Neurology and neurosurgery course 8-26.4.2019

Neurology and neurosurgery course 8-26.4.2019

Klo	Ma 8.4.	Ti 9.4.	Ke 10.4.	To 11.4.	Pe 12.4.
08:15	8.00-8.15 Instrument-bags BM1, floor P, beside the kok 2 8.15-11.15 **Introduction for the course and neurologic status** Clinical teachers Olli Häppölä Mikko Kallela B136a	9.00-9.45 **Neuro dg** Sampsa Vanhatalo, New Children's Hospital Stenbäckinkatu 9 Meeting room 13 1.floor		8.15-9.45 **Ischemic stroke: Diagnostics and treatment of acute Ischemic stroke/** Sami Curtze kok 11	
10:15		10.15-11.45 **Clinical neurophysiology/** Sampsa Vanhatalo New Children's Hospital	10.15-11.45 **Multiple sclerosis (MS)/** Elina Järvinen B236a		
11:15					
12:00					
13:00	13.00-14.30 **Neuro-oncology for general practice I** Merja Kallio kok 1		13-14.30 **Vascular neurosurgery and trauma/** Johan Marjamaa B236a	13.00-13.45 **Preliminary exam** Olli Häppölä Mikko Kallela B136a	
14:30					

Neurology and neurosurgery course 8-26.4.2019

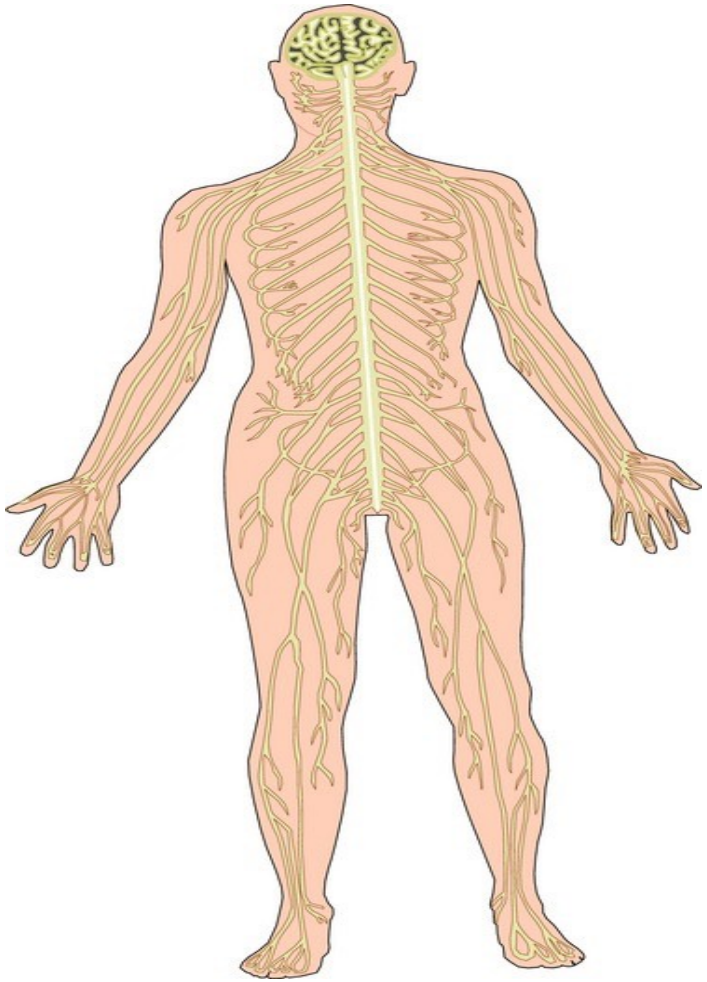
Klo	Ma 15.4.	Tiistai 3.5.	Ti 16.4.	Ke 17.4.	To 18.4.	Pe 19.4.
08:15	8.15-9.45 **Intracerebral hemorrhage: Diagnostics and acute treatment/** Daniel Stribian kok 11		8.15-9.45	8.15-9.45 **Neuro-oftalmology/** Sanna Seitsonen Eye and Ear hospital P-floor, meeting place front of the cafeteria	8.15-10.00 **Neurodiagnostics** Mikko Kallela, Olli Häppölä B136a	**Easter**
			Headache/ Ville Artto B136a			
10:15	10.15-11.45 **Dizziness/** **Lauri Soinne** kok 11		10.15-11.45 **Neuroradiology/** Marko Kangasniemi Meilahti hospital, first floor, radiology unit		10.15-11.45 **Spinal tap/** Olli Häppölä Mikko Kallela BM, Skill workshop	
11:15						
12:00						
13:00			13.00-14.30 **Neuro-oncology for general practice II** Merja Kallio B 236a		13.00-14.30 **Clinical cases** Olli Häppölä, Meilahti tower hospital, Neurology outpatient clinic, room 24	
14:30						

Neurology and neurosurgery course 8-26.4.2019

Klo	Ma 22.4.	Ti 23.4.	Ke 24.4	To 25.4.	Pe 26.4.
08:15	**Easter**	8.15-9.45 **Tumors and Pediatric Neurosurgery/** Päivi Koroknay-Pal kok 11	8.15-9.45 **Parkinson´s disease** Johanna Eerola, Meilahti tower hospital, Neurology outpatient clinic, lounge	9.00-9.45 **Question hour/** Olli Häppölä Mikko Kallela kok 12	**9.30-11.30** **Written examination** BM, lecture hall 1 & 2
10:15		10.15-11.45 **Spine and functional neurosurgery/** Johan Marjamaa kok 11	10.15-11.45 **Epilepsy seminar/** Krista Nuotio kok 11		
11:15					
12:00					
13:00		13.00-14.30 **Etiology and Prevention of ischemic stroke/** Jukka Putaala kok 11	13.00-14.30 **Neurodegenerative diseases/** Susanna Melkas kok 11		

The Neurological Examination

Where is the Lesion in the Nervous System



https://neurologicexam.med.utah.edu/adult/html/home_exam.html

The NeuroLevel and NeuroExam

Neurological Examination

Cognition

Cranial Nerves

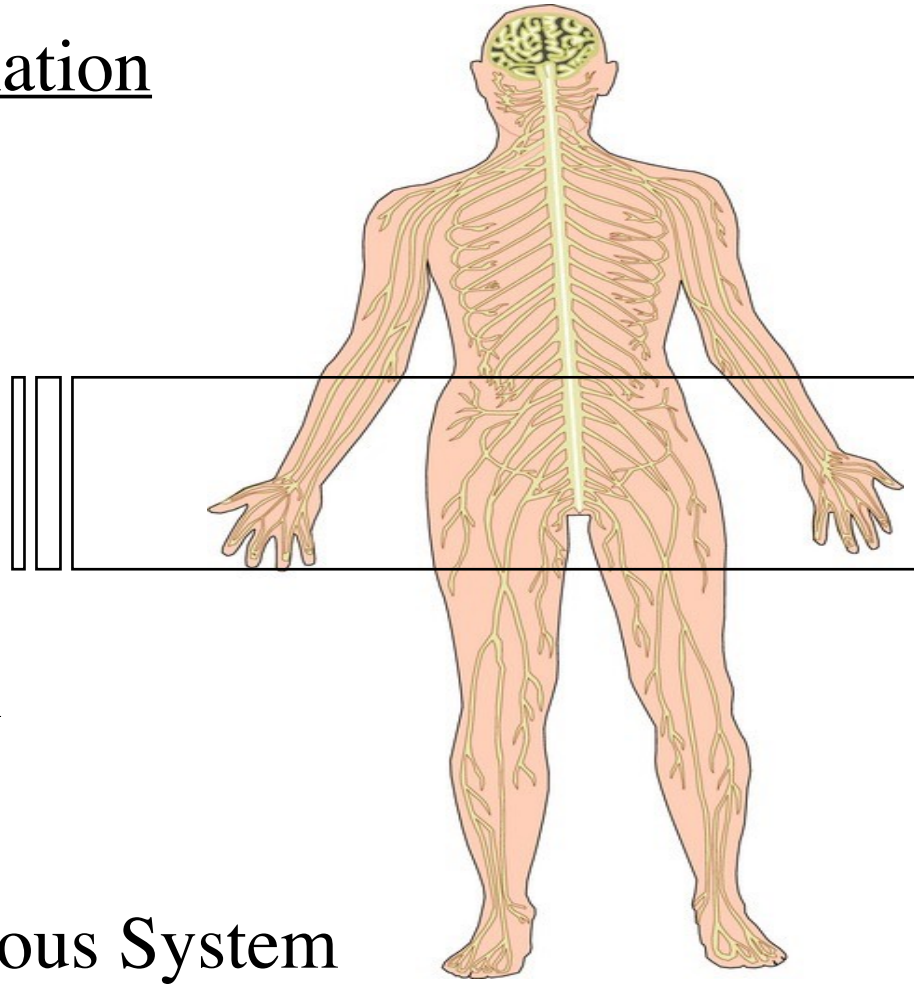
Motor examination

Cordination

Sensory Examination

Reflexes

The Autonomic Nervous System



Neurological Level

Psyche

Cerebral hemispheres

Basal ganglia

Brainstem and cranial nerves

Cerebellum

Spinal cord

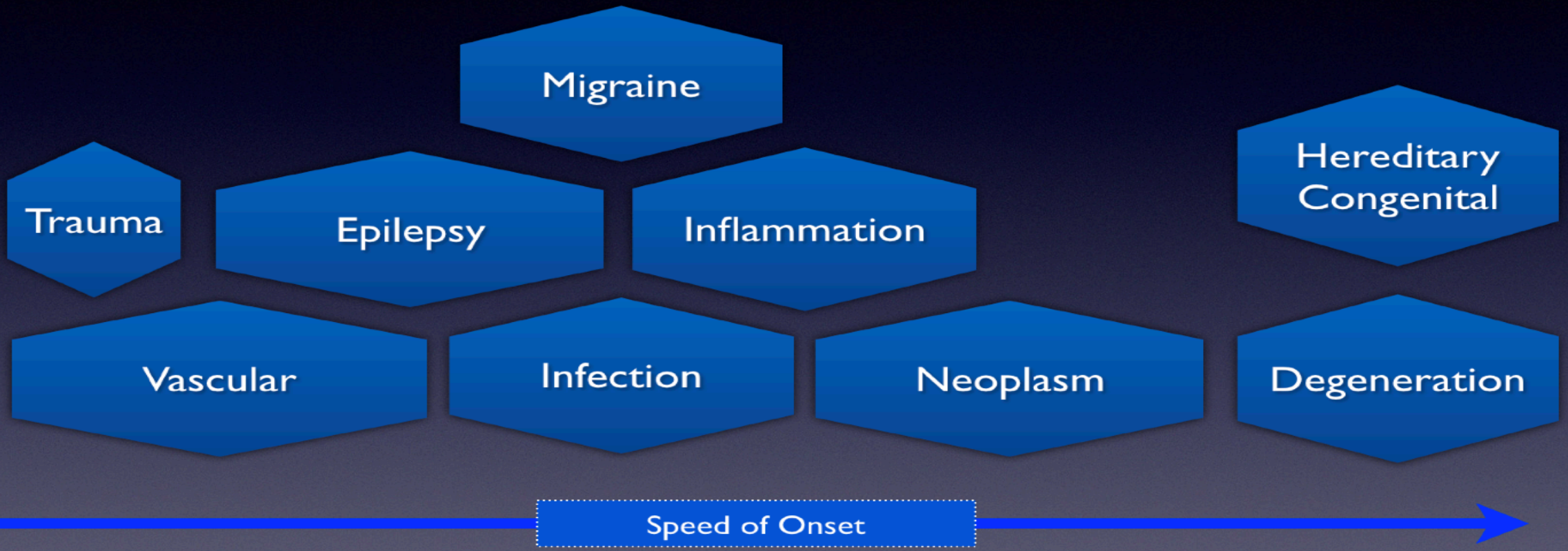
Nerveroot

Peripheral nerve

Myoneural junction

Muscle

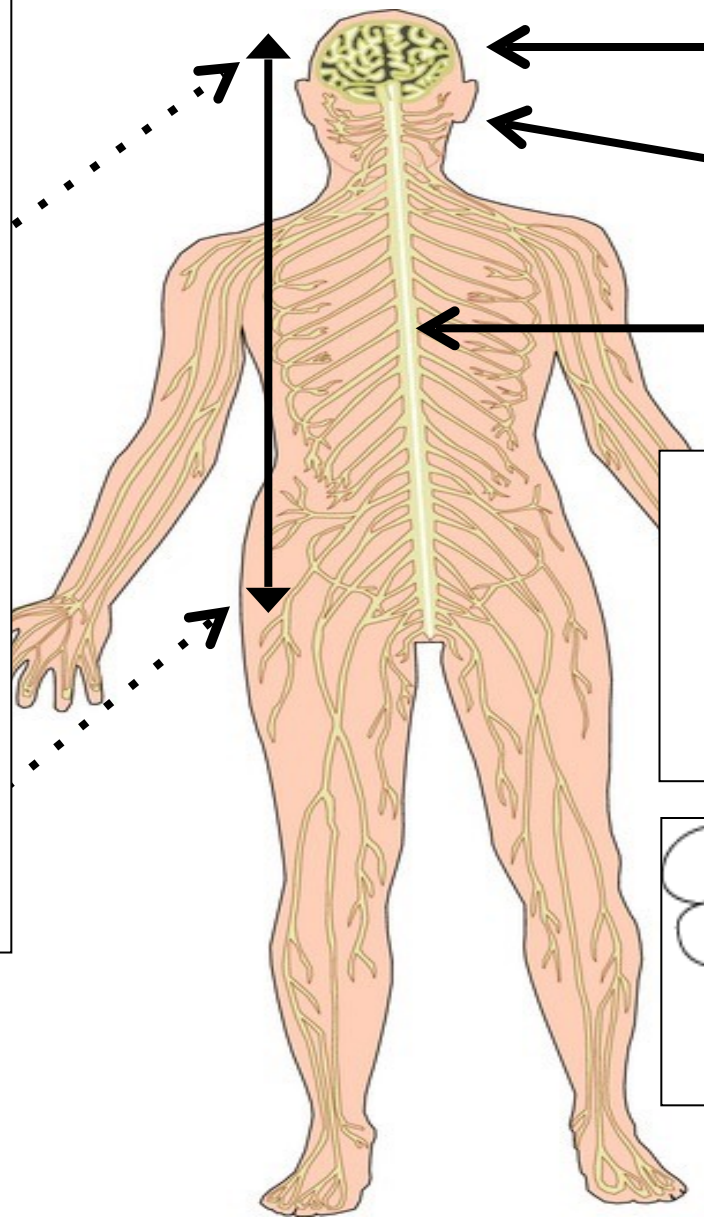
The Timescale of Neurological Symptoms



Upper motor neuron deficit

-Muscle Weakness
-Spasticity
-Hyperreflexia
-Babinski sign

... localise the lesion to the pyramidal tract

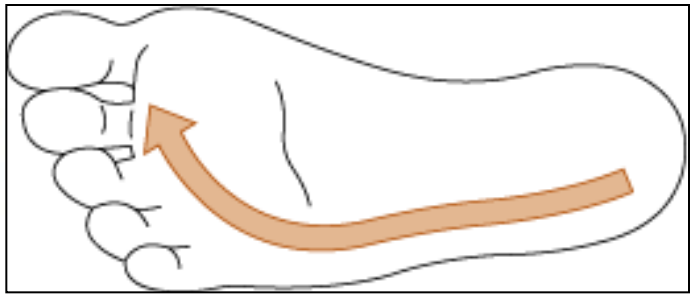


Aphasia, neglect

Double vision

Sensory level

The corresponding neurological level is figured out based on associated symptoms



Mental status examination	•The assessment of consciousness, often using the Glasgow Coma Scale (GCS) •Mental status examination, often mini mental state examination (MMSE) •Global assessment of higher functions •Intracranial pressure is roughly estimated by fundoscopy; this also enables assessment for microvascular disease.

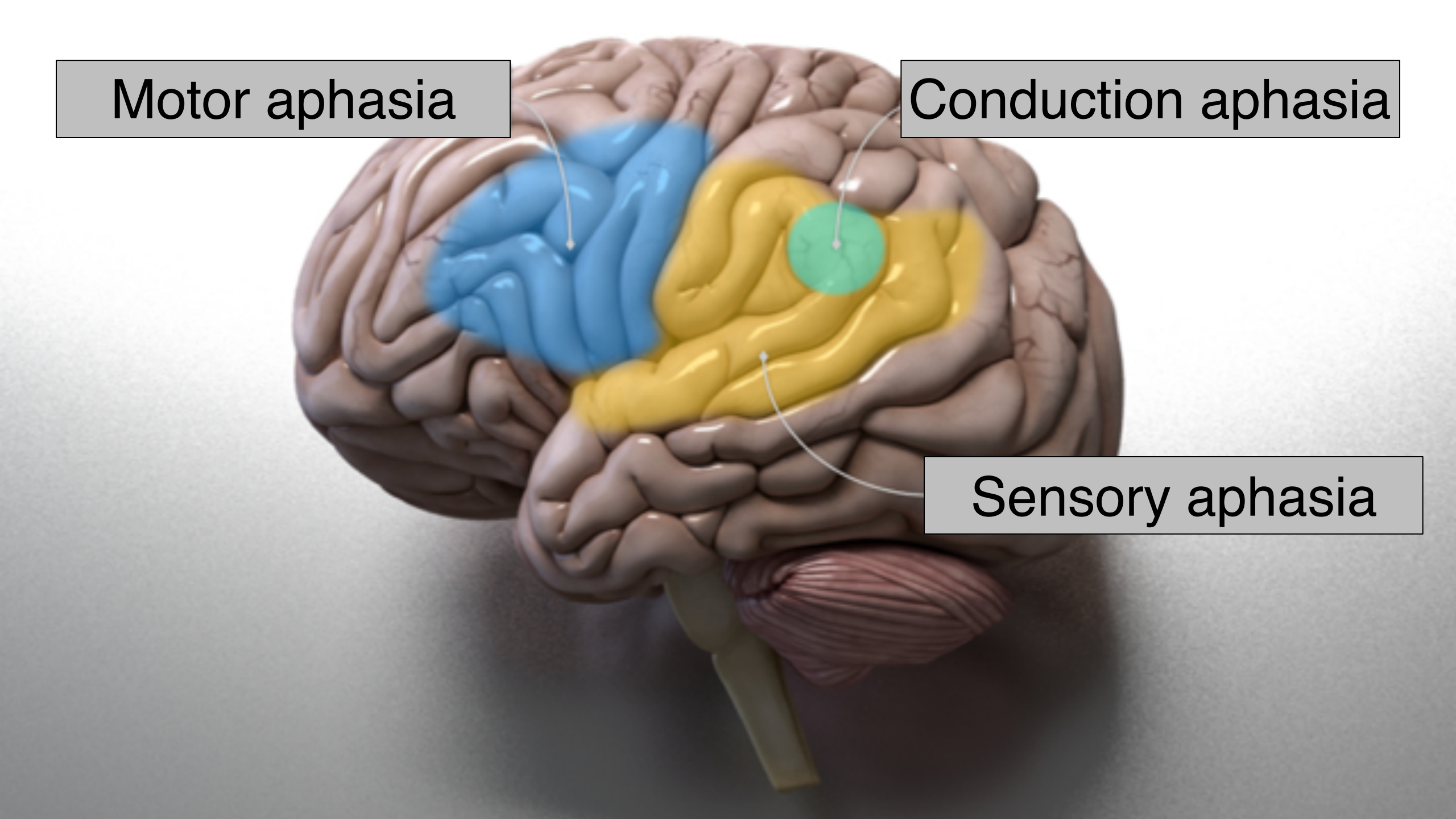
https://en.wikipedia.org/wiki/Neurological_examination

The Mental Status Examination

- State of Consciousness
- Appearance and General Behaviour
- Stream of Mental Activity
- Emotional State
- Content of Thought

Sensorium and Intellectual Resources

- Orientation
- Personal Identification
- Attention
- Comrehension
- Insight
- Memory
- Judgement, Reasoning Power, Abstract Thinking
- General Knowledge and Information
- Language
- Writing, Drawing, Constructional Ability
- Counting and Calculation
- Reading and Writing
- Intellectual Ability

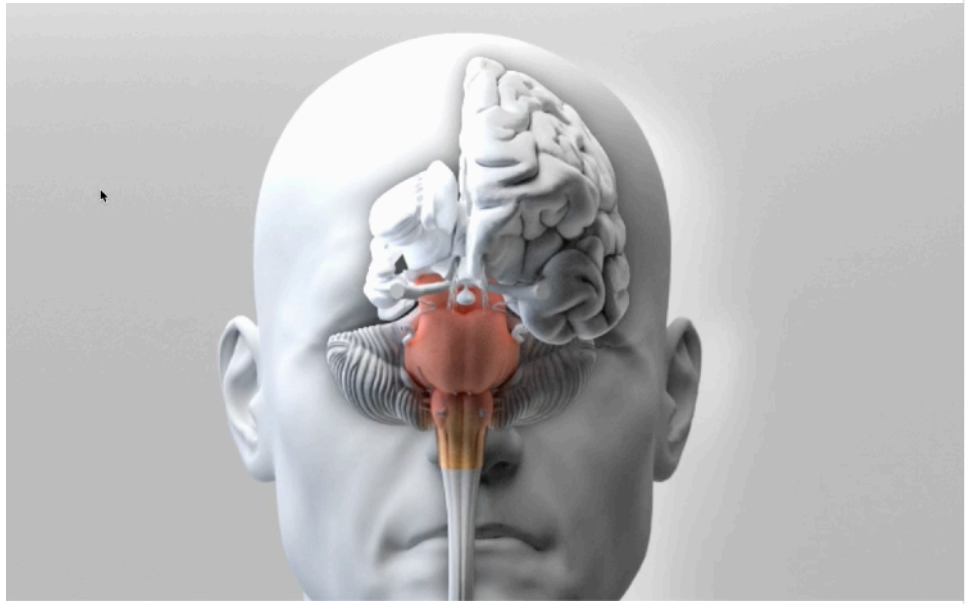

Motor aphasia
Conduction aphasia
Sensory aphasia

Cranial nerve examination	Cranial nerves (I-XII): sense of smell (I), visual fields and acuity (II), eye movements (III, IV, VI) and pupils (III, sympathetic and parasympathetic), sensory function of face (V), strength of facial (VII) and shoulder girdle muscles (XI), hearing (VII, VIII), taste (VII, IX, X), pharyngeal movement and reflex (IX, X), tongue movements (XII). These are tested by their individual purposes (e.g. the visual acuity can be tested by a Snellen chart).

https://en.wikipedia.org/wiki/Neurological_examination

Eyes: II, III, IV, VI

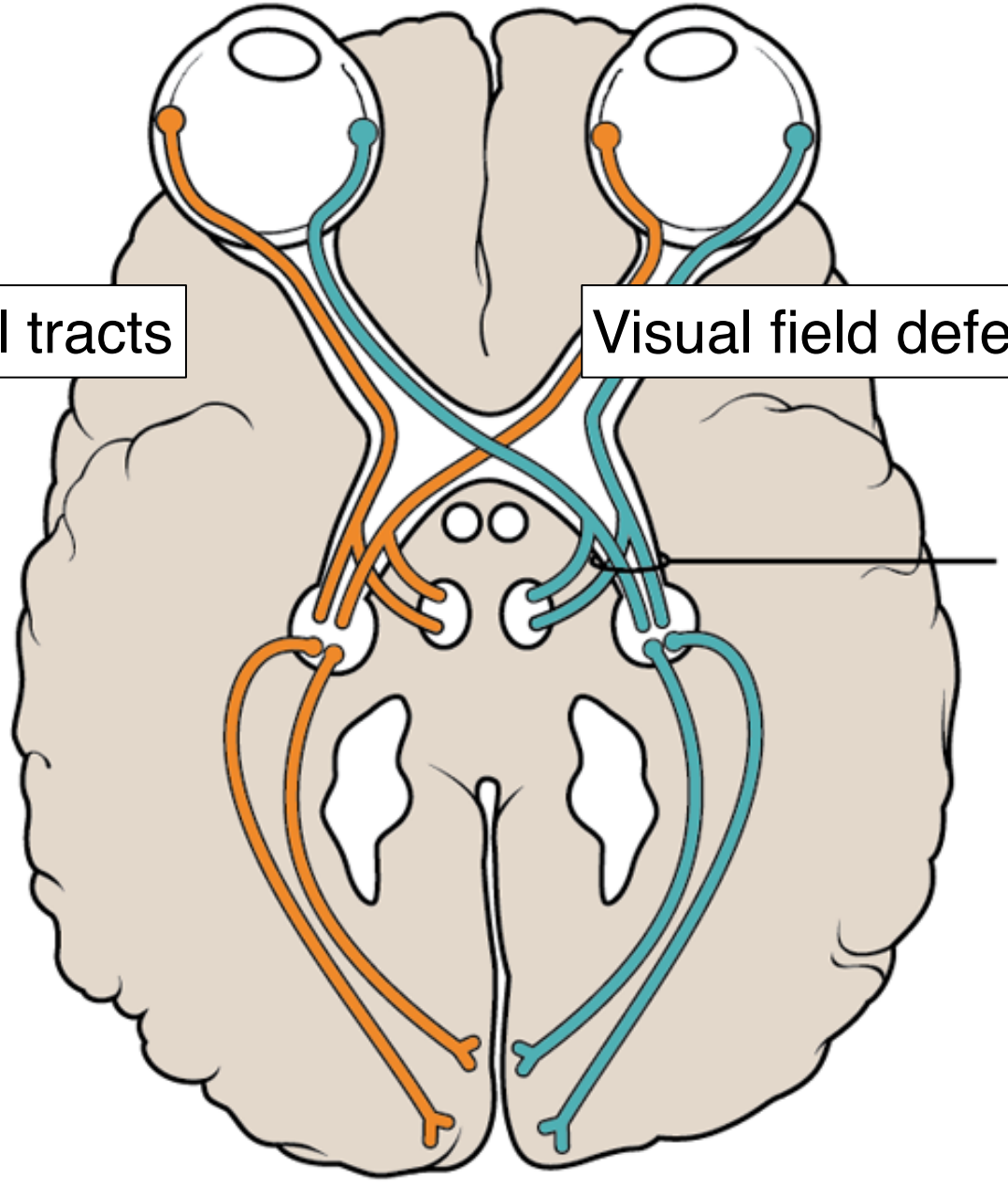
Face: V, VII

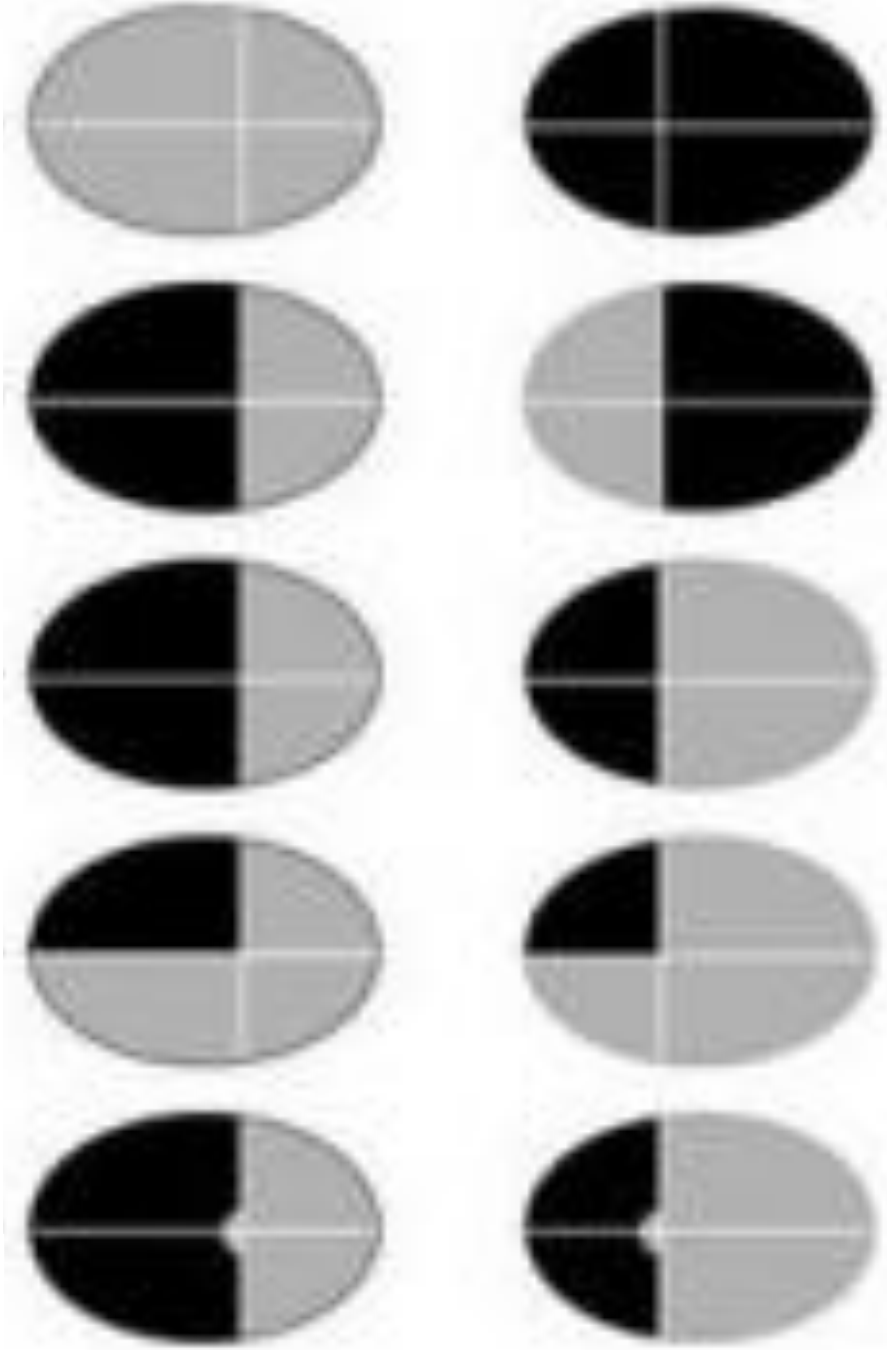


Pharynx-Tongue : IX, X, XII

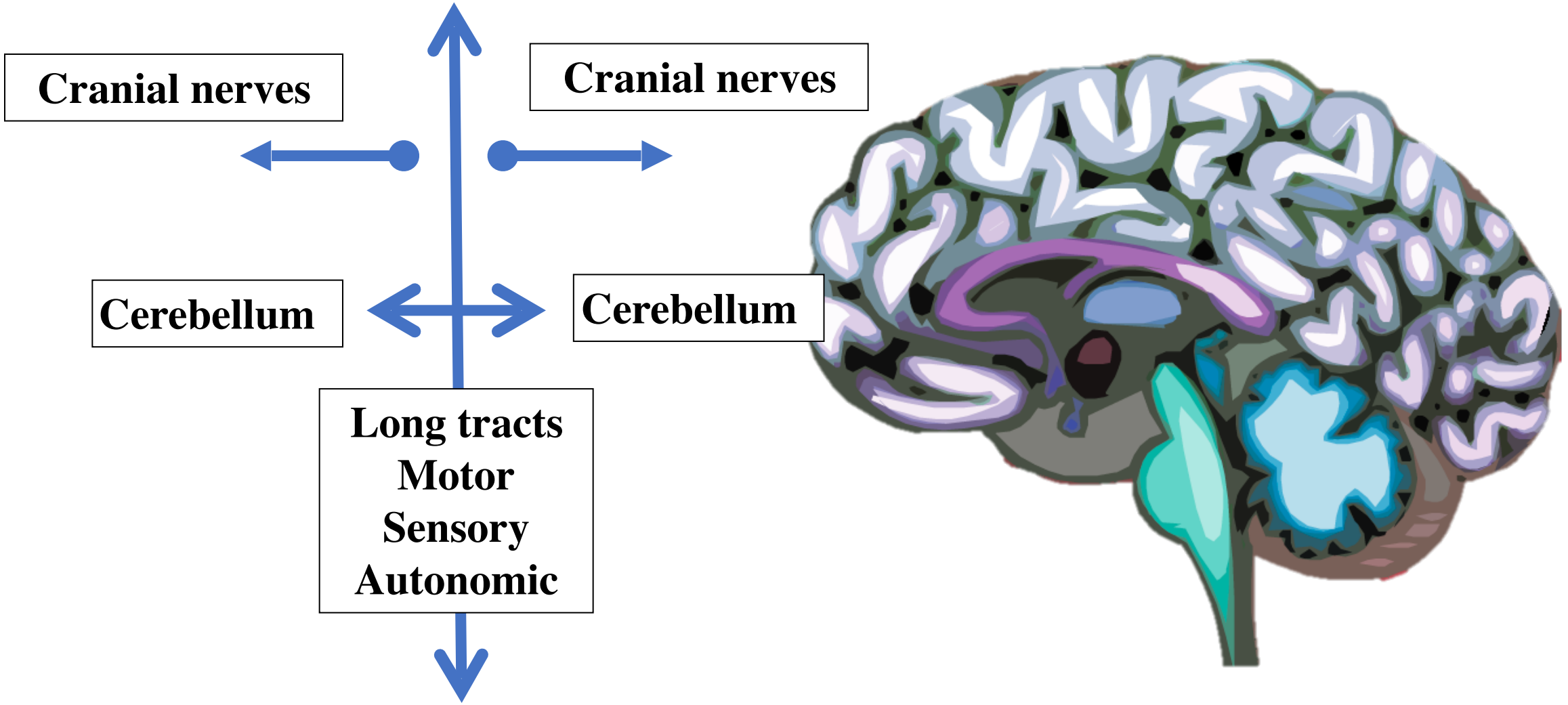
Visual tracts

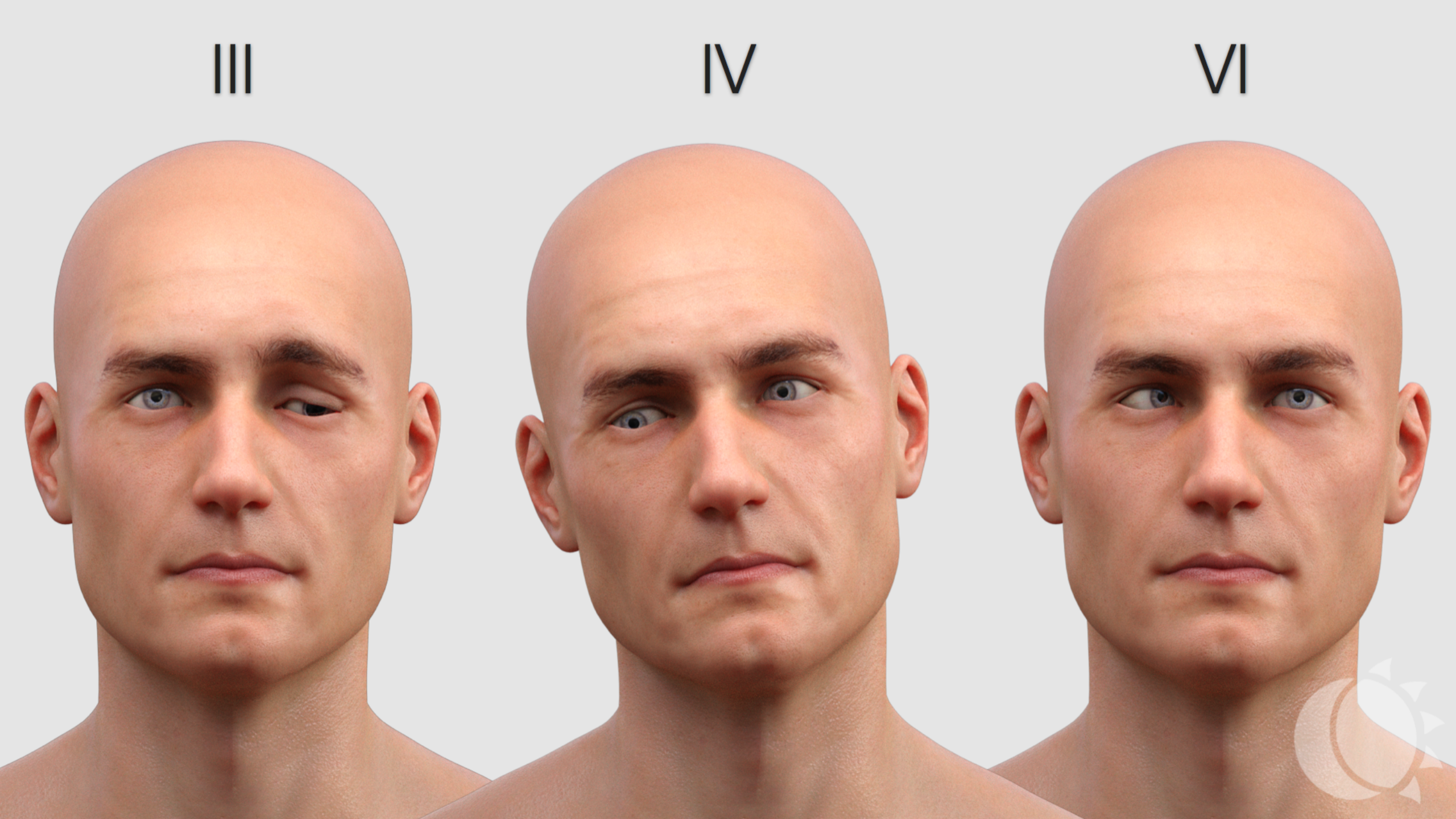
Visual field defects





Brainstem Cranial Nerves in a Nutshell




III
IV
VI

Motor system	•Muscle strength, often graded on the MRC scale 0 to 5[4] (i.e., 0 = Complete Paralysis to 5 = Normal Power).
	  • grades 4–, 4 and 4+ maybe used to indicate movement against slight, moderate and strong resistance respectively.
	•Muscle tone and signs of rigidity.
	•Examination of posture
	  • Decerebrate
	  • Decorticate
	  • Hemiparetic
	•Resting tremors
	•Abnormal movements
	  • Seizure
	  • Fasciculations
	  • Tone
	  • Spasticity
	  • Pronator drift
	  • Rigidity
	  • Cogwheeling (abnormal tone suggestive of Parkinson's disease)
	  • *Gegenhalten* – is resistance to passive change, where the strength of antagonist muscles increases with increasing examiner force. More common in dementia.

https://en.wikipedia.org/wiki/Neurological_examination

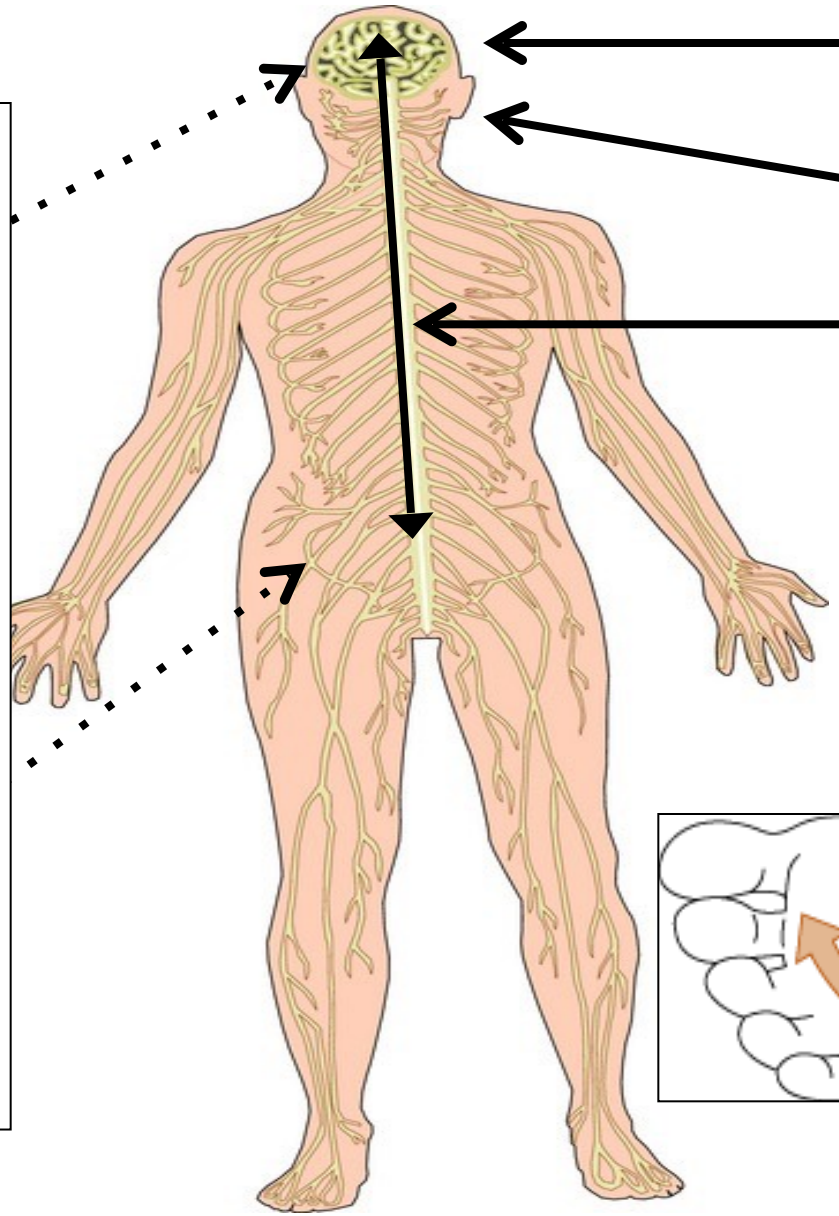
The corticospinal tract

Associated localising symptoms

Upper motor neuron deficit

-Muscle Weakness
-Spasticity
-Hyperreflexia
-Babinski sign

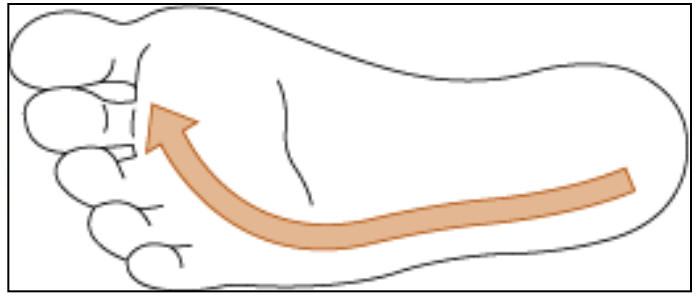
... localise the lesion to the pyramidal tract

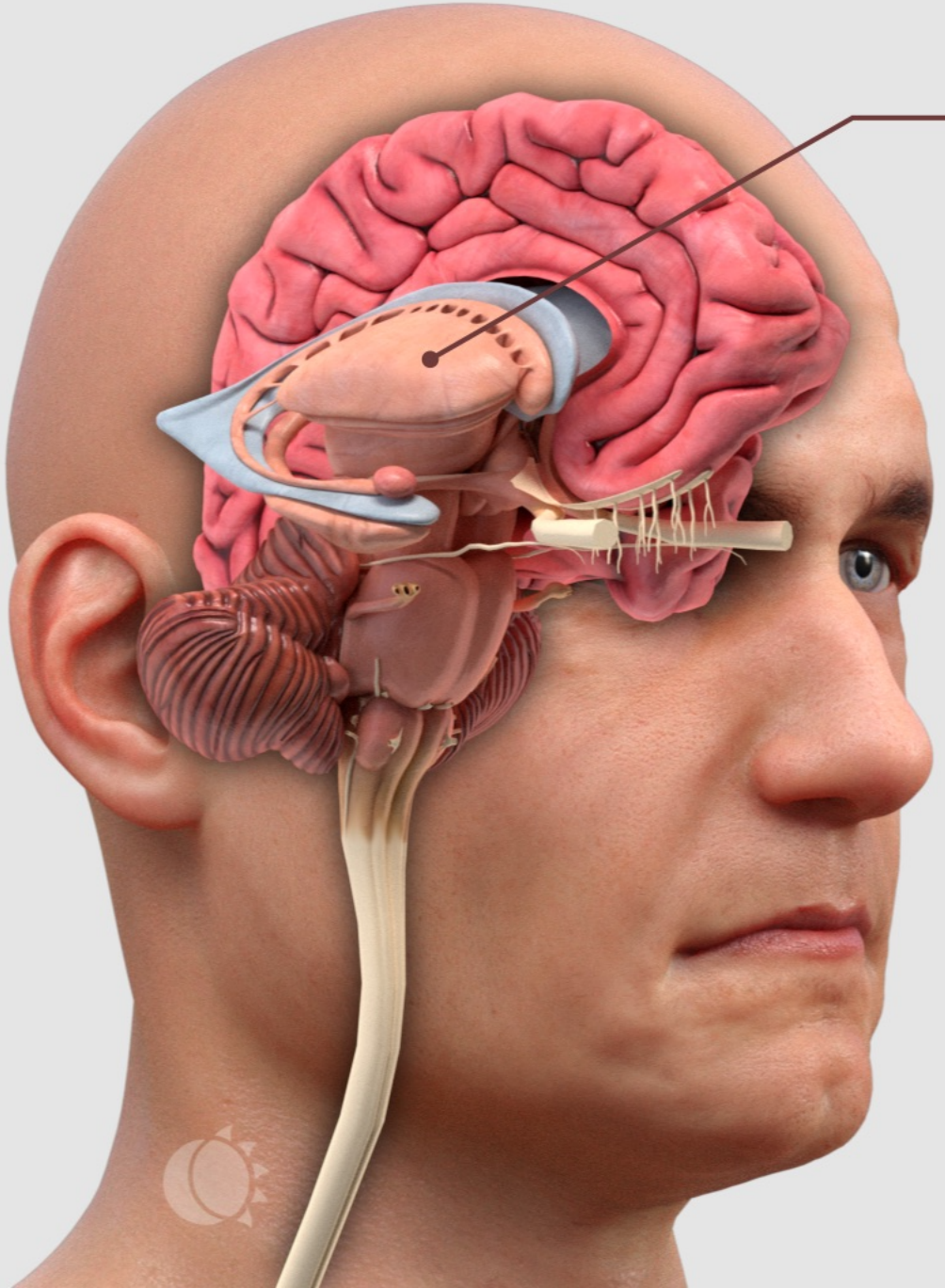


Aphasia, neglect

Double vision

Sensory level





Basal Ganglia

TRAP =

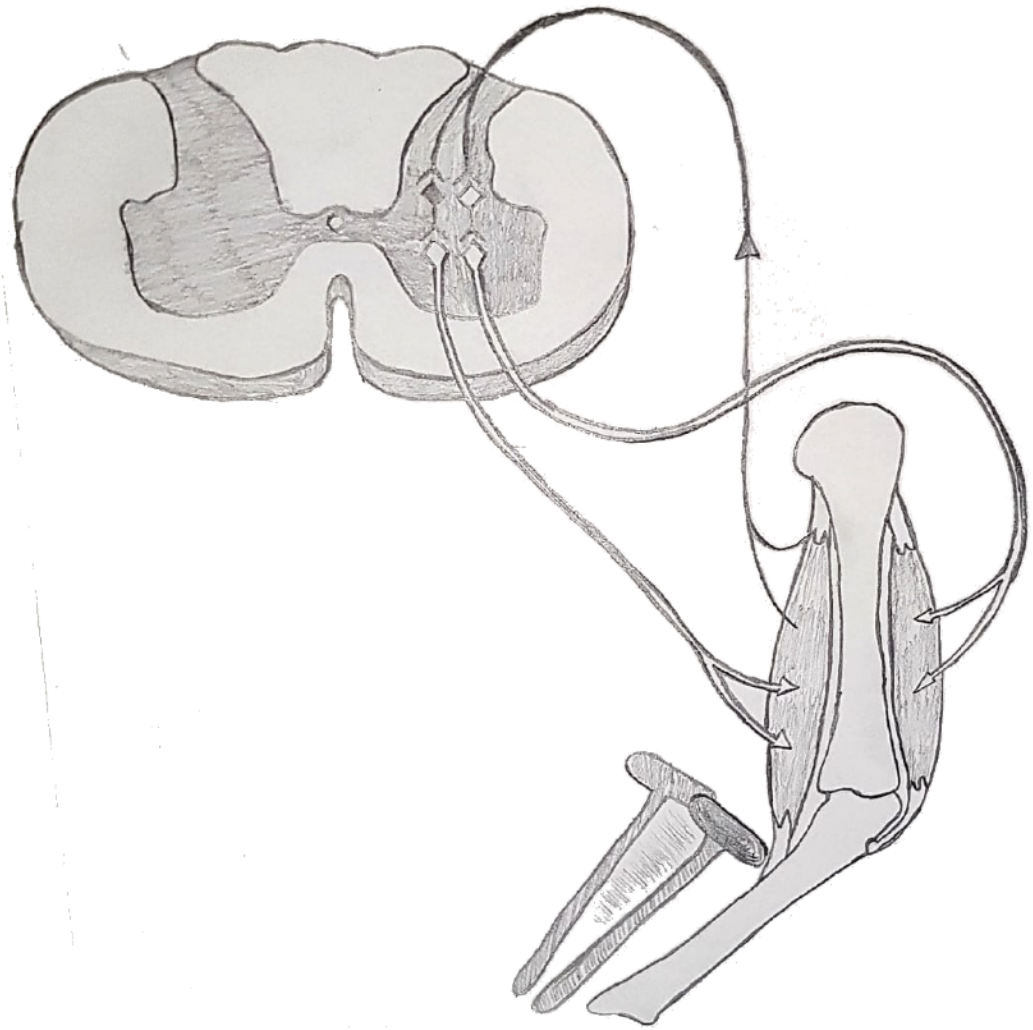
Tremor
Akininesia
Rigidity
Postural Instability

Myathenia Gravis – disorder of the neuromuscular junction

Symptoms

- Drooping of eyelids (ptosis)
- Double vision
- Difficulty swallowing, chewing, or talking (for a long time)
- Hoarse nasal voice.
- Fatigue
- Problems walking up stairs or lifting objects.
- Difficulty breathing due to muscle weakness.

Deep Tendon Reflexes

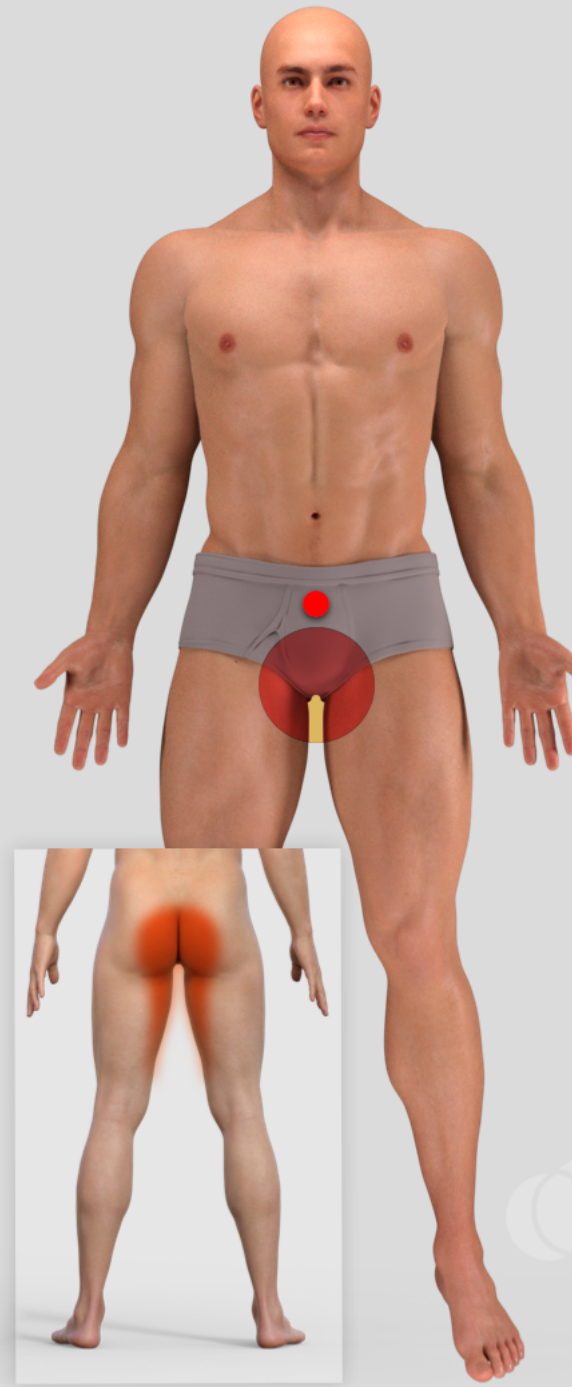


Deep tendon reflexes	Masseter, biceps and triceps tendon, knee tendon, ankle jerk and plantar (i.e., Babinski sign). Globally, brisk reflexes suggest an abnormality of the UMN or pyramidal tract, while decreased reflexes suggest abnormality in the anterior horn, LMN, nerve or motor end plate. A reflex hammer is used for this testing.

https://en.wikipedia.org/wiki/Neurological_examination

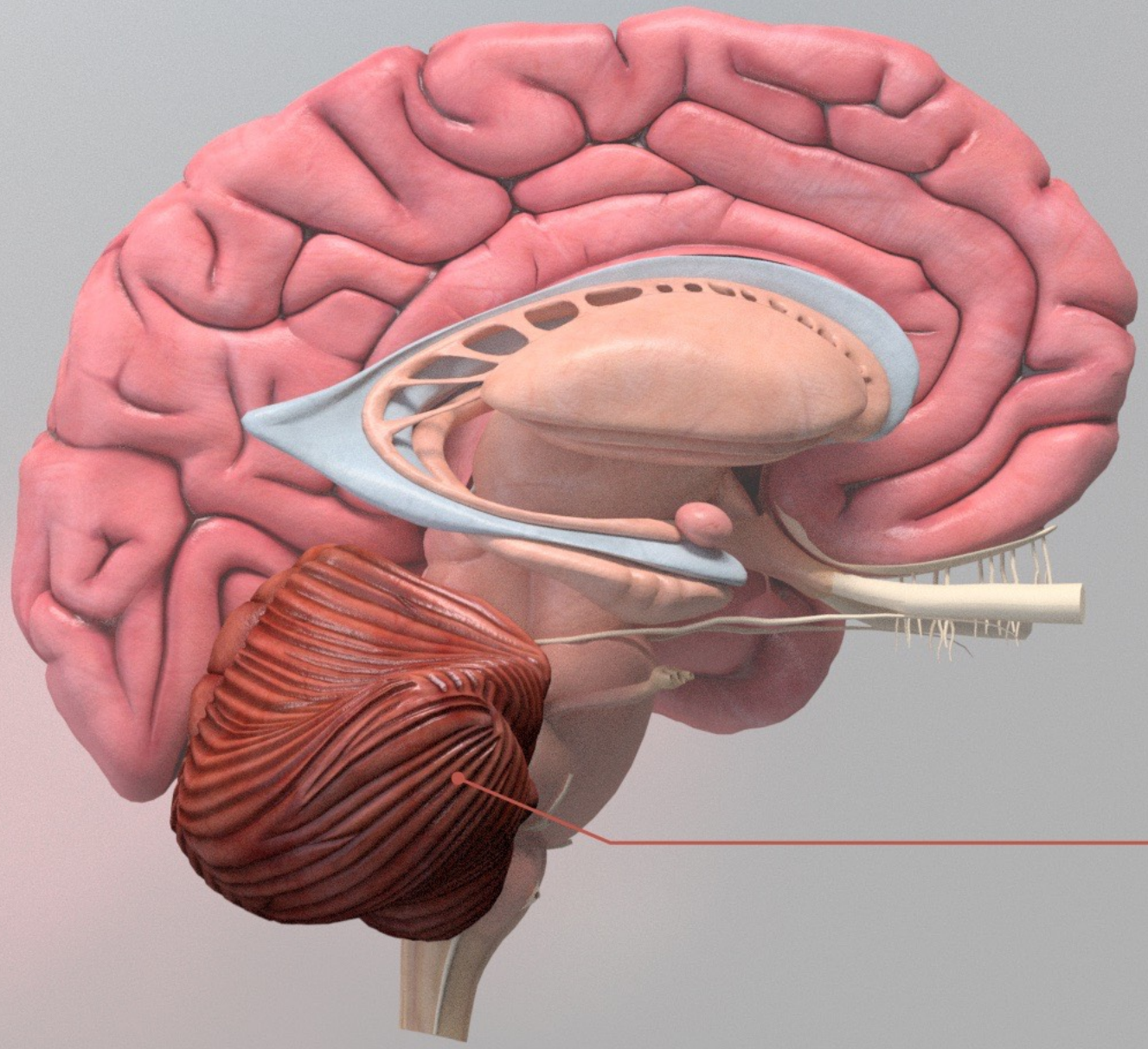
Sensation	Sensory system testing involves provoking sensations of fine touch, pain and temperature. Fine touch can be evaluated with a *monofilament test*, touching various dermatomes with a nylon monofilament to detect any subjective absence of touch perception. • Light touch • Pain • Temperature • Vibration • Position sense • Graphesthesia • Stereognosis, and • Two-point discrimination (for discriminative sense) • Extinction • Romberg test – 2 out of the following 3 must be intact to maintain balance: i. vision ii. vestibulocochlear system iii. epicritic sensation

https://en.wikipedia.org/wiki/Neurological_examination



Cerebellum	•Cerebellar testing • Dysmetria • Finger-to-nose test • Ankle-over-tibia test • Dysdiadochokinesis • Rapid pronation-supination • Ataxia • Assessment of gait • Nystagmus • Intention tremor • Staccato speech

https://en.wikipedia.org/wiki/Neurological_examination



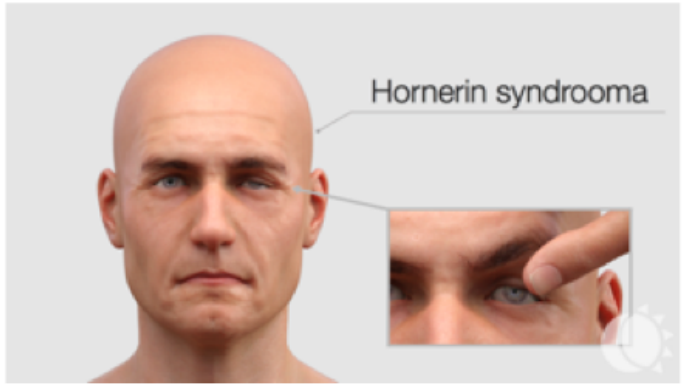
Cerebellum

Damage causes impairment in motor skills (ataxia) and can cause nystagmus.

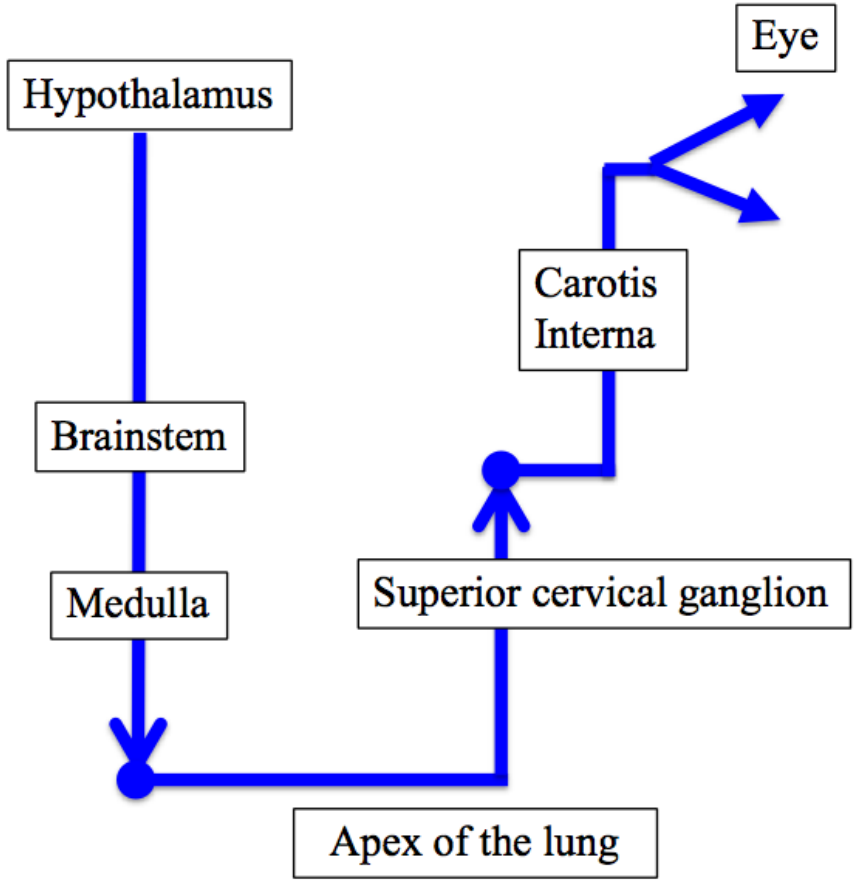
Autononomic Nervous system	•Orthostatism •Bovel and bladder (constibation, diarrea, hesitancy, urgency, retention, incontinence •Sexual functions - impotence

https://en.wikipedia.org/wiki/Neurological_examination

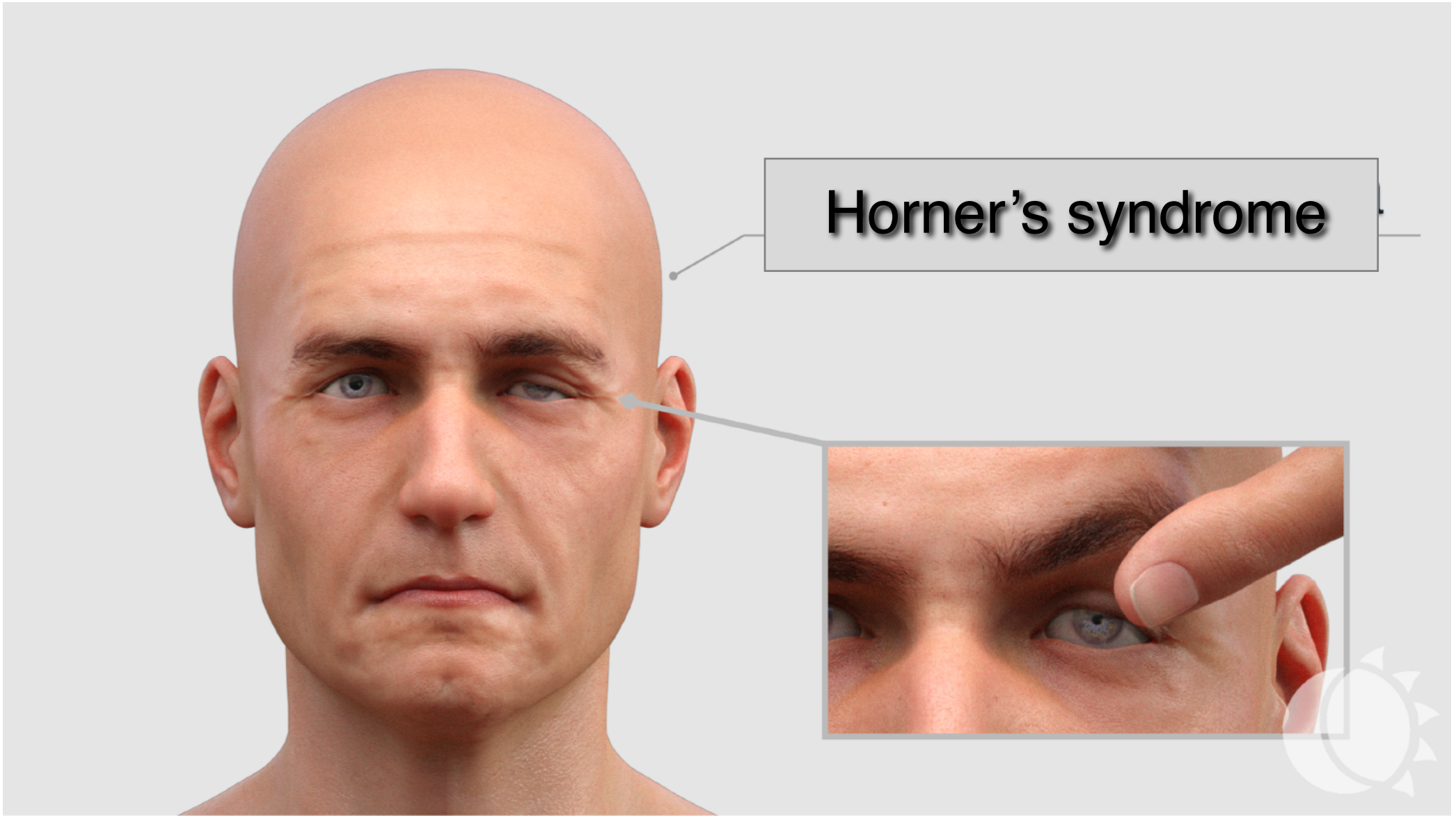
Horner's syndrome



CCA = Common Carotid Artery
SCG = Superior Cervical Ganglion
ICP = Internal Cerebral Artery
CS = CavernousSinus
LCN = Long Ciliary Nerve
GG = Ganglion Ciliare



Horner’s syndrome



The NeuroLevel and NeuroExam

Neurological Examination

Cognition

Cranial Nerves

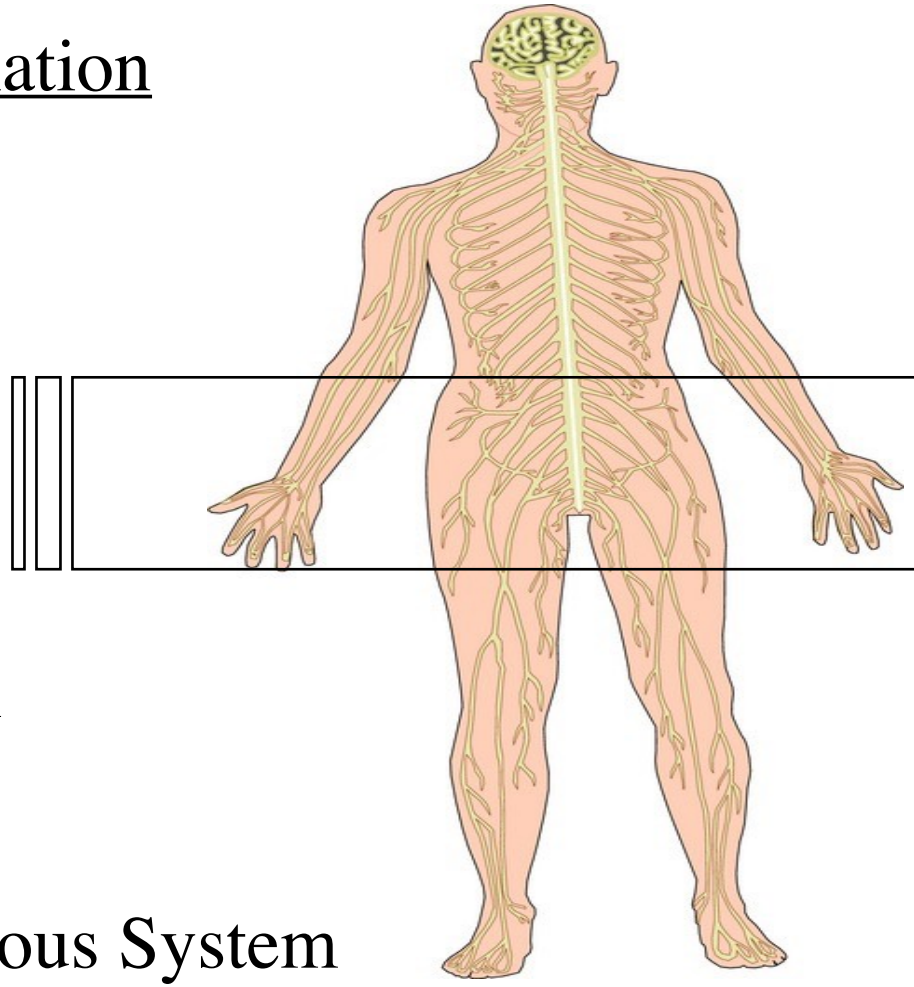
Motor examination

Cordination

Sensory Examination

Reflexes

The Autonomic Nervous System



Neurological Level

Psyche

Cerebral hemispheres

Basal ganglia

Brainstem and cranial nerves

Cerebellum

Spinal cord

Nerveroot

Peripheral nerve

Myoneural junction

Muscle

Standard bedside examination	
Cognitive examination	Arousal, consciousness; orientation to personal data, time, place, and situation; spontaneous language, comprehension, behavior, and mood
Gait	Normal speed, turning around, walking on toes and heels, walking on a line
Cranial nerve examination	Ophthalmoscopy, visual fields and acuity (CN II), virect and indirect pupillary refl exes (CN II, III), full range of eye movements and smooth pursuit (CN III, IV, VI) Facial sensation (CN V), facial muscle power (CN VIII) Speech (dysarthria), palatal contraction (CN IX, X), head turning and shoulder lifting (CN XI), tongue power and diadochokinesia (CN XII)
Motor examination	Straight arm test Elevation and abduction of the arm at 90° (deltoid muscle) Adduction in the same position (major pectoralis muscle) Elbow fl exion with forearm supinated (biceps muscle) Elbow extension (triceps muscle) Extension of the wrist (extensor carpi radialis longus muscle) Pincer grip (fl exor pollicis brevis, fl exor digitorum superfi cialis, and opponens pollicis muscles) Finger abduction and adduction (interossei muscles) Hip flexion (iliopsoas muscle) Knee extension (quadriceps femoris muscle) Knee flexion (biceps femoris, semitendinosus, and semimembranosus muscles) Dorsifl exion of foot (tibialis anterior muscle) Plantar flexion of foot (gastrocnemius, soleus muscles)
Cordination (cerebellum)	Finger-(nose)-finger test, knee-heel test; gait (including Romberg's test)
Sensory examination	Touch at hands and feet (pin prick only if patient has sensory complaints); vibration and proprioception in the great toe
Reflex status and muscle tone	Brachialis (C5/C6), Brachioradialis (C5–C7), Finger flexor (C6/C7), Triceps (C6–C8), Adductor (L2/L3), Patellar (L2–L4), Achilles (S1/S2), Plantar reflexes, muscle tone in arms and legs
Autonomic nervous system	Dizziness when getting up (orthostatism), heart, bladder and bowel symptoms, impotence

System overview: auscultation of heart, carotids, lungs; pulse, blood pressure; temperature

Daniel Kondziella, Gunhild Waldemar. Neurology at the Bedside. Springer Science & Business Media, 2013.