Syllabus Laboratorium Anatomy

Neurobehaviour and Special Senses- part 1

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

Part 1 :

1. Central Nervous System Vs Peripheral Nervous System
2. Spinal Cord : ascending & descending tract, autonomic system

Part 2 :

3. Brain Stem
4. Cranial Nerves
5. Cerebellum

Part 3 :

6. Cerebral hemisphere
7. Basal ganglia
8. Limbic System
9. Blood brain circulation

C Venue

Lab Anatomy C4.1 Jatinangor (Medical Faculty Universitas Padjadjaran)

D Equipment Anatomy Model

CNS &PNS	1. Model potongan otak (sagital) – basah 2. Model otak -kering 3. Model skeleton cranial base 4. Model potongan otak (coronal)- basah

E Pre-requisite

Before following the activity in laboratorium NBSS, the students must prepare :

- **The assignment :**
  1. **Describe the gross appearance of the spinal cord.**
  2. **Draw the schematic pictures about transverse section of spinal cord at a different levels (3rd cervical segment, 6th cervical segment, 6th thoracic segment, 3rd lumbar segment, 3rd sacral segment)**
  3. **Explain about ascending pathway : ALS tract , dorsal column tract, and spinocerebellar tract, draw with the schematic pictures (include : first order, second order and third order neuron)**
  4. **Explain about descending pathway : corticospinal tract & corticobulbar tract (also include : first order, second order and third order neuron)**
  5. **Differentiate about upper and lower motor neuron**
  6. **Explain about external structure of Brain stem**

  (Please write down the assignment in the separate papers. The assignment will be collected on the lab day)

- Content lab in manual book (pre and post test will be taken from the manual, if scorring pre test less than 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

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)

4. **LIST ANATOMICAL REVIEW (** *give the checklist √ if you have already known*)

Lab Anatomy NBSS Part I :

I.	Concept central nervous system as an axis	

Drawing schematic picture :

Central nervous system as an axis , include :

- Cerebrum
- Cerebellum
- Mid Brain
- Pons
- Medulla Oblongata

Brain Stem

- Spinal cord : cerical, thoracic, lumbar & sacral

Which one is the forebrain, midbrain and hind brain?

Fig. 1.1 Schematic picture “CNS as an axis “

Don”t forget to give the name for every each structure !

II.	Concept Central Nervous System (Spinal cord) vs Peripheral Nervous System	

1. Define the peripheral nervous system, related with the concept no.I, and classified the peripheral nervous system
   Definition:……
   ……
   ……
   Classification of peripheral nervous system :
   ……
   ……
   ……
   ……

Trigger Case :

A 34-year-old man was having a car crashed accident. On examination, he had fracture dislocation of the seventh thoracic vertebrae, with signs and symptoms of severe damage to the spinal cord. Later, he was found to have paralysis of the left leg. Testing of cutaneous sensibility revealed a band of cutaneous hyperesthesia Increased sensitivity extending around the abdominal wall on the left side at the level of umbilicus. Just below this, he had total analgesia, thermoanesthesia, and partial loss of sensation of touch skin of the abdominal wall below the level of umbilicus and involving the whole of the right leg.

Questions :

1. According the case above,the patient has fracture dislocation at the seventh thoracic vertebrae.
   Drawing the schematic picture : **tranverse section spinal cord at the level above**. Include :
   - White matter
   - Grey matter
   - Central canal
   - Anterior view : anterior median fissure
   - Posterior view : posterior median sulcus
   - Anterior horn
   - Posterior horn
   - Lateral horn
   - Anterior , lateral & posterior white column
   - Anterior, lateral & posterior grey column
   - Anterior roots
   - Posterior roots : dorsal root ganglion

Fig. 2.1 Transverse section spinal cord at the level umbilicus

Give the name for every each structure

2. Explain the term of white matter & grey matter
   White matter : ……
   ……
   Grey Matter : ……
   ……

3. Exlplain the different characteristic between posterior root & anterior root of the spinal cord.
   Anterior root : ……
   ……
   ……
   Posterior root :……
   ……
   ……
   At the posterior root, there is a " dorsal root of ganglion (DRG) ". Explain about that!
   ……
   ……
   ……
   ……

4. What the meaning of sensoric, motoric, afferent & efferent ?
   Sensoric : ……
   ……
   Motoric :……
   ……

Afferent :……
……
Efferent :……
……

5. See the schematic below :

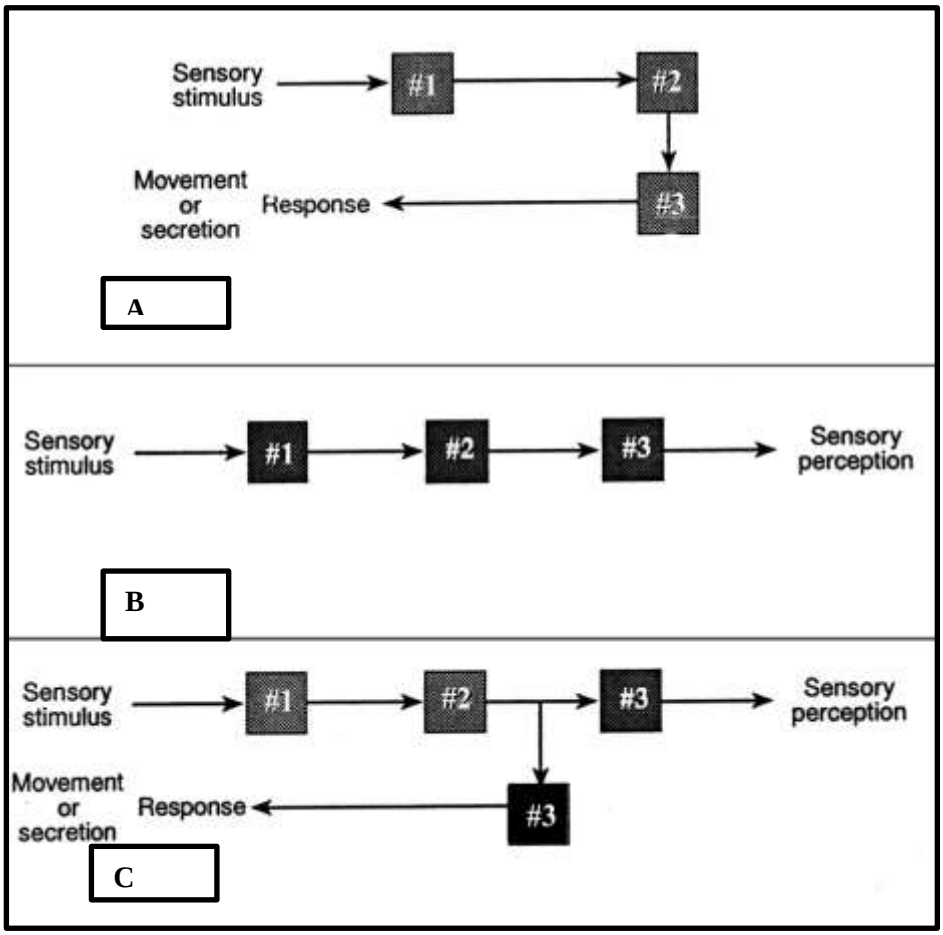

Fig. 2.2 Circuit & Pathway of Nervous System

See the Fig. Above. If #1, #2, &#3 is a neuron, can you explain A,B and C ? Give an example for each part.

A :……
……
B :……
……
C :……
……

6. According to the case above, the term " Hyperesthesia, analgesia, thermoanasthesia " can you differentiate each term ? Describe another sensory stimulus except of them.
   Hyperesthesia : ……
   ……
   Analgesia :……
   ……
   Thermoanashtesia : ……
   ……

   Another sensory stimulus :
   1.....
   2.....
   3.....
   4.....

   Can you differentiate between stimulus sensory from glands, skin, smooth muscles, skeletal muscles ?.....
   ……
   ……
   ……
   Please add the answer above to the schematic picture of Fig. 1.1

7. Impression from the outside world and from within the body by special sensory nerve endings or receptors.
   Explain 5 basic functional types of sensory receptors :
   1.....
   2.....
   3.....
   4.....
   5.....

   Describe 2 basic structural types of sensory receptors :
   1.....
   2.....
   Comparison each type of receptors :.....
   ……
   ……

8. See part C of Fig. " Response movement or secretion ", means the target organs are :.....
   Based on the target organ, we can classify the respons with :
   1. ……
   2……
   Please add the the answer above to the schematic picture of Fig.1.1

9. About the perception . Where the location of " perception " in the CNS ?
   ……

10. Review Modul Lab EMS about " General Concept of Neuron –Hypothalamus&Hypophysis". Fill The blank below with the sinonim :

	CNS	PNS
Cell Body	Nucleus	Ganglion
Axon/dendrite	……	…….
White matter	Contains of.....	Contains of.....
Gray matter	Contains of.....	Contains of.....
Mielin	……	……
Nerve		Dermatome :..... Plexus : Cervical :..... Brachial :..... Lumbosacral:.....

11. After we identify the questions above, we can conclude :
    The sensoric fiber has :.....components
    The motoric fiber has :.....components
    The peripheral nerve (or nerve) has.....components

III. The Spinal Cord and The Ascending & Descending Tracts

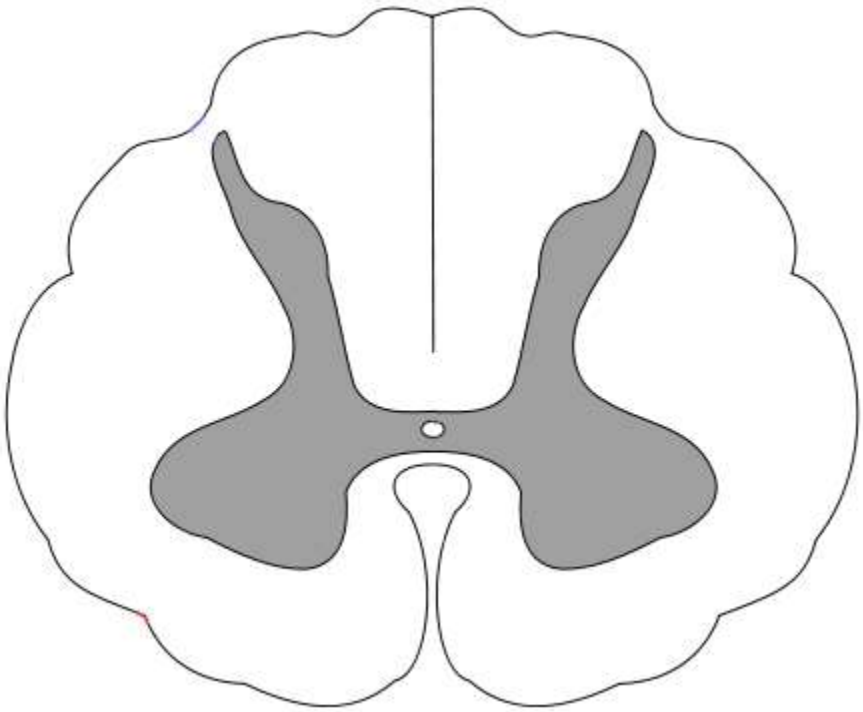

Fig. 3.1 Transverse Section of Spinal Cord

Please add the Fig. 3.1, the organization of :

- **Anterior Spinothalamic tract**
- **Lateral Spinothalamic tract**
- **Dorsal Column tract**
- **Spinocerebellar tract**
- **Corticospinal tra**

IV. Clinical Syndromes Affecting The Spinal Cord

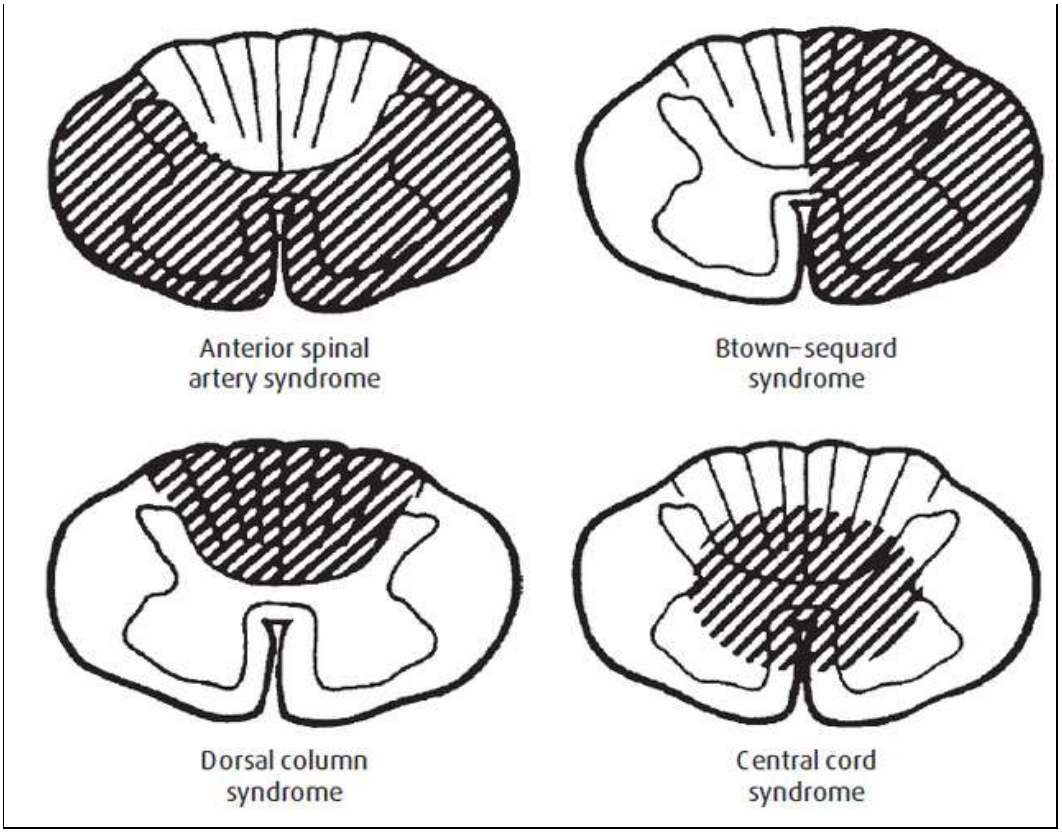

Fig. 4.1 Spinal Cord Syndromes

See the fig. Above, explain about the deficit neurologic :

1. Motor neuron : Upper or Lower ?

2. Type of paralysis : spastic or flacid ?

3. Sensory neuron :
   - Pain
   - Temperature
   - Light touch
   - Tactile discrimination & vibratory
   - Proprioceptive

4. Physiological reflex?

5. Pathological reflex?

V. Autonomic System

Clinical scenario :

A 28 –year – old man involved in an automobile accident several months ago had recovered from all the abnormalites resulting from brainstem damage except for a right sided mild ptosis, miosis and facial anhidrosis.

Questions :

1. Which system probably involved in that case ?.....

   .....

2. Explain about the system :

   - Basic principles : afferent and efferent?

   - General functions !

- Location of the control centers of each function !
