

All Neuroanatomy Clinicals

<u>Clinical</u>	<u>Reference</u>	<u>Info</u>																								
1-Types of Paralysis	Snell's, pg.166	<ol style="list-style-type: none"> 1. Hemiplegia: Paralysis of 1 side of body 2. Monoplegia: Paralysis of 1 limb 3. Diplegia: Paralysis of 2 corresponding limbs (Arms or legs) 4. Paraplegia: Paralysis of 2 lower limbs 5. Quadriplegia: Paralysis of all limbs 																								
2-Tabes Dorsalis (imp)	Snell's, pg.165	<p>Location: Posterior Sensory Root (spinal cord)</p> <p>Cause: Syphilis</p> <p>Tracts involved: All sensory tracts</p> <ol style="list-style-type: none"> 1. Dorsal column 2. Antero Lateral Spinothalamic <p>Symptoms:</p> <ol style="list-style-type: none"> 1. Stabbing pain in lower limbs 2. Paresthesia in lower limbs 3. Hypersensitivity of skin to touch, heat and cold 4. Ataxia and hypotonia in lower limbs 5. Loss of tendon reflex 																								
3-Upper Motor Lesion (UML) and Lower Motor Lesion (LML) (vvv.imp)	Snell's, pg.166	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>UML</u></th> <th style="text-align: center;"><u>LML</u></th> </tr> </thead> <tbody> <tr> <td>Location</td> <td>In CNS above nerve vertebrae</td> <td>Level of vertebrae and PNS</td> </tr> <tr> <td>Power</td> <td>Slight decrease</td> <td>Severe decrease</td> </tr> <tr> <td>Size</td> <td>Slight decrease</td> <td>Severe decrease</td> </tr> <tr> <td>Tone</td> <td>Hypertonia/Rigidity/Spasticity (Clonus)</td> <td>Hypotonia/Flaccidity</td> </tr> <tr> <td>Reflex</td> <td>Hyperreflexia</td> <td>Hyporeflexia</td> </tr> <tr> <td>Babinski Sign</td> <td>Foot Dorsiflexes</td> <td>Foot Plantarflexes</td> </tr> <tr> <td>Fasciculation</td> <td>Absent</td> <td>Present</td> </tr> </tbody> </table>		<u>UML</u>	<u>LML</u>	Location	In CNS above nerve vertebrae	Level of vertebrae and PNS	Power	Slight decrease	Severe decrease	Size	Slight decrease	Severe decrease	Tone	Hypertonia/Rigidity/Spasticity (Clonus)	Hypotonia/Flaccidity	Reflex	Hyperreflexia	Hyporeflexia	Babinski Sign	Foot Dorsiflexes	Foot Plantarflexes	Fasciculation	Absent	Present
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4-Complete Cord Transection syndrome (imp)	Snell's, pg.168	<p>Location: Complete Spinal Cord section</p> <p>Cause: Fracture of Vertebral Column</p> <p>Tracts Involved: All Sensory and All Motor</p> <p>Symptoms:</p>																								

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5-Anterior Cord Syndrome (imp)	Snell's, pg.168	<p>Location: Anterior Spinal Cord section</p> <p>Cause: Anterior Spinal Artery damaged</p> <p>Tracts Involved: All Motor Tracts and All Sensory tracts Except Dorsal Column</p> <p>Symptoms:</p> <table border="1"> <thead> <tr> <th><u>Tracts</u></th> <th><u>At Level of Lesion</u></th> <th><u>Below Level of Lesion</u></th> </tr> </thead> <tbody> <tr> <td>Corticospinal</td> <td>LML Bilateral Paralysis (Hypotonia, Hyporeflexia, Babinski Sign Plantarflexes)</td> <td>UML Bilateral Paralysis (Hypertonia, Hyperreflexia, Babinski sign Dorsiflexes)</td> </tr> <tr> <td>Anterolateral Spinothalamic</td> <td>Bilateral Loss of Pain and temperature</td> <td>Bilateral Loss of Pain and temperature</td> </tr> <tr> <td>Dorsal Column</td> <td>Normal</td> <td>Normal</td> </tr> </tbody> </table>	<u>Tracts</u>	<u>At Level of Lesion</u>	<u>Below Level of Lesion</u>	Corticospinal	LML Bilateral Paralysis (Hypotonia, Hyporeflexia, Babinski Sign Plantarflexes)	UML Bilateral Paralysis (Hypertonia, Hyperreflexia, Babinski sign Dorsiflexes)	Anterolateral Spinothalamic	Bilateral Loss of Pain and temperature	Bilateral Loss of Pain and temperature	Dorsal Column	Normal	Normal
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6-Central Cord Syndrome (imp)	Snell's, pg.168	<p>Location: Center of Spinal Cord section</p> <p>Cause: Hyperextension</p> <p>Tracts Involved: Portion of All Motor Tracts and All Sensory tracts</p> <p>Symptoms:</p> <table border="1"> <thead> <tr> <th><u>Tracts</u></th> <th><u>At Level of Lesion</u></th> <th><u>Below Level of Lesion</u></th> </tr> </thead> <tbody> <tr> <td>Corticospinal</td> <td>LML Bilateral Paralysis</td> <td>UML Bilateral Paralysis</td> </tr> </tbody> </table>	<u>Tracts</u>	<u>At Level of Lesion</u>	<u>Below Level of Lesion</u>	Corticospinal	LML Bilateral Paralysis	UML Bilateral Paralysis						
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		Anterolateral Spinothalamic	Bilateral Loss of Pain and temperature	Bilateral Loss of Pain and temperature Sacral Sparing												
7-Brown-Sequard or Cord Hemi section Syndrome (Most vvv.imp)	Snell's, pg.170	<p>Location: Half of Spinal Cord section</p> <p>Cause: Commonly damaged</p> <p>Tracts Involved: Ipsilateral All Motor Tracts, Ipsilateral All Sensory tracts and Contralateral Spinothalamic</p> <p>Symptoms:</p> <table border="1"> <thead> <tr> <th><u>Tracts</u></th> <th><u>At Level of Lesion</u></th> <th><u>Below Level of Lesion</u></th> </tr> </thead> <tbody> <tr> <td>Corticospinal</td> <td>LML Ipsilateral Paralysis (Hypotonia, Hyporeflexia, Babinski Sign Plantarflexes)</td> <td>UML Ipsilateral Paralysis (Hypertonia, Hyperreflexia, Babinski sign Dorsiflexes)</td> </tr> <tr> <td>Anterolateral Spinothalamic</td> <td>Bilateral Loss of Pain and temperature</td> <td>Contralateral Loss of Pain and temperature</td> </tr> <tr> <td>Dorsal Column</td> <td>Ipsilateral loss of Fine touch, vibration, etc.</td> <td>Ipsilateral loss of Fine touch, vibration, etc.</td> </tr> </tbody> </table>			<u>Tracts</u>	<u>At Level of Lesion</u>	<u>Below Level of Lesion</u>	Corticospinal	LML Ipsilateral Paralysis (Hypotonia, Hyporeflexia, Babinski Sign Plantarflexes)	UML Ipsilateral Paralysis (Hypertonia, Hyperreflexia, Babinski sign Dorsiflexes)	Anterolateral Spinothalamic	Bilateral Loss of Pain and temperature	Contralateral Loss of Pain and temperature	Dorsal Column	Ipsilateral loss of Fine touch, vibration, etc.	Ipsilateral loss of Fine touch, vibration, etc.
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8-Syringomyelia (imp)	Snell's, pg.170	<p>Location: Center at commissures of Spinal Cord section</p> <p>Cause: Developmental Abnormality</p> <p>Tracts Involved: Spinothalamic Tracts and Anterior Corticospinal Fibers</p> <p>Symptoms:</p> <table border="1"> <thead> <tr> <th><u>Tracts</u></th> <th><u>At Level of Lesion</u></th> <th><u>Below Level of Lesion</u></th> </tr> </thead> <tbody> <tr> <td>Anterior Corticospinal</td> <td>LML Ipsilateral Paralysis of</td> <td>UML Ipsilateral Paralysis of</td> </tr> </tbody> </table>			<u>Tracts</u>	<u>At Level of Lesion</u>	<u>Below Level of Lesion</u>	Anterior Corticospinal	LML Ipsilateral Paralysis of	UML Ipsilateral Paralysis of						
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			Trunk and small hand muscles	Trunk and small hand muscles
		Anterolateral Spinothalamic	Bilateral Loss of Pain and temperature	Normal
		Dorsal Column	Normal	Normal
9-Arnold-Chiari Malformation (v.imp)	Snell's, pg.215	<ul style="list-style-type: none"> • Congenital anomaly in which medulla and tonsils of cerebellum herniate through foramen magnum into vertebral canal • CSF doesn't circulate causing internal hydrocephalus • Medulla and cranial nerve 9,10,11,12 effected 		
10-Lateral Medullary Syndrome (vvv.imp)	Snell's, pg.215	<p>Location: Lateral side of medulla</p> <p>Cause: Posterior Inferior Cerebellar Artery (PICA) or vertebral artery damaged</p> <p>Nucleus/Tracts Damaged and Symptoms:</p> <ol style="list-style-type: none"> 1. Nucleus Ambiguus: Dysphagia and dysarthria due to paralysis of laryngeal muscles 2. Nucleus of spinal tract of trigeminal: Analgesia of ipsilateral side of face 3. Descending Sympatetic Fibers: Ipsilateral Horner's Syndrome 4. Vestibular Nucleus: Vertigo, Nausea, Nystagmus 5. Inferior cerebellar peduncle: Ipsilateral cerebellar signs 6. Spinal Lemniscus: Contralateral Loss of pain and temperature and crude touch 		
11-Medial Medullary Syndrome (vvv.imp)	Snell's, pg.215	<p>Location: middle of medulla</p> <p>Cause: Vertebral Artery Damaged</p> <p>Nucleus/Tracts Damaged and Symptoms:</p> <ol style="list-style-type: none"> 1. Corticospinal/Pyramidal Tract: Contralateral Hemiparesis (difficulty or inability to move) 2. Dorsal Column Medial Lemniscus: Contralateral Loss of tactile discrimination, vibration, fine touch, proprioception, etc. 3. Hypoglossal Nerve: Ipsilateral paralysis of tongue and tongue deviates to paralyzed side 		

<p>12-Weber Syndrome (vvv.imp)</p>	<p>Snell's, pg.217</p>	<p>Location: Front region of midbrain</p> <p>Cause: Posterior Cerebral artery (Basilar Artery)</p> <p>Nucleus/Tracts Damaged and Symptoms:</p> <ol style="list-style-type: none"> 1. Oculomotor Nerve (Cranial Nerve No.3): Ipsilateral Ophthalmoplegia, Eyeball deviated to right because medial rectus muscle paralyzed, ptosis because Levator Palpbre superioris paralyzed 2. Edinger-Westphal Nucleus: Light Accommodation Reflex Gone
<p>13-Benedict Syndrome (vvv.imp)</p>	<p>Snell's, pg.217</p>	<p>(Similar to weber)</p> <p>Location: Middle Region of Midbrain</p> <p>Cause: Posterior Cerebral artery (Basilar Artery)</p> <p>Nucleus/Tracts Damaged and Symptoms:</p> <ol style="list-style-type: none"> 1. Medial Lemniscus: Contralateral Hemianesthesia 2. Red Nucleus (Rubrospinal): Contralateral involuntary Limb movement
<p>14-Cerebellar Disease (v.imp)</p>	<p>Snell's, pg.241</p>	<p>Damage to any side of cerebellum always gives ipsilateral symptoms</p> <p>Acute damage is more dangerous than chronic as CNS doesn't have time to adapt</p> <p>General Symptoms:</p> <ol style="list-style-type: none"> 1. Hypotonia 2. Change in posture and gait 3. Ataxia (Disturbance of voluntary movement) 4. Dysdiadochokinesia (Inability to perform postural movements) 5. Disturbances of Reflexes 6. Nystagmus (also in Lateral Medullary Syndrome) 7. Dysarthria (also in Lateral Medullary Syndrome) <p>Types of Syndromes:</p> <ol style="list-style-type: none"> 1. Vermis Syndrome: Symptoms seen mainly in trunk and head 2. Cerebellar Hemisphere: Symptoms seen mainly in Limbs and Phonation

<p>15-Aphasia (viva)</p>	<p>Snell's, pg.292</p>	<p>Types:</p> <ol style="list-style-type: none"> Expressive Aphasia: Broca's Motor Speech Area damaged, ability of speech is lost Receptive Aphasia: Wernicke's Sensory Speech Area damaged, ability to understand speech is lost Global Aphasia: Expressive and receptive Aphasia together, Wernicke and Broca both damaged
<p>16-Schizophrenic</p>	<p>Snell's, pg.306</p>	<p>Symptoms:</p> <ol style="list-style-type: none"> Disordered thinking Emotional withdrawal Blunted affect Paranoid delusions Auditory Hallucinations <p>Treatment: Dopamine receptor blockers, but also affects basal ganglia system</p>
<p>17-Kluver-Bucy Syndrome (v.imp)</p>	<p>Snell's, pg.306</p>	<p>Cause: Amygdaloid Complex Destruction</p> <p>Symptoms:</p> <ol style="list-style-type: none"> Decreased Anger Decreased Fear Decreased Restlessness Increased Appetite Increased Sexual Activity
<p>18-Basal Nuclei Disorders (vvv.imp)</p>	<p>Snell's, pg.315</p>	<p>Generally 2 Types:</p> <p>Hyperkinetic (Excessive abnormal movements):</p> <ol style="list-style-type: none"> Chorea Athetosis Ballismus Parkinson <p>Hypokinetic (Lack or slowness of movements):</p> <ol style="list-style-type: none"> Parkinson
<p>19-Chorea (vvv.imp)</p>	<p>Snell's, pg.315</p>	<p>Involuntary quick, jerky and nonrepetitive movements</p> <p>Huntington Disease: Caused by Autosomal Dominant gene of chromosome 4</p> <p>Gaba neurons of striatonigral inhibiting pathway degenerate</p> <p>Symptoms are Choreiform movements and progressive dementia</p>

		<p>Sydenham Chorea: Streptococcal bacteria similar to basal ganglia so antigens start attacking basal ganglia</p> <p>Symptoms: Choreiform Movements and Rheumatic Fever</p>
20-Hemiballismus (vvv.imp)	Snell's, pg.315	<p>One side limb starts flying about out of control</p> <p>Damage to Subthalamus (Does Smooth Movement)</p>
21-Parkinson's Disease (vvv.imp)	Snell's, pg.315	<p>Both Hyper and Hypokinetic</p> <p>Damage to Substantia Niagra</p> <p>Symptoms:</p> <ol style="list-style-type: none"> 1. Tremor 2. Rigidity (Lead pipe or Cog-wheel) 3. Bradykinesias 4. Postural disturbances
22-Athetosis (vvv.imp)	Snell's, pg.318	<p>Slow, sinuous, writhing Movements</p> <p>Damage to Globus Pallidus</p>
23-Thalamic Lesions	Snell's, pg.369	<p>Important relay so many tracts can be damaged, sensory loss if VPL and VPM damaged</p> <p>Interthalamic nuclei blocked for complete pain blockage</p> <p>Thalamic hand and choreoathetosis may occur</p>
24-Thalamic hand	Snell's, pg.369	<p>Contralateral hand is held in an abnormal posture due to thalamic lesion, wrist is pronated and flexed, metacarpophalangeal joint is flexed and interphalangeal joint is extended</p>
25-Types Of Headaches	Snell's, pg.429	<ol style="list-style-type: none"> 1. Meningeal Headache: Dura matter damage giving referred trigeminal nerve pain 2. Cerebral Tumor Headache: Stretching of Dura matter 3. Migraine Headache: multiple reasons causing dilation and constrictions of cerebral arteries 4. Alcoholic headache: Toxic effect on meninges 5. Diseases of teeth, eye or sinus headache: Referred pain by trigeminal
26-Hydrocephalus (vvv.imp)	Snell's, pg.456	<p>Increased CSF volume and pressure in skull due to over production or reduced drainage or blockage</p> <p>Types:</p> <ol style="list-style-type: none"> 1. Communicating: No obstruction and CSF circulates freely through ventricles and subarachnoid space

		2. Non-communicating: Obstruction present which prevents circulation between ventricles and Subarachnoid space																		
27-Lumbar Puncture (vvv.imp)		<p>Between L4-L5</p> <p>Structures Pierced:</p> <ol style="list-style-type: none"> 1. Skin 2. Superficial Fascia 3. Deep Fascia 4. Vertebral Ligaments 5. Dura Matter 6. Subdural Space 7. Arachnoid Matter 																		
28-Cerebral Artery Syndrome (vvv.imp)	Snell's, pg.472	<p>Damage to Arteries causes different areas to be infarcted</p> <table border="1"> <thead> <tr> <th>Artery</th> <th>Lobe</th> <th>Symptom</th> </tr> </thead> <tbody> <tr> <td>Anterior Cerebral</td> <td>Paracentral Lobe</td> <td>Contralateral Hemiparesis and Hemisensory loss of leg and foot</td> </tr> <tr> <td>Middle Cerebral</td> <td>Precentral, postcentral, frontal lobe</td> <td>Contralateral Hemiparesis and hemisensory loss of arms and face</td> </tr> <tr> <td>Posterior Cerebral</td> <td>Occipital Lobe</td> <td>Contralateral homonymous Hemianopia</td> </tr> <tr> <td>Internal Carotid</td> <td>Anterior part of Cerebrum</td> <td>Symptoms of middle and anterior cerebral Artery</td> </tr> <tr> <td>Vertebro basilar</td> <td>Brainstem and Occipital Lobe</td> <td>Medial+ Lateral Medullary Syndromes and Benedict + Webber Syndrome</td> </tr> </tbody> </table>	Artery	Lobe	Symptom	Anterior Cerebral	Paracentral Lobe	Contralateral Hemiparesis and Hemisensory loss of leg and foot	Middle Cerebral	Precentral, postcentral, frontal lobe	Contralateral Hemiparesis and hemisensory loss of arms and face	Posterior Cerebral	Occipital Lobe	Contralateral homonymous Hemianopia	Internal Carotid	Anterior part of Cerebrum	Symptoms of middle and anterior cerebral Artery	Vertebro basilar	Brainstem and Occipital Lobe	Medial+ Lateral Medullary Syndromes and Benedict + Webber Syndrome
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Characteristic	Epidural/Extra cranial Hemorrhage	Subdural Hemorrhage	Sub Arachnoid Hemorrhage	Cerebral Hemorrhage
Site	Between Periosteal and meningeal layer of dura matter	Between Dura matter and arachnoid matter	Between Arachnoid matter and pia matter	Within Cerebrum
Vessel	Anterior branch of Middle Meningeal Artery	Cerebral/Bridging Vein	Circle Of Willis	Capillaries of Cerebrum
Cause	Blunt Trauma	Elderly suddenly moving head	Hypertension	Hypertension

Symptoms	Lucid Interval, progressively increasing intervals of unconsciousness	Varies	Severe and sudden Headache	Depends on Location
CT. Scan	Lens Shape	Crescent Shape	Filled Subarachnoid space	Depends on location

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