

Dr. Arwa 9

Sensory and motor tract of the spinal cord

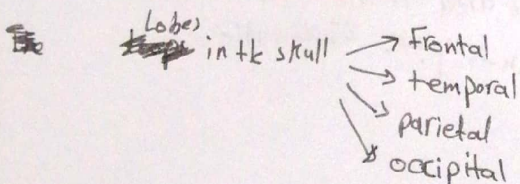
* Lateral inhibition => method in the cerebral cortex to determine the exact source that the stimuli come from

* when I have stimulation on a receptive area and there are signals from different neuro pathway

the neuro pathway ^{come} from A, B, C so the cerebral cortex can't exactly determine the source of the stimuli (sound) so the cerebral cortex use a method (Lateral inhibition) to accurately determine the source by Inhibiting 2 adjacent neurons from the right and the left so one neuron still ~~stimuli~~ stimulated

* Lateral inhibition happen if there is more than one stimulated neuron.

* Somato Sensory system -> refer to every somatic sensation



Soma => means outer layer not inner

* The somato sensory neurons transport the sensation to specific place on the cerebral cortex

* The somato sensory system have 2 types of receptors

1] general sensation -> responsible for temperature, touch, pressure, Proprioception...

- * very simple receptor
- * free nerve ending

position 1, Location 1, 2, 3, 4

2] special senses -> inner ear, olfactory in the nose, photoreceptor in the retina of the eye

liparace organ in the inner ear => ^{مسئولة عنه} positions 1, 2, 3

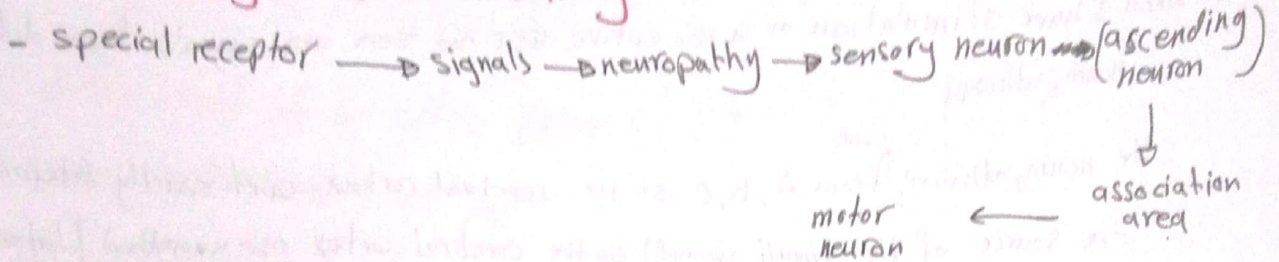
* the place of the somato sensory system on the skull is in the parital lobe between the Frontal and the occipital lobes

* The parital lobe contain the somato sensory ~~system~~ system

- sensory area
- motor area
- association area

in the middle of the cerebral hemisphere

*** The processing of the somatosensory**



- when the signals receive the association area ⇒ stimuli جديد أو قديم
 new or old
 خبر أو تجربة سابقة

- Anatomical topographic ⇒ cerebral cortex كل منطقة مسؤولة عن كل شيء

- very important information ⇒ the size of the area on the cerebral cortex
 علاقة حجم المنطقة بحجم الأعضاء
 sensory receptors في المنطقة الحسية
 motor area المنطقة الحركية

*** The processing of the receptor (the processing in the receptive area)**

specific location has specific receptor for specific stimulus (specific energy)

↓
 stimulation to the membrane of the receptor

↓
 signal transduction (power membrane potential)

↓
 ينتقل

transport along the sensory neuron according to the nature of the receptors

① phasic receptor ⇒ Fast

② tonic receptor ⇒ Slow

* the frequency of the adaptation intensity of the stimuli

If the stimuli very strong intensity to the membrane potential

that was the processing on the receptive area => nerve ending on the skin on the muscle inside the joint ...
لـ سميت بهذا الاسم لأنه في العين وال... فيها الـ Reception

the reception start -> transport along the sensory neuron to circuit level on the spinal cord

- the final destination in all the neuropathways is the thalamus (except the ~~smell~~ sense of smelling)

- the thalamus is called the relay station => It sort incoming sensory information to the appropriate part of the brain except the smell

- If person passed out and you want to wake him you will use very strange smell to wake him up quickly

thalamus حاتم بار
فحركتها بتكون اسرع
ويتنقل بسرعة لـ
cerebral cortex
sudden ويصير
wake up

* Tract of the somato sensory neuron

- sensory => carrying the input/impulses from down to up => afferent / ascending neuron
the name start with spinal

* spino cerebral tract -> sensory or motor?

↳ transport up to the cerebellum from the spinal

- motor tract => the name end with spinal

* the stemulospinal => transport from the cerebellum to the spin

spinal tract

First order ⇒ ~~entering~~ the sensory neuron enter dorsal / ventral / posterior or anterior site of the spinal cord.

Second order ⇒ neuron enter the gray matter and connect with the enter neuron that exist in the spinal cord

third neuron ⇒ spinal cord مجرد ما يطالع من to higher up centers in the brain (thalamus)

* The ~~Arr~~ Arrangement of the tract on the spinal cord ?!

1] tract that carry the sensory impulses from one modality (common) in one tract

- Fine touch For somatic organs have one tract

2] Somatotopic ⇒ sensory impulses that come from the leg have specific location and so...

3] ~~somatotopic~~ medial lateral rate ⇒ as the processing of sensory impulses more complicated need to go to higher area in the brain ←

وربع يكون الارتفاع بال spinal cord
↳ more lateral

- simple processing start from the medial then gradually go to the lateral

The sensory tracts:

□ posterior column tract → Fasciculus gracilis
→ Fasciculus cuneatus

pathway ⇒

□ kind of stimuli ^{that} the tract carry :

- ① fine touch
- ② vibration
- ③ pressure

- The red colour change to white ⇒ motor pathway finished the first order and start the second order

In the second order ⇒ desiccation (crossover) happen

← neuron دخل يمين وغير اتجاهه لليسار

Desiccation ^{صنوره عند} → right side of the brain control the left side of the body and versa versa

← يتخالف من tract لاخر

The Desiccation happen in the brain stem (medulla oblongata)

← ventra nuclei of the thalamus

2] spinothalamic tract → lateral
 → anterior

A - Lateral spinothalamic tract
 sensory for the pain and temperature sensation

* second order → entering the gray matter → decussation exactly at the level in the entry of the spinal cord

Laterally to the spinal cord ←
 كل مسار في
 . يعني

B - Anterior spinothalamic tract ⇒ enter like the lateral one
 but the decussation is anteriorly (ventral side) of the spinal cord

3] spinocelebral tract → very unique
 في اختلافات كثير من الباقين
 ↓ anterior
 ↓ posterior

A - Anterior spinocelebral tract

* يعمل في A sensory neuron
 ↓
 up to the higher centers

celebrum
 ↓
 decussation and crossover

كمان في
 وهذا الشيء
 إلى عينة

B - Posterior spinocelebral tract

* enter with red arrow → white in the cord

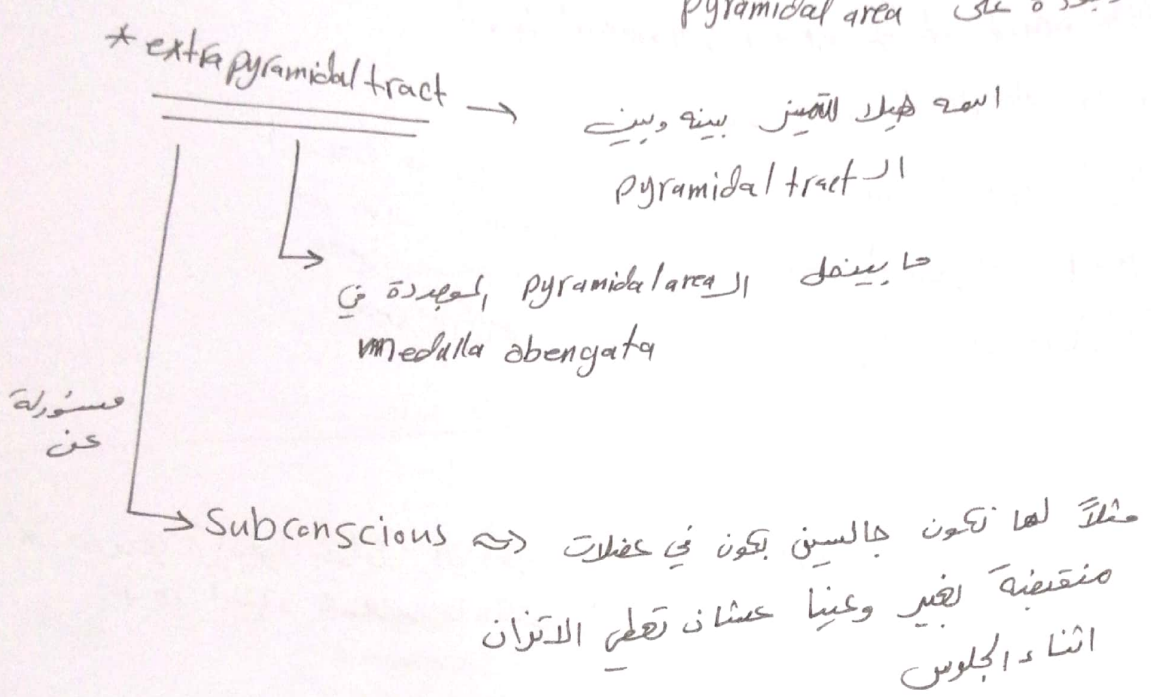
crossover or decussation ←

same direction

Motor tract:

Somatic motor tract → pyramidal tract
 → extrapyramidal tract

Pathway ⇒ spinal cord (pyramidal tract) to higher central
 enter very special area in the medulla oblongata
 موجودة على pyramidal area



كذلك اثناء المشي في عضلات بصرها انقباضه وانقباض بدون وعينا

كل اشئ بصري ايرادي له علاقة بار
 extra pyramidal tract

Any defect in the extra pyramidal tract cause

Parkinson disease

بسبب ارتفاع دافن.

Defect → neuropathy

→ neurotransmit

* the tract of the extra pyramidal tract

1] vestibulospinal tract

2] Tectospinal tract

3] Reticulospinal tract

4] Rubrospinal tract

كل حزمة مسؤولة
عنا Balance
معين في موقع
معين في الجسم