

Syllabus Laboratorium Anatomy
Neurobehaviour and Special Senses (PART 3)

A Sequences

- I. Introduction : 40 min
- II. Pre Test : 10 min
- III. Activity Lab : 90 min
 - Discussion 90 min
- IV. Post Test : 10 min

B Topic

1. Cerebral hemisphere
2. Basal ganglia
3. Limbic System
4. Blood brain circulation

C Venue

Lab Anatomy C4.1 Jatinangor (Medical Faculty Universitas Padjadjaran

D Equipment Anatomy Model

CNS & PNS	<ol style="list-style-type: none"> 1. Model potongan otak (sagital) – basah 2. Model otak -kering 3. Model skeleton cranial base 4. Model potongan otak (coronal)- basah
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E Pre-requisite

- Content lab in manual book (pre and post test will be taken from the manual, if scoring pre test ≤ 50 , can not allowed the activity lab)
- Bring your text book, reference book e.q Anatomy atlas, e-book etc. (minimal 1 group 1 atlas).
- Bring your pencil colours (min 3 colours)

F	Activity Lab
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1. Students will be divided into 4 small groups
2. Introduction will be given in the large group (40 min)
3. Discussion in the small group (90 min)

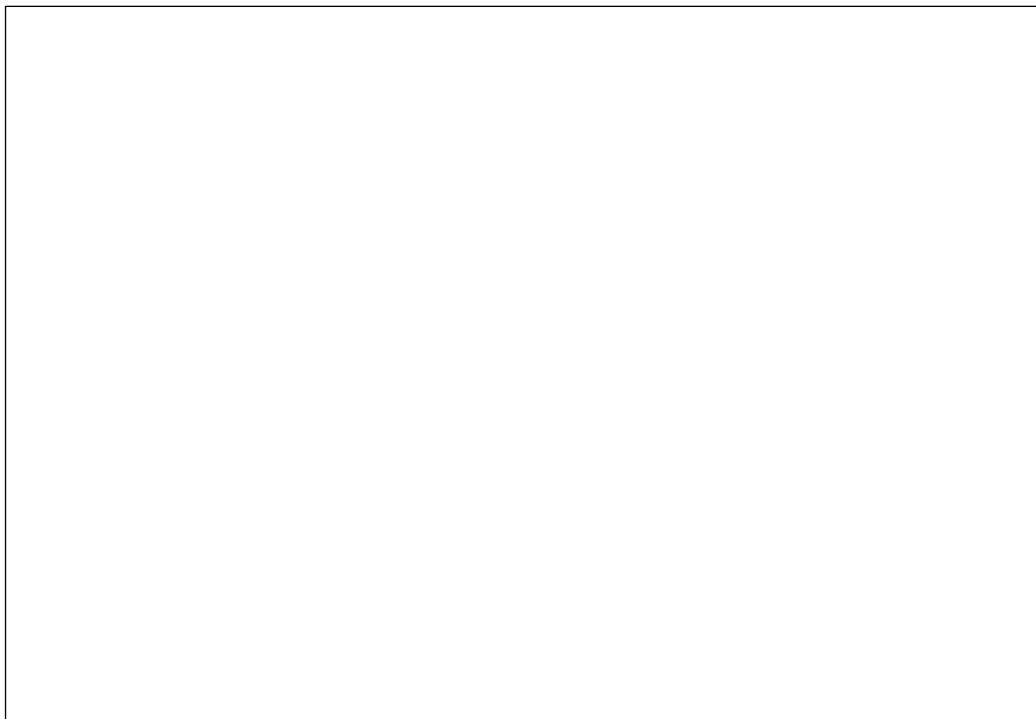
I. The Cerebral Hemisphere

Clinical Scenario :

A 65-year-old male patient is admitted to the hospital with a parietal lobe hemorrhage on the dominant side of the brain. The patient speaks slowly, and his articulation is very poor consisting mainly of nonsensical phrases that are meaningless to the observer. The patient is aware that his speech is abnormal and continues to attempt the intended meaning by repeated reiterations without success. The patient was diagnosed stroke at the parietal lobes of the cerebral cortex.

FIND THE PICTURE STRUCTURE BELOW !

- Longitudinal cerebral fissure
- Falx cerebri
- Corpus callosum
- Tentorium cerebelli
- Gyrus
- Sulcus : central sulcus, calcarine sulcus, parieto-occipital sulcus, lateral sulcus
- Lobes : frontal, parietal, temporal, occipital
- Insula
- Internal structures : White matter & grey matter, ventricles (body, anterior, posterior and inferior horns, interventricular foramen), basal nuclei

II. Histology layer of cerebral cortex.**Questions :****Describe the nerve cells of the cerebral cortex.****Draw the schematic picture the layers of the cerebral cortex with the cell**

Cortical Connections :

Explain how the pattern of connections on the structures below :

1. Superior longitudinal fasciculus, arcuate fasciculus and insula
2. Corpus callosum, anterior commissura
3. Internal capsule, corona radiata
4. Thalamic radiation
5. Motor projections fibers

Functional areas.**a. FIND THE PICTURE TO identify the structures below :**

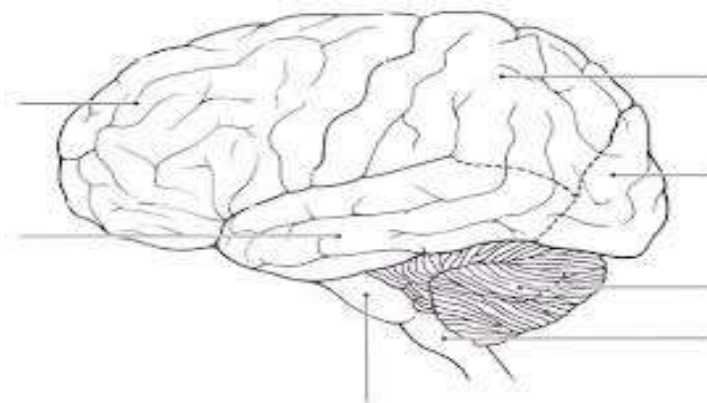
- Frontal eye field
- Premotor area
- Motor speech area of broca
- Primary motor area
- Primary somesthetic area
- Secondary somesthetic area
- Wernicke area
- Secondary visual area
- Primary visual area
- Primary auditory area
- Secondary auditory area

b. Classify the areas above based on the lobes !

- Frontal eye field → lobes :
- Premotor area → lobes :
- Motor speech area of Broca → lobes :
- Primary motor area → lobes :
- Primary somesthetic area → lobes :
- Secondary somesthetic area → lobes :
- Wernicke area → lobes :
- Secondary visual area → lobes :
- Primary visual area → lobes :
- Primary auditory area → lobes :
- Secondary auditory area → lobes :

c. What the different the term between primary, secondary. Explain the main concept!**d. What is the meaning of the Association cortex ?****e. About the prefrontal cortex, explain about it's correlation with the personal behavior.**

Labelling this picture :



According to the case above, where the location of the lesion ?

II. The Limbic System

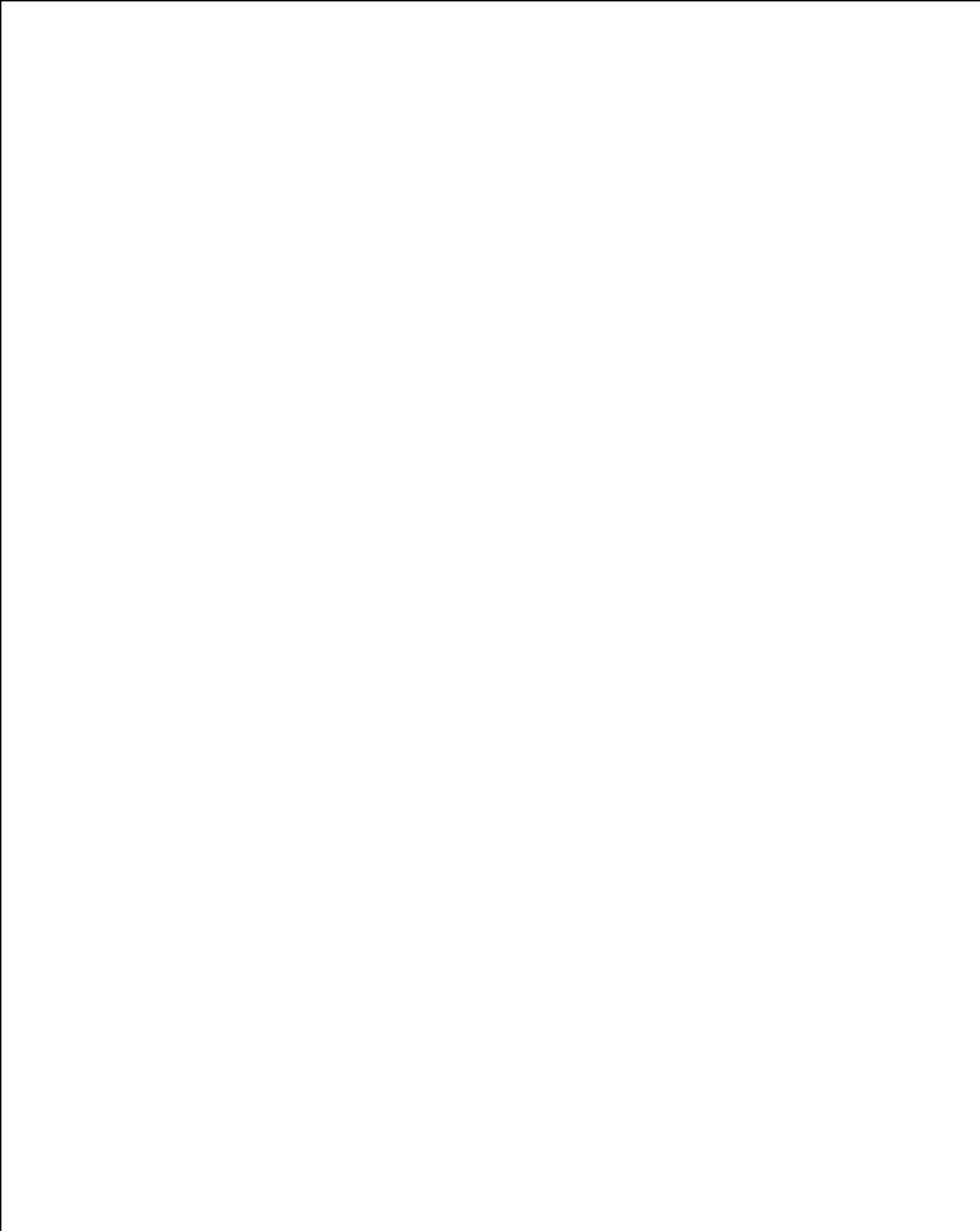
Clinical case :

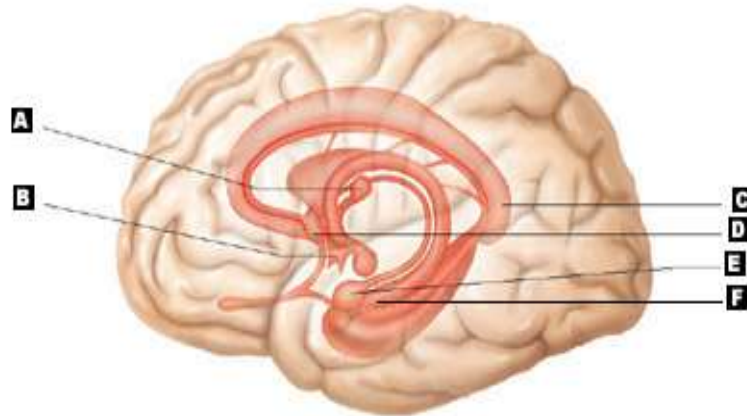
At 12 months of age, a male infant appears emotionally flat: no smiling or warm, happy expressions. Also, the mimicking of sounds, facial expressions, and spontaneous babbling are absent. At 16 months, the child does not say single words and at 24 months does not link two or three words into meaningful statements such as "want drink." Continued development is marked by the lack of socialization with other toddlers, the lack of attentiveness to his parents when talking to him, diminished "normal" play, obsessive attention directed to objects, and the lack of spontaneous expressions of normal emotions coupled with abnormal tantrums.

The limbic system was involved in that situation.

FIND THE PICTURE to identify the structures below :

- Hippocampus
- Parahippocampal gyrus
- Uncus
- Dentate gyrus
- Uncus
- Fimbria
- Amygdaloid nucleus





Questions :

1. According to the case above, what are the two key functional centers of the limbic system, and where are they located?

2. Based on clinical evidence, what are the functions of the hippocampus and amygdaloid nuclei?

The Basal Ganglia and their's connections

Clinical case :

- a. **A 58-year-old man was seen by a neurologist because he had noticed the development of a slight tremor of his left hand. The tremors involved all of the fingers and the thumb and were present at rest but ceased during voluntary movement. On examination, he tended to perform all his movements slowly, and his face had very little expression and was almost masklike. On passively moving the patient's arm, the neurologist found the muscles showed increased tone, and there was a slight jerky resistance to the movements. When asked to stand up straight, the patient did so but with a stooped posture, and when he walked, he did so by shuffling across the examining room. The neurologist made the diagnosis of Parkinson's disease.**

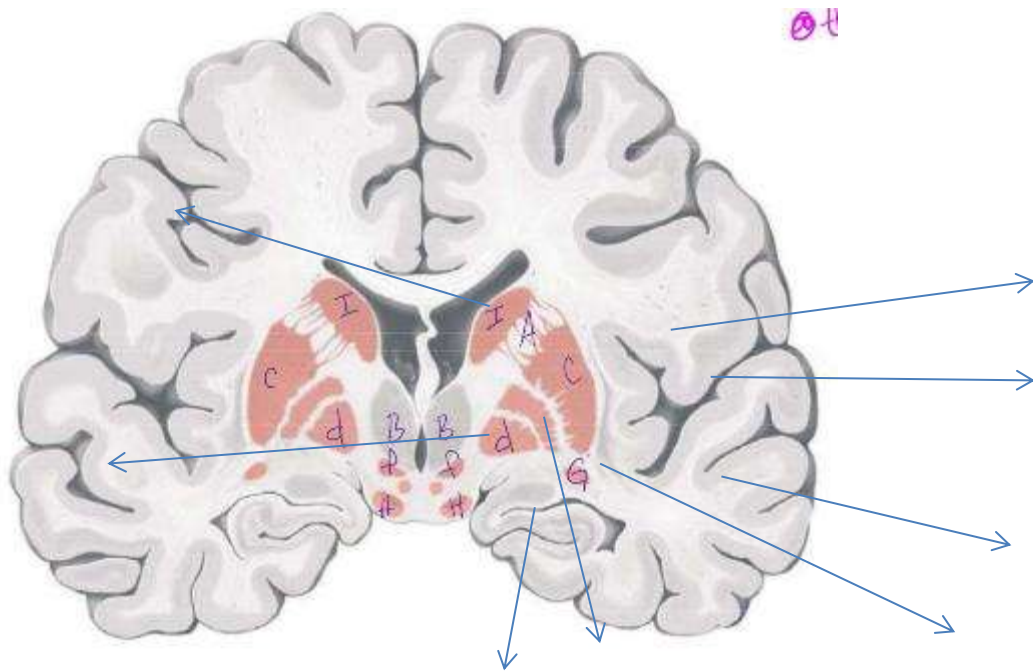
Question :

a. Which structure probably involved in this case ?

b. FIND THE PICTURE TO identify the structures :

- Caudate nucleus : head, body and tail
- Amygdaloid nucleus
- Lentiform nucleus
- Substansia nigra & subthalamic nucleus
- Claustrum

Labelling this picture :



Fill with the arrow between the structures : Don't forget also fill the neurotransmitters between them

Motor & sensory area of cerebral cortex

Intralaminar nuclei of thalamus

Corpus striatum

Globus pallidus

Thalamus

Substantia nigra

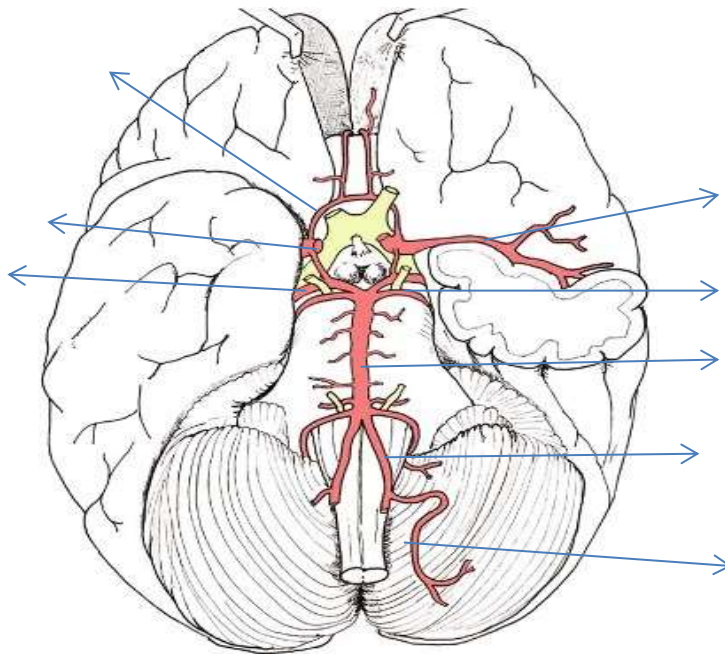
Brainstem

Spinal cord

I. Blood supply of the brain

A 61-year-old woman collapsed in the supermarket and was in a coma when admitted to the emergency department of the local hospital. Twenty-four hours later, she recovered consciousness and was found to have paralysis on the left side of her body, mainly involving the lower limb. Also had sensory loss of the leg and the foot. She was able to swallow normally and did not appear to have difficulty with her speech. The MRI confirmed there was a lesion at the right cerebral hemisphere.

Questions :



G Reference

1. Clinically Neuroanatomy, 6ed. , Richard S. Snell
2. Basic Neuroanatomy, Young & Young

H Clinical Cases

Already stated above

