

UPPER VS LOWER MOTOR NEURON DISEASE**A . UPPER MOTOR NEURON****1 . Multiple sclerosis**

Motor & sensory, descending
Asymmetric
(Optic nerve involved)
Spinal cord lesions in most patients

2 . Progressive multifocal leukoencephalopathy (JC virus reactivation)

Motor (hemiparesis) & sensory
Asymmetric
(Optic nerve NOT involved; may have hemianopsia [occipital lobe])
Spinal cord lesions rare
Fast deterioration

B . UPPER & LOWER MOTOR NEURON**1 . ALS**

Motor only
Starts as unilateral weakness in distal legs/arms; eventually symmetric
Facial muscles, speech affected
Diaphragm affected
Extraocular muscles spared; bowel/bladder function spared

2 . Conus Medullaris Syndrome

Motor and sensory
Symmetric (vs Cauda equina [asymmetric])
Severe lower back pain, lower limb motor weakness, paresthesia/
numbness, saddle anesthesia
Anal sphincter dysfunction; urinary retention/overflow incontinence
Impotence
Sudden onset (vs Cauda equina [gradual])
Patella reflex preserved (vs Cauda equina); Achilles reflex diminished

C . LOWER MOTOR NEURON**1 . Guillaine-Barre Syndrome (GBS)**

Motor & sensory, ascending
Symmetric
Diaphragm affected
Autonomic dysfunction: constipation, urinary retention, BP/arrhythmia
Bilateral facial nerve palsy (also CN 3-12)

2 . Myasthenia Gravis (MG)

Motor only
Symmetric
Facial muscles affected
Diaphragm affected
No UMN/LMN signs (reflexes preserved)

3 . Lambert-Eaton Myesthenic Syndrome (LEMS)

Motor only
Symmetric
Facial muscles affected
Autonomic effects (from low acetylcholine)
Diaphragm may be affected late in disease
Reduced or absent reflexes

4 . Polio

Motor only
Asymmetric
Rarely autonomic

5 . Spinal muscular atrophy

Motor only (floppy baby)
Symmetric

6 . Botulism

Motor only (floppy baby), descending
Symmetric flaccid paralysis always beginning w/ cranial nerves.
Dysphagia
Autonomic effects (low Ach)

7 . Syringomyelia

Motor & sensory
Motor may be asymmetric; loss of pain/temp. in cape-like distribution

8 . Cauda Equina Syndrome

Motor and sensory

Asymmetric

Low back pain, lower limb motor weakness, paresthesia/numbness, saddle anesthesia

Anal sphincter dysfunction; urinary retention/overflow incontinence

Impotence

Gradual onset

Patella reflex diminished; Achilles reflex diminished

NOTES/RECAP

GBS, botulism both infectious, both symmetrical, both autonomic dysfunction

GBS ascending vs. botulism descending

GBS motor/sensory, botulism motor

Polio vs GBS/botulism

All are infectious

Polio asymmetric, rarely autonomic (some skin/cold intolerance from sympathetic effects)

Polio vs botulism

Both infectious, both motor only

Botulism symmetric, autonomic effects

MG/LEMS vs ALS

All: No sensory

All: diaphragm affected

All: can present as symmetric weakness

extra-ocular muscles affected vs ALS, spared

ALS is upper motor neuron and lower motor neuron

SMA vs botulism

Both motor only/floppy, symmetric

botulism has anticholinergic effects

Myasthenia gravis vs Lambert Eaton

Both: motor only, symmetric, diaphragm/facial muscles, autoimmune

LEMS: has anticholinergic effects

LEMS VS GBS

both: symmetric, facial muscles; autonomic effects; autoimmune

LEMS: motor only

Cauda equina syndrome vs ALS

both: asymmetric; lower motor neuron muscle weakness

ALS: also upper motor neuron; sensory intact; bowel/bladder intact;

Respiratory problems

Cauda equina vs conus medullaris

Both: Motor and sensory

lower limb motor weakness, paresthesia/numbness

saddle anesthesia, bowel/bladder incontinence, impotence

Cauda equina: asymmetric, only lower motor neuron, more gradual onset

with less severe back pain, both patella/achilles reflexes lost