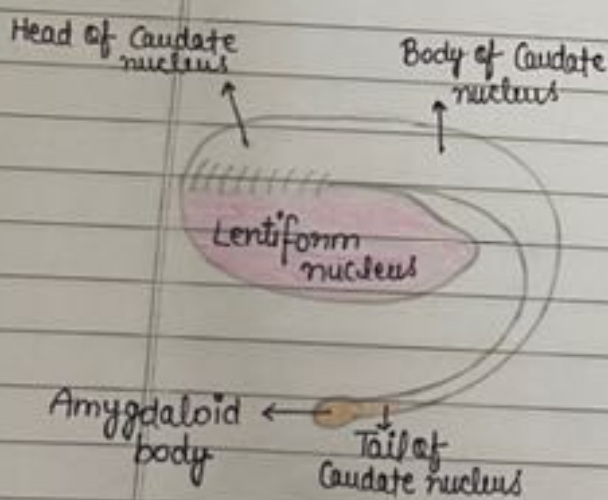


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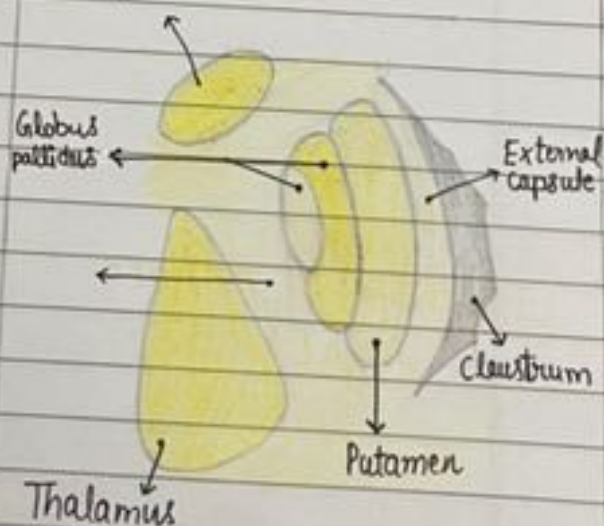
Corpus Striatum

→ Situated lateral to the thalamus.
→ Divided by internal capsule into two nuclei.

- (i) Caudate nucleus
- (ii) Lentiform nucleus.



Head of caudate nucleus

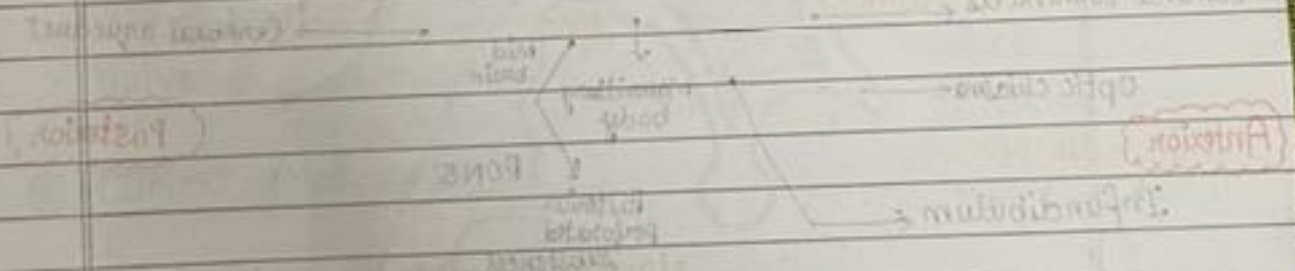


Applied Anatomy :-

① Lesions of internal Capsule.

- Internal Capsule is usually involved in cerebrovascular disorders, due to the involvement of medial and lateral striate branches of middle cerebral artery.
- Commonly occurs due to the rupture of lateral striate (also called Charcot's artery of cerebral haemorrhage), which supplies the posterior limb of internal capsule.

Damaged caused by haemorrhage and infarction leads to loss of sensations and Spastic paralysis (hemiplegia) of the opposite half of the body.



Anterior wall :-

- Anterior column of fornix
- Anterior commissure
- Corpus callosum

Posterior wall :-

- Pineal body
- Posterior commissure
- Tectal sulcus

Lateral wall :-

- Medial surface of thalamus
- Hypothalamus
- Hypophyseal stalk

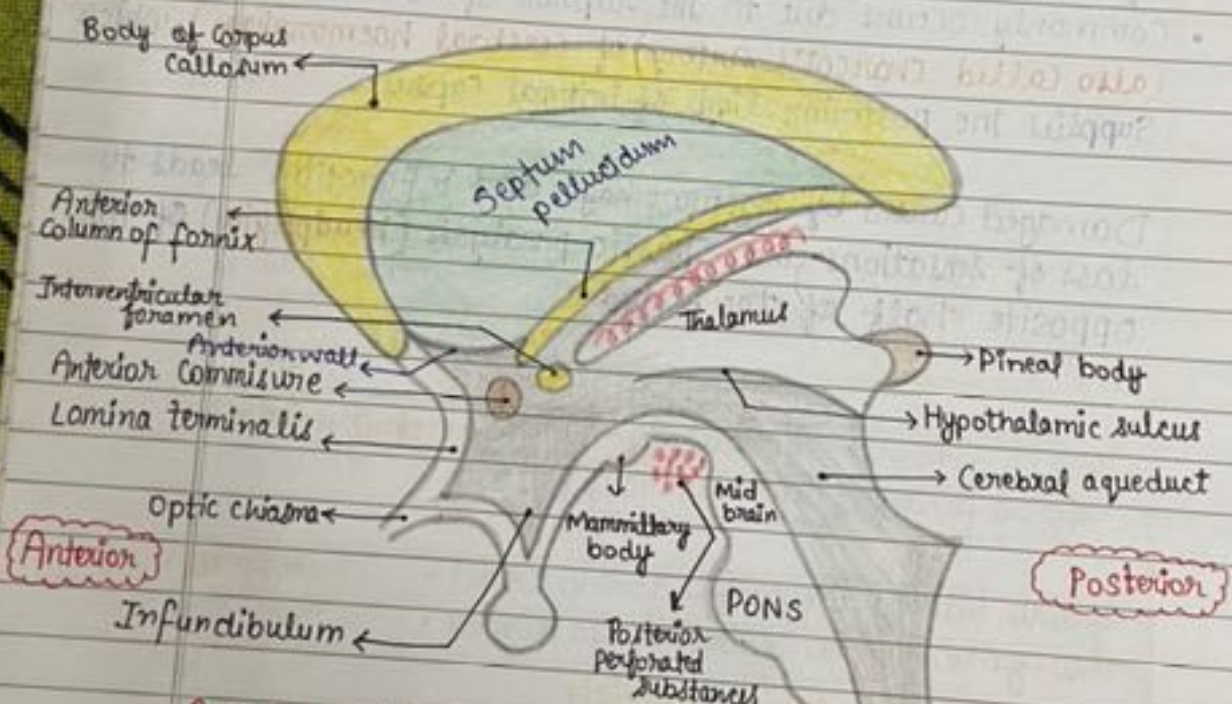
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⊕ Ependyma → thin neuroepithelial lining of ventricular system of the brain and central canal of spinal cord.
→ made up of ciliated columnar epithelium

⊕ Third Ventricle

- Third ventricle is the cavity of Diencephalon.
- It is a median cleft (cavity) between the two thalami and part of hypothalamus.
- Cavity is lined by ependyma.

#. Boundaries :-



Anterior wall :-

- Anterior columns of fornix
- Anterior Commissure
- Lamina terminalis

Posterior wall :-

- Pineal body
- Posterior commissure
- Cerebral aqueduct.

Lateral wall :-

- Medial surface of thalamus
- Hypothalamus
- Hypothalamic sulcus.

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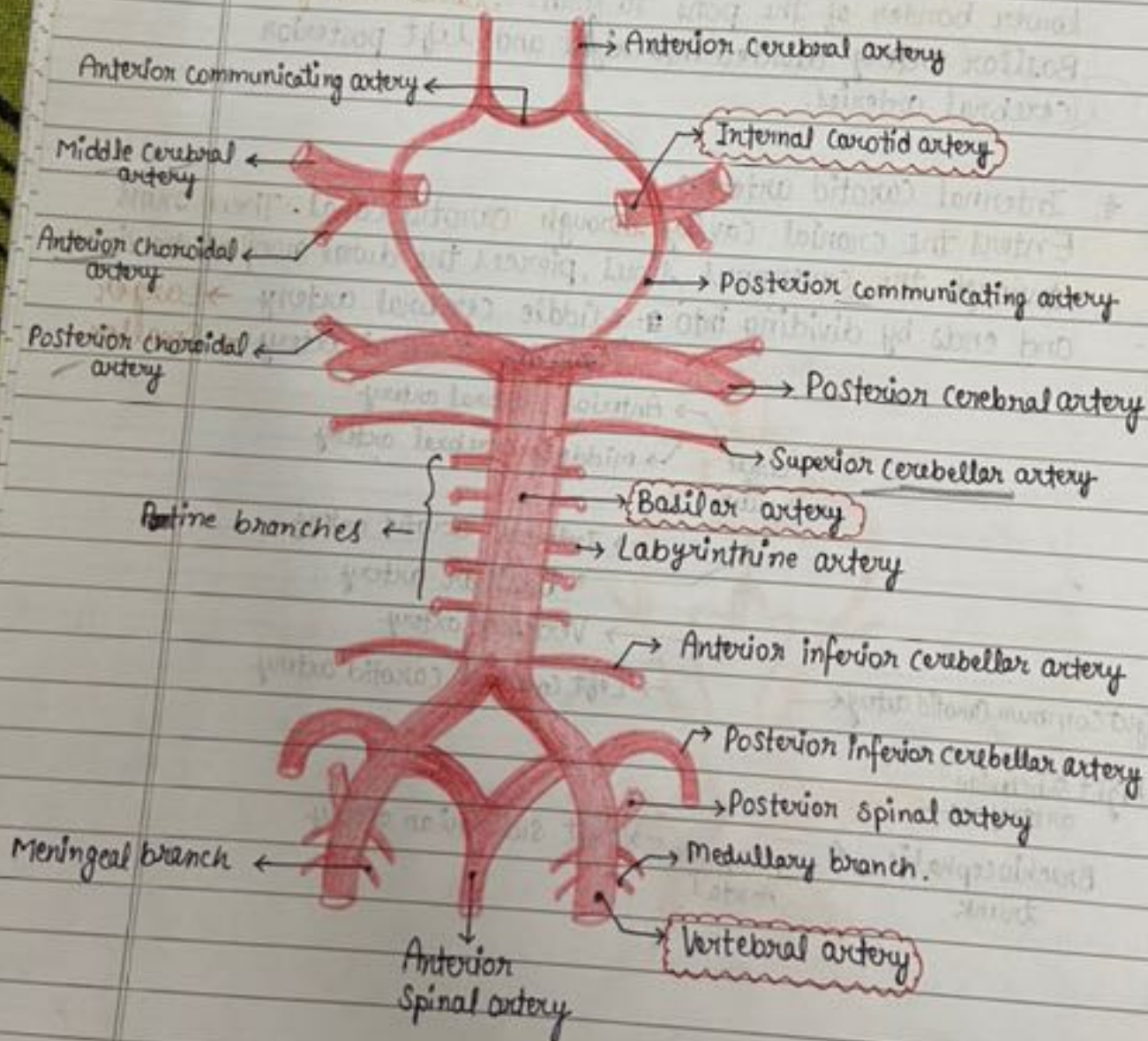
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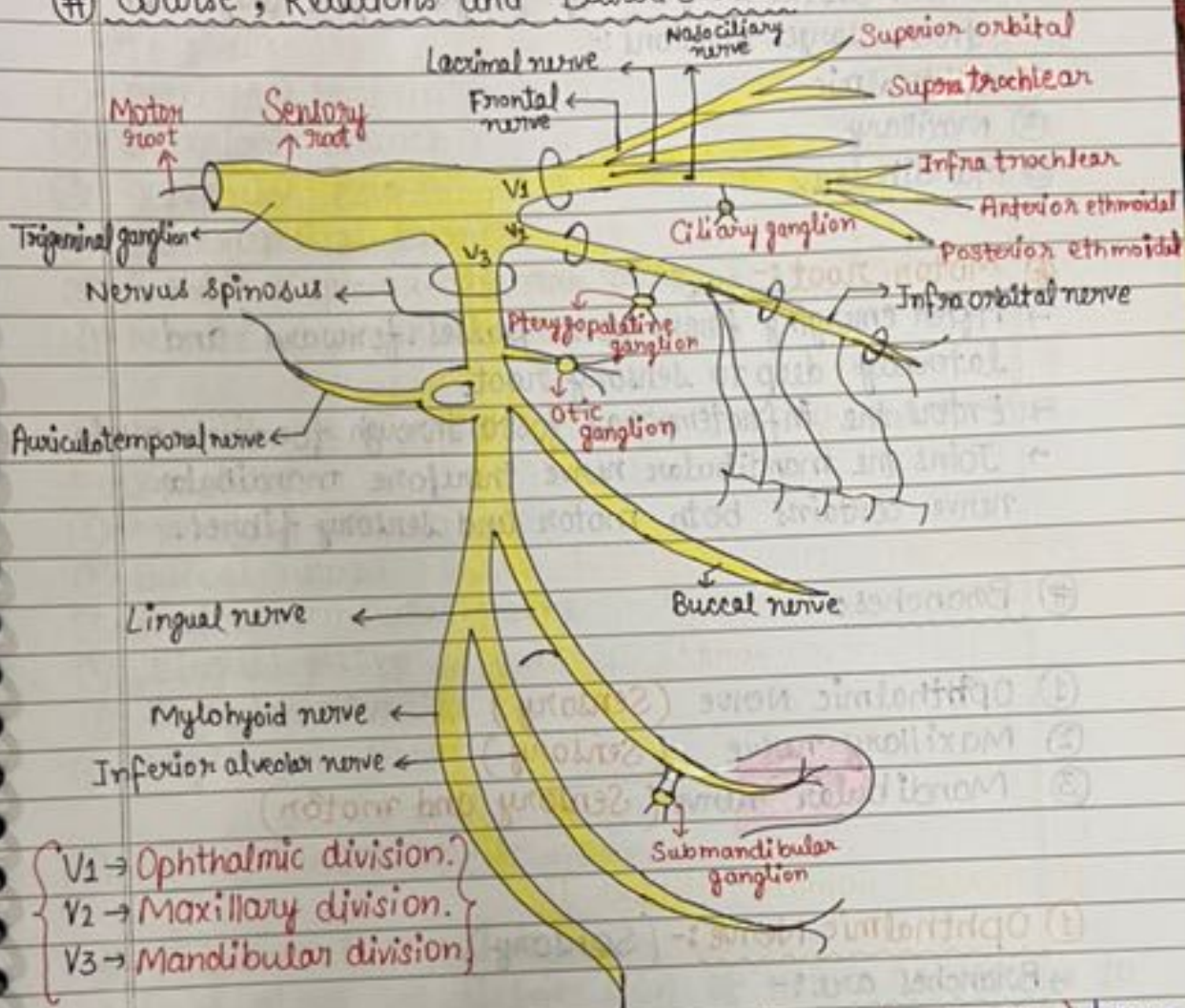
Circle of Willis or Circulus Arteriosus

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Branches of basilar and internal carotid arteries anastomose at the base of brain around the interpeduncular fossa and forming a hexagonal arterial circle called Circle of Willis or Circulus Arteriosus.



Course, Relations and Distribution:-



→ Nerve arises by two roots (motor and sensory) from ventrolateral aspect of pons.

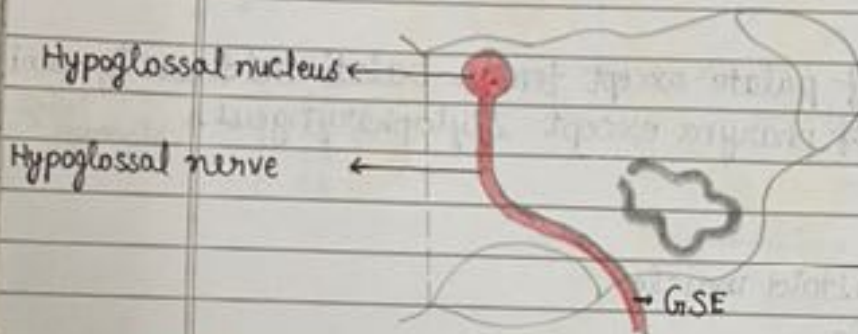
① Sensory root:-

- Passes forwards and laterally over temporal bone to enter the middle cranial fossa.
- Here it exhibits a rounded enlargement, trigeminal (gasserian) ganglion. The Subarachnoid expansion over this portion is called Meckel's cave.

Twelfth Cranial Nerve (Hypoglossal)

- Hypoglossal is 12th cranial nerve
- Purely motor
- Supply the muscles of tongue.

⊕ Functional Components and Nuclei :-



⊕ General somatic efferent fibres

- Arises from hypoglossal nucleus and supply all the muscles of tongue.

⊕ Course and Relations :-

