

Palsy

Mechanism: Paresis (partial weakness) and plegia (complete loss of power) are caused by affliction of the motor pathway for a given segment (cortex/subcortical white matter, corticospinal tract in the brainstem or spinal cord, anterior horn cell, root, peripheral nerve, neuromuscular junction, or muscle).

Syndromes:

Central paresis (upper motor neuron): lesions of the motor cortex, corticospinal tract, or spinal cord lead to weakness accompanied (after an initial pseudoflaccid phase) by spasticity, hyperreflexia, and pyramidal irritative signs

By distribution: hemiparesis - one half of the body affected, paraparesis - lower extremities affected, quadriparesis - all four extremities affected

Peripheral paresis (lower motor neuron): hypotonia, hypo/areflexia with atrophy (and fasciculations), in neuropathy sensation is affected in the area nervina of the given nerve.

Radiculopathy: involvement in the innervation zone of a specific nerve root accompanied by a sensory deficit and pain in the same localization

Polyneuropathy: involvement of acral segments in a stocking-glove distribution with signs of hypotonia, areflexia, and sensory ataxia

Myasthenic syndrome: accentuating weakness caused by rapid muscle fatigability with preserved sensation and reflexes

Myopathic syndrome: weakness dominantly in proximal segments (hips and shoulders) with muscle atrophy and normal sensation

Functional movement disorder: impairment of power inconsistent over time, not corresponding to anatomical distribution (incongruent with findings), and resolving with distraction.

Red flags:

- Sudden focal weakness (FAST-positive) → perform imaging without delay (susp. stroke).
- Weakness accompanied by headache, vomiting, or impaired consciousness → intracerebral/subarachnoid hemorrhage
- Symmetric limb weakness with a sensory level, urinary retention, or back pain → acute compression of the spinal cord / cauda equina (urgent MRI and decompression)
- Ascending weakness with areflexia, respiratory failure, or autonomic instability → GBS;
- Fatigable bulbar/respiratory weakness → myasthenic crisis.

Examination:

- 1) Clinical evaluation (time course, distribution of involvement, sensory symptoms, pain, fatigability).
- 2) Neurological examination: assessment of power, testing muscle tone, reflexes, mapping the boundary of sensory deficit, and testing fatigability.
- 3) Imaging methods: multimodal brain CT if stroke/hemorrhage is suspected, urgent spinal MRI if cord compression is suspected.
- 4) Laboratory and supplementary examinations: electrolytes (ions), glucose, TSH, creatine kinase, lumbar puncture (albuminocytologic dissociation in GBS), antibodies in MG
- 5) electromyography (EMG) and nerve conduction studies

Treatment:

- Ischemic stroke: reperfusion (intravenous thrombolysis and/or mechanical thrombectomy).
- Intracerebral hemorrhage: blood pressure control, coagulation reversal, and neurosurgical evaluation.
- Spinal cord compression: emergent decompression.
- Guillain-Barré syndrome: intravenous immunoglobulins (IVIG) or plasmapheresis.
- Myasthenia gravis / crisis: IVIG or plasmapheresis.
- Multiple sclerosis / myelitis: high doses of corticosteroids.
- Neuropathy / radiculopathy: treatment of the primary cause, anti-edematous therapy, decompression.

Onset	Children	Adults
Acute	GBS, acute flaccid myelitis, transverse myelitis, acute spinal cord injury / spinal cord infarct, tick-borne encephalitis / botulism, spinal cord compression by tumor	ischemic or hemorrhagic stroke (most common acute focal weakness), acute spinal cord compression (degenerative, tumor, abscess, hematoma), GBS, acute myasthenic crisis
Subacute	subacutely progressing inflammatory or demyelinating processes, spinal tumors	multiple sclerosis / myelitis, progressive forms of polyneuropathies and radiculopathies, myositides and endocrine/metabolic myopathies
Chronic	cerebral palsy and congenital myopathies / muscular dystrophies (e.g., Duchenne disease), hereditary neuropathies (Charcot-Marie-Tooth)	chronic peripheral neuropathy and radiculopathy, amyotrophic lateral sclerosis (ALS), chronic myopathies and functional neurological disorder

Explanatory notes: GBS - Guillain-Barré syndrome, ALS - amyotrophic lateral sclerosis, MG- myasthenia gravis