

2 Patient who has Weakness Cheat Sheet by bee.f (bee.f) via cheatography.com/180201/cs/37875/

Weakness overview

Distribution: reflects the site of lesion (e.g. proximal, distal, bilateral, unilateral, etc.)

Type: reflects the element of the nervous system that's impaired

To understand **nature** of **pathology** & **aetiology** of muscle **weakness**, what 4 things need to be considered?

- 1. Type of weakness
- 2. Distribution of weakness
- 3. Time course of onset
- 4. Mode of onset

Weakness vs. fatigue:

- Weakness: is regional
- Fatigue: is generalised

Pt records:

- Sense of clumsiness, tightness, instability
- Uncoordinated movement
- Numbness

Physical manifestations:

- Clumsiness
- Uncoordinated movement
- Loss of fine motor skills
- Imbalance

4 considerations of weakness:

- Type of weakness
- Distribution of weakness
- Time course of onset
- Mode of onset

Etiology

Introduction: Causes of weakness are categorised by lesion location. Some disorders have characteristic of lesions in more than one location. E.g. *Amyotrophic lateral sclerosis (ALS)* may have findings of both UMN & LMN dysfunction. Disorders of the SC may affect tracts from UMN, LMN (anterior horn cells), or both

Common causes of focal weakness

- Stroke: unilateral weakness
- Neuropathies: including trauma or entrapment caused (e.g. carpal tunnel syndrome) & that are immune-mediated (e.g. Bell palsy)

Etiology (cont)

Temporary focal weakness:

- TIA (transient ischemic attack)
- Hypoglycaemia: with treatment hypoglycaemia & resulting weakness resolve

Generalised weakness:

- Disuse atrophy: resulting from illness or frailty (specifically in older pts)
- Generalised muscle wasting: due to prolonged immobilisation in an intensive care unit (ICU) aka *ICU myopathy*
- Critical illness polyneuropathy aka ICU neuropathy
- Common myopathies: e.g. alcoholic myopathy, hypokalaemia, corticosteroid myopathy
- Use of paralytic drugs in critical care pts

Fatigue

Introduction: Many pts report weakness when they have fatigue. This can prevent maximal effort & muscle performance during strength testing

Common causes:

- Acute severe illness of almost any cause, cancers, chronic infections (e.g.HIV, hepatitis, endocarditis, mononucleosis), endocrine disorders, renal failure, hepatic failure, heart failure, & anaemia
- Multiple sclerosis can cause *daily fatigue* that increases with exposure to **heat & humidity**
- Pts with fibromyalgia, depression or chronic fatigue syndrome may report weakness or fatigue but have no defined objective abnormalities



By bee.f (bee.f) cheatography.com/bee-f/

Not published yet. Last updated 12th April, 2023. Page 1 of 2. Sponsored by Readable.com Measure your website readability! https://readable.com



2 Patient who has Weakness Cheat Sheet by bee.f (bee.f) via cheatography.com/180201/cs/37875/

Pathophysiology

Introduction: Voluntary movement initiated in cerebral cortex in the posterior aspect of the frontal lobe. Neurons involved - UMN or corticospinal tract nuerons - synapse with LMN in the spinal cord. LMN transmit impulses to the neuromuscular junction to initiate muscle contraction

Common mechanism of weakness include dysfunction of:

- UMN: corticospinal & corticobulbar tract lesions
- LMN: due to peripheral poly neuropathies or anterior horn cell lesions
- Neuromuscular junction
- Muscle: due to myopathies

Location correlates with physical findings:

- UMNL: disinhibits LMN → causing ↑ muscle tone (spacticity) & ↑ muscle stretch reflexes (hyperreflexia); Babinski reflex is specific for corticospinal tract dysfunction; UMNL can also ↓ tone & reflexes if motor paralysis is sudden & severe (e.g *spinal cord transections* → tone 1st ↓, then ↑ gradually over days/weeks) or if lesion damages the motor cortex of the precentral gyrus & not nearby motor associations
- LMNL: disrupts reflex arcs → causing hyporefelxia & ↑ muscle tone (flaccidity), & may cause fasciculations; with time, muscle atrophy
- Peripheral polyneuropathies: most noticeable in the longest nerves (i.e. weakness is prominent in the distal limb than the proximal & in legs more than arms) & produce signs of LMNL (e.g. ↓ reflexes & muscle tone)
- **Neuromuscular junction myasthenia gravis:** (most common disorder) fluctuating weakness that worsens with activity & lessens with rest
- **Diffuse muscle dysfunction:** (myopathies) most noticeable in the largest muscle groups (proximal muscles)

Evaluation	
Temporal pattern:	
Anatomic pattern:	
Physical examination:	
Additional findings:	

Key points

☐ If fatigue has **no anatomic or temporal pattern** of weakness in pts with a normal physical examination, suspect **chronic fatigue syndrome**, an as-yet undiscovered systemic illness **(e.g. severe anaemia, hypothyroidism, Addison disease)**, a psychologic problem **(e.g. depression)**, or an adverse drug effect

Distinguish loss of muscle strength from a feeling of fatigue

- ☐ If pts have **true muscle** weakness, first focus on determining whether weakness is caused by dysfunction of the **brain**, **spinal cord**, **plexuses**, **peripheral nerves**, **neuromuscular junction**, **or muscles**
- ☐ If pts have hyperreflexia & increased muscle tone (spasticity), particularly if Babinski reflex is present, suspect an UMN (corticospinal tract) lesion in the brain or spinal: MRI is usually required
- \Box If pts have $\mbox{hyporeflexia}$, \downarrow tone, atrophy, & fasciculations, suspect a LMNL
- ☐ If pts have difficulty climbing stairs, combing hair, & standing up with predominantly proximal muscle weakness & intact sensation, suspect myopathy



By bee.f (bee.f) cheatography.com/bee-f/

Not published yet. Last updated 12th April, 2023. Page 2 of 2. Sponsored by Readable.com

Measure your website readability!

https://readable.com