

## Introduction

### Parts of the Central Nervous System Related to Ventricles

- Cerebral hemispheres
- Pons
- Medulla oblongata
- Spinal cord
- Central canal

### Ventricular System

#### Main Ventricles

- Lateral ventricles
- Third ventricle
- Fourth ventricle

#### Connections Between Ventricles

- Lateral ventricle
- Interventricular foramen
- Third ventricle
- Aqueduct of midbrain
- Fourth ventricle
- Central canal

Diagrammatic coronal section showing the interconnections between the ventricles



## Lateral Ventricle

### Site

- It is the cavity of the cerebral hemisphere, one on each side.

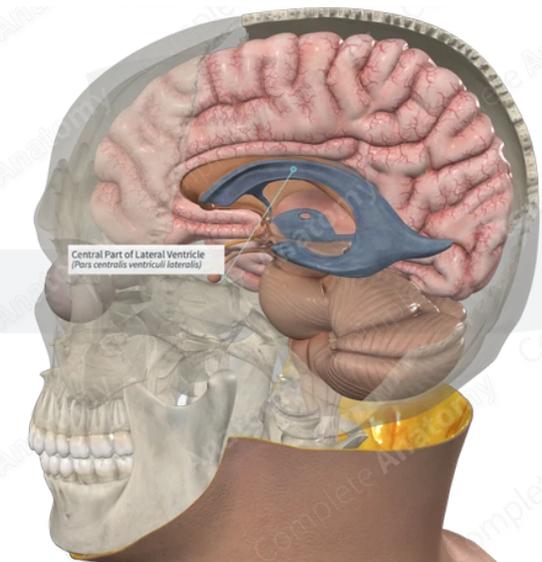
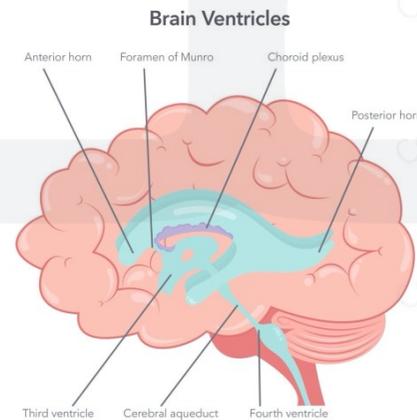
### Parts of the Lateral Ventricle

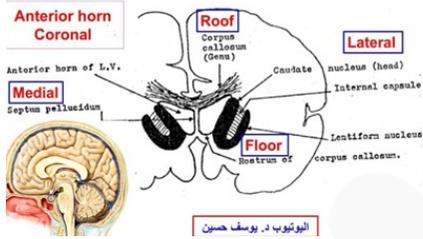
1. Central part (trunk) of lateral ventricle in parietal lobe
2. Anterior horn of lateral ventricle in frontal lobe
3. Posterior horn of lateral ventricle in occipital lobe
4. Inferior horn of lateral ventricle in temporal lobe

- **Collateral trigone**

### Connections

- The anterior horn is connected to the 3rd ventricle by the **interventricular foramen (foramen of Monro)**.





### Anterior (Frontal) Horn of the Lateral Ventricle

#### Boundaries (Coronal Section)

##### Roof

- Corpus callosum (genu)

##### Medial wall

- Septum pellucidum

##### Floor and Lateral wall

- Head of caudate nucleus
- Internal capsule
- Lentiform nucleus

##### Additional structures

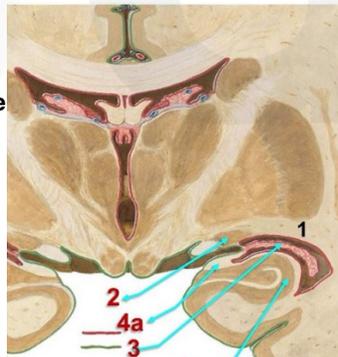
- Rostrum of corpus callosum

### Inferior Horn of the Lateral Ventricle

#### (Coronal Section)

1. Lateral wall
  - Tapetum of corpus callosum
2. Roof
  - Tail of caudate nucleus
  - Stria terminalis
3. Medial wall
  - Choroid fissure invaginated by choroid plexus
4. Floor

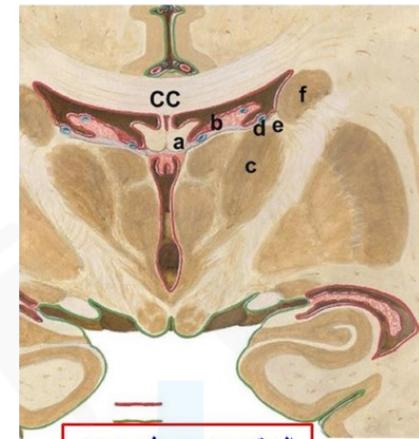
- a. Fimbria of the hippocampus
- b. Hippocampus



### Central Part (Body) of the Lateral Ventricle

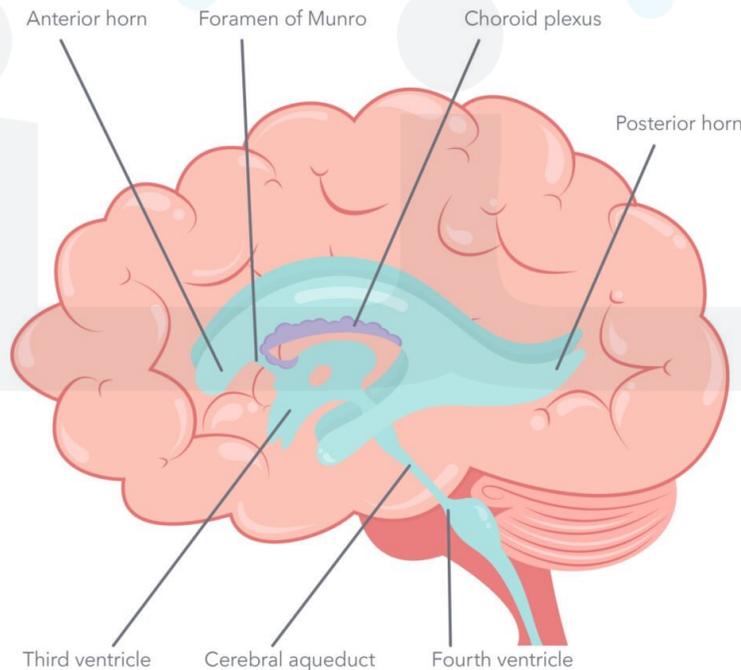
#### Boundaries (Coronal Section)

1. Roof
  - Body of corpus callosum
2. Medial wall
  - Septum pellucidum
3. Floor and lateral wall (from medial to lateral):
  - a. Body of fornix
  - b. Choroid plexus of the lateral ventricle
  - c. Superior surface of the thalamus
  - d. Thalamostriate vein
  - e. Stria terminalis
  - f. Body of caudate nucleus



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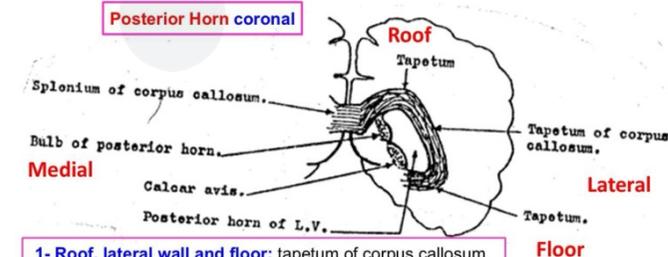
### Brain Ventricles



### Posterior Horn of the Lateral Ventricle

#### (Coronal Section)

1. Roof, lateral wall and floor
  - Tapetum of corpus callosum
2. Medial wall
  - Shows two elevations:
    - a. Bulb of posterior horn (upper): formed by forceps major of corpus callosum
    - b. Calcar avis (lower): produced by the calcarine sulcus



- 1- Roof, lateral wall and floor; tapetum of corpus callosum.
- 2- Medial wall; shows 2 elevations;
  - a- Bulb of posterior horn (upper); is formed by forceps major of corpus callosum.
  - b- Calcar avis (lower); produced by the calcarine sulcus.

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## Choroid Plexus

### Choroid Plexus of the Lateral Ventricle

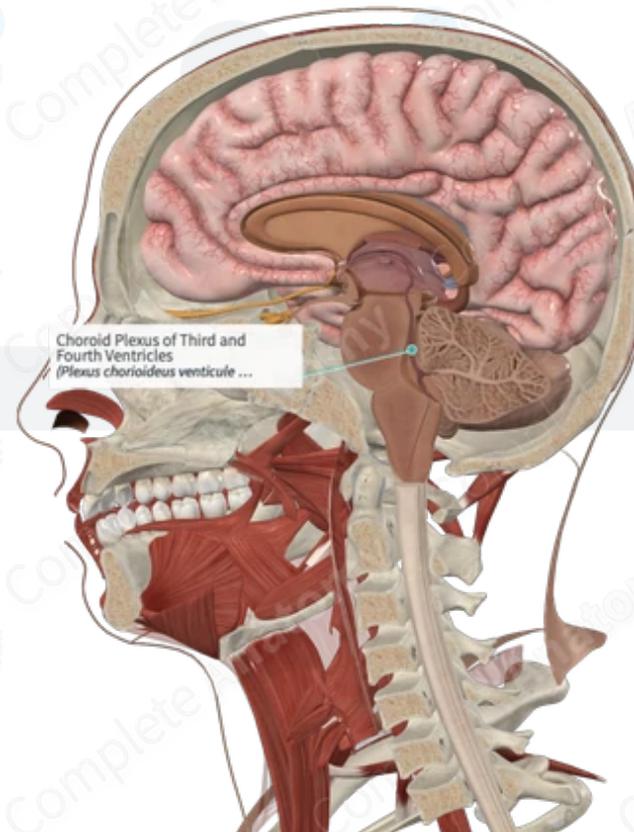
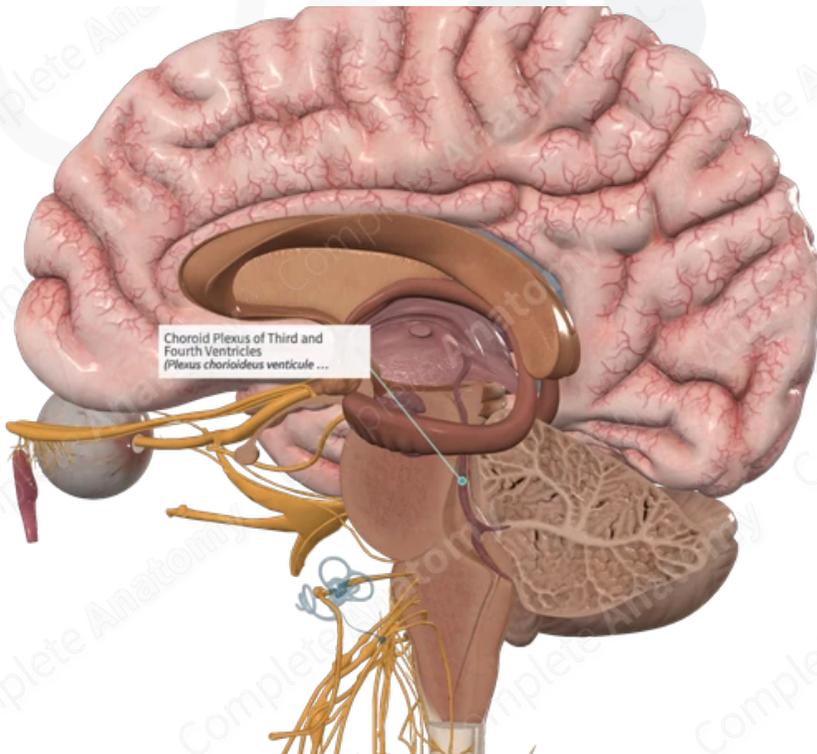
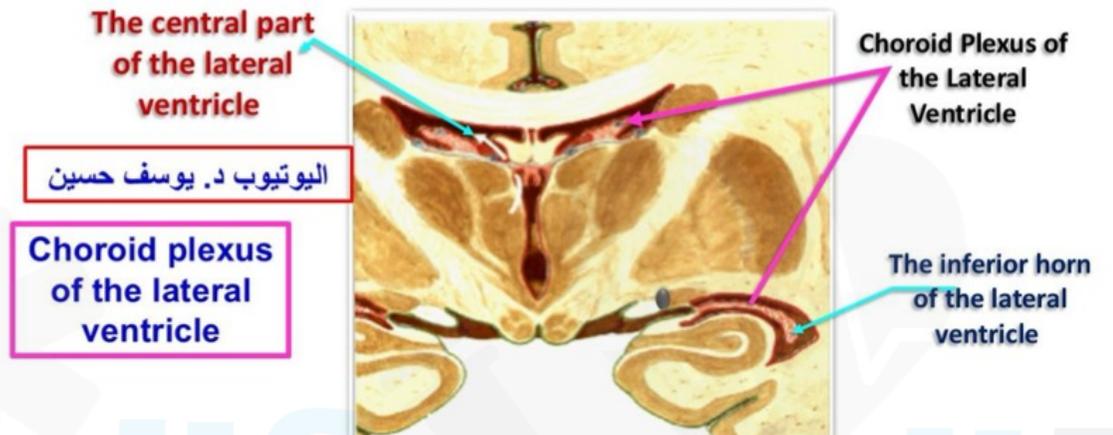
- Present in the central part of the lateral ventricle
- Present in the inferior horn of the lateral ventricle

### Tela Choroidea

- Double-layer of pia mater
- Contains choroid plexuses

### Blood Supply

- Choroid plexus in central part is formed by posterior choroidal branches of posterior cerebral artery
- Choroid plexus in inferior horn is formed by anterior choroidal branches of internal carotid artery



# C.S.F.

## Cerebrospinal Fluid

### Functions of Cerebrospinal Fluid

1. Protects the brain and spinal cord from the external shocks and trauma.
2. Supports the brain and spinal cord.
3. Regulation of the intracranial pressure.
4. Used for diagnosis of some diseases (Lumbar puncture)

### Characters of the C.S.F.

#### 1. Appearance:

- Clear watery fluid.
- If it becomes turbid this indicates meningitis.

#### 2. Formation:

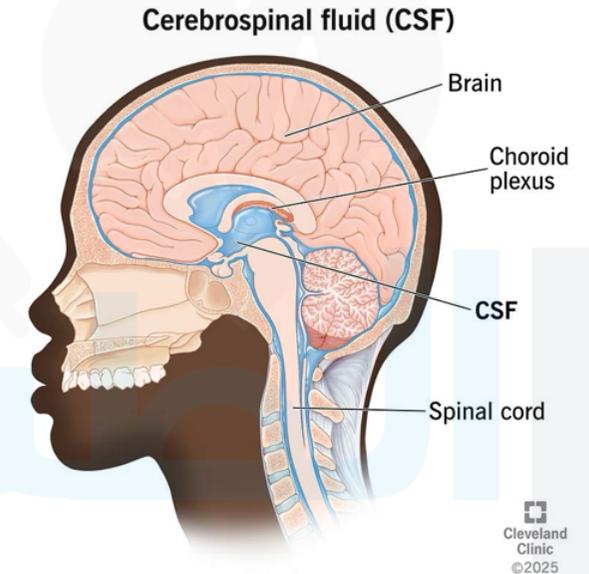
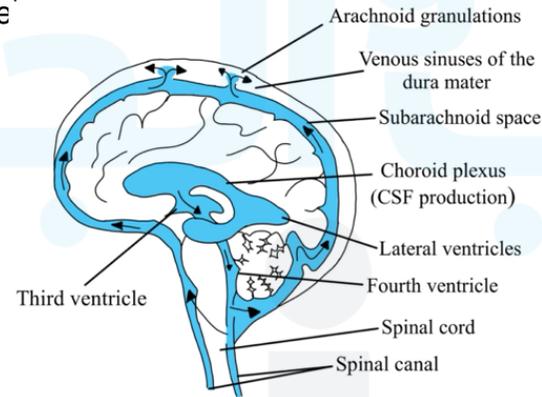
- It is formed by choroid plexuses in the brain ventricles.

#### 3. Amount:

- About 120–150 ml.

#### 4. Secretion:

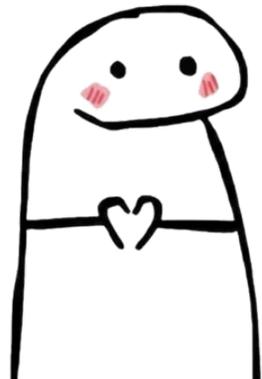
- About 20 ml per hour.



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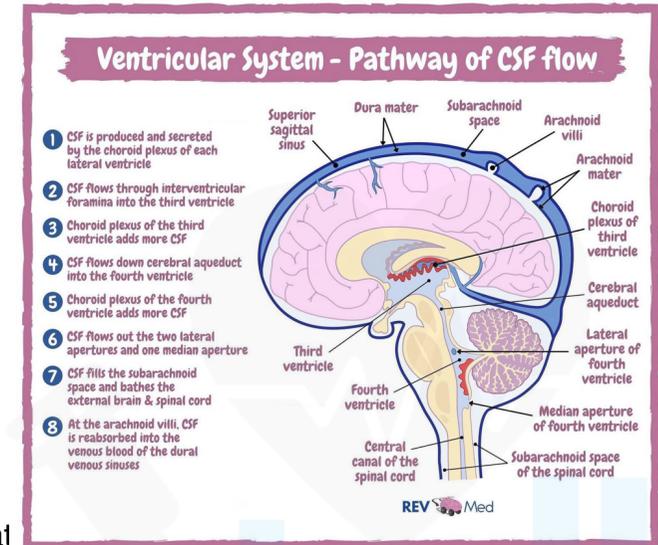


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## C.S.F. Circulation

- C.S.F. is filtrated by the choroid plexus of the **lateral ventricles on each side**
- interventricular foramina of Monro
- **3rd ventricle** (more C.S.F. is added by the choroid plexuses)
- cerebral aqueduct of Sylvius
- **4th ventricle** (more C.S.F. is added by the choroid plexuses)
- 3 apertures in the roof of the 4th ventricle
  - **2 lateral foramina of Luschka**
  - **median foramen of Magendi**
- subarachnoid space.
  - Some of the C.S.F. passes down through the central canal of the closed medulla oblongata



## Absorption of C.S.F.

- C.S.F. was filtrated by arachnoid villi and granulations into the superior sagittal sinus.

## N.B.

- Pulsation of the large arteries present in the subarachnoid space, helping the circulation.



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لَا حَوْلَ وَلَا قُوَّةَ إِلَّا بِاللَّهِ

"من كنوز الجنة"