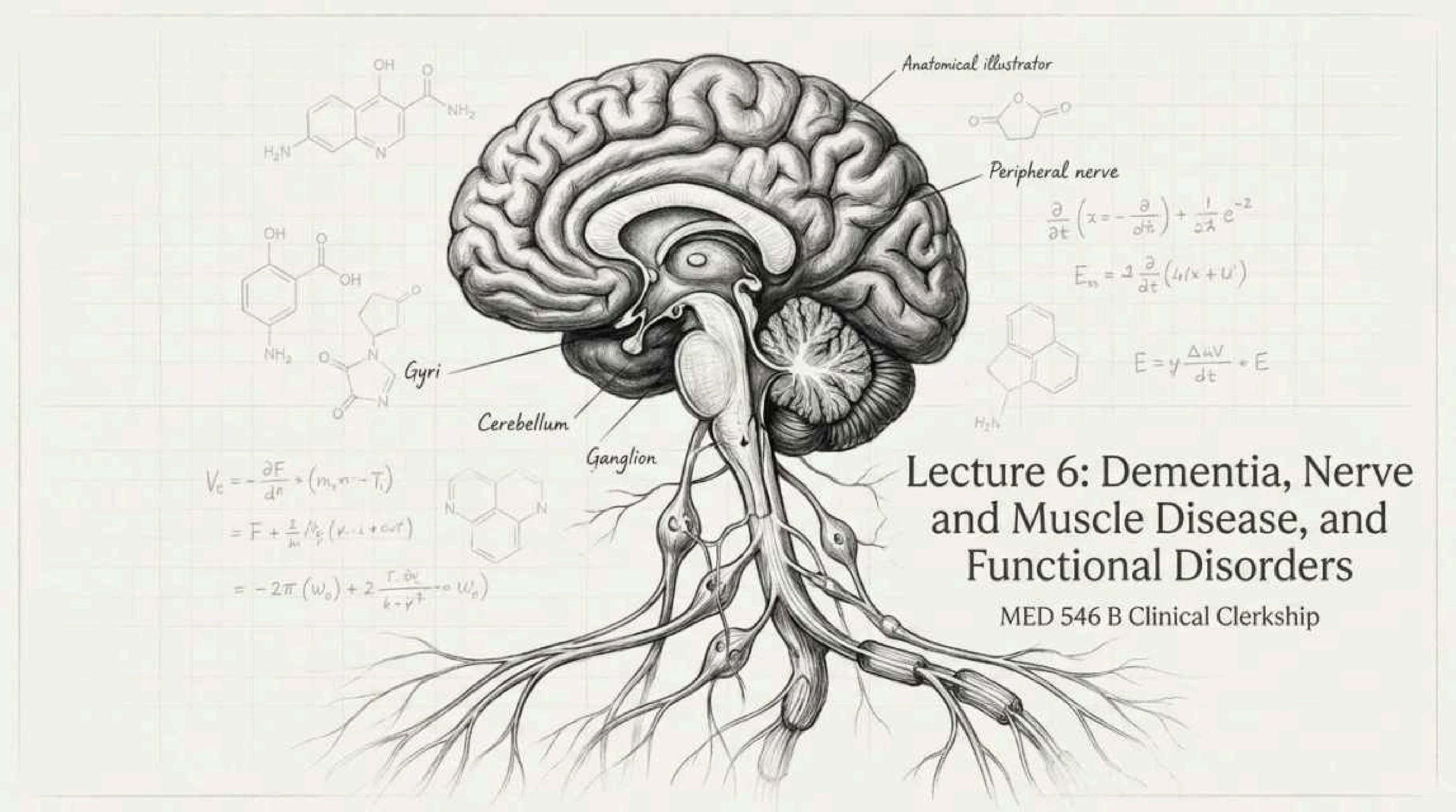
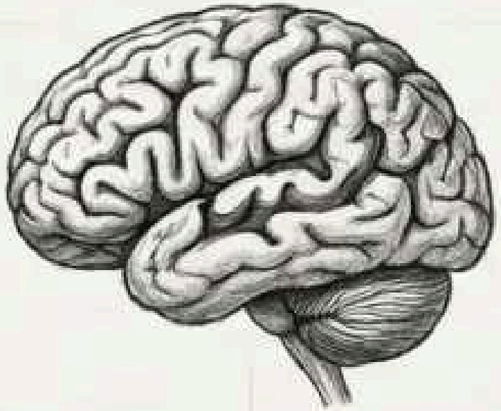


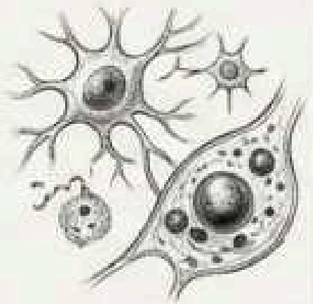
Lecture 6: Dementia, Nerve and Muscle Disease, and Functional Disorders

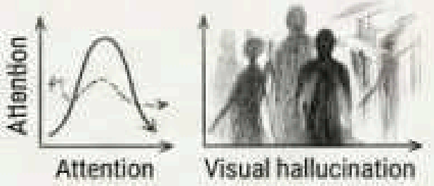
MED 546 B Clinical Clerkship

Alzheimer's Disease
(60-70% of cases)



Dementia with Lewy Bodies
(Fluctuating cognition, visual hallucinations, parkinsonism)



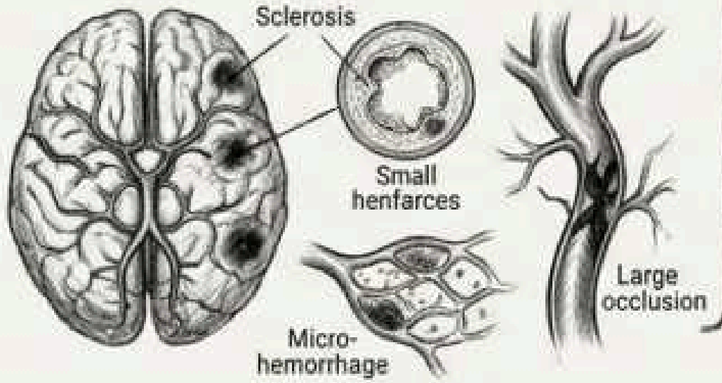




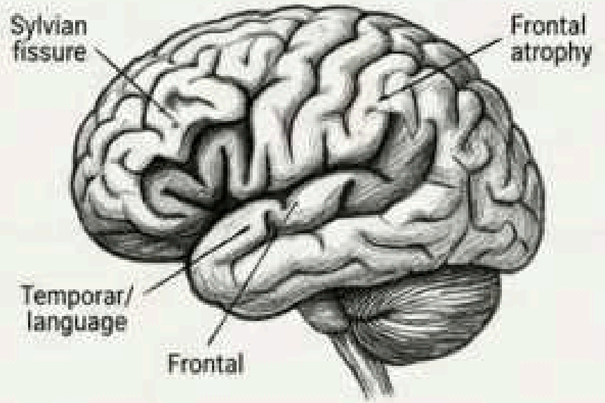
55 Million
Worldwide



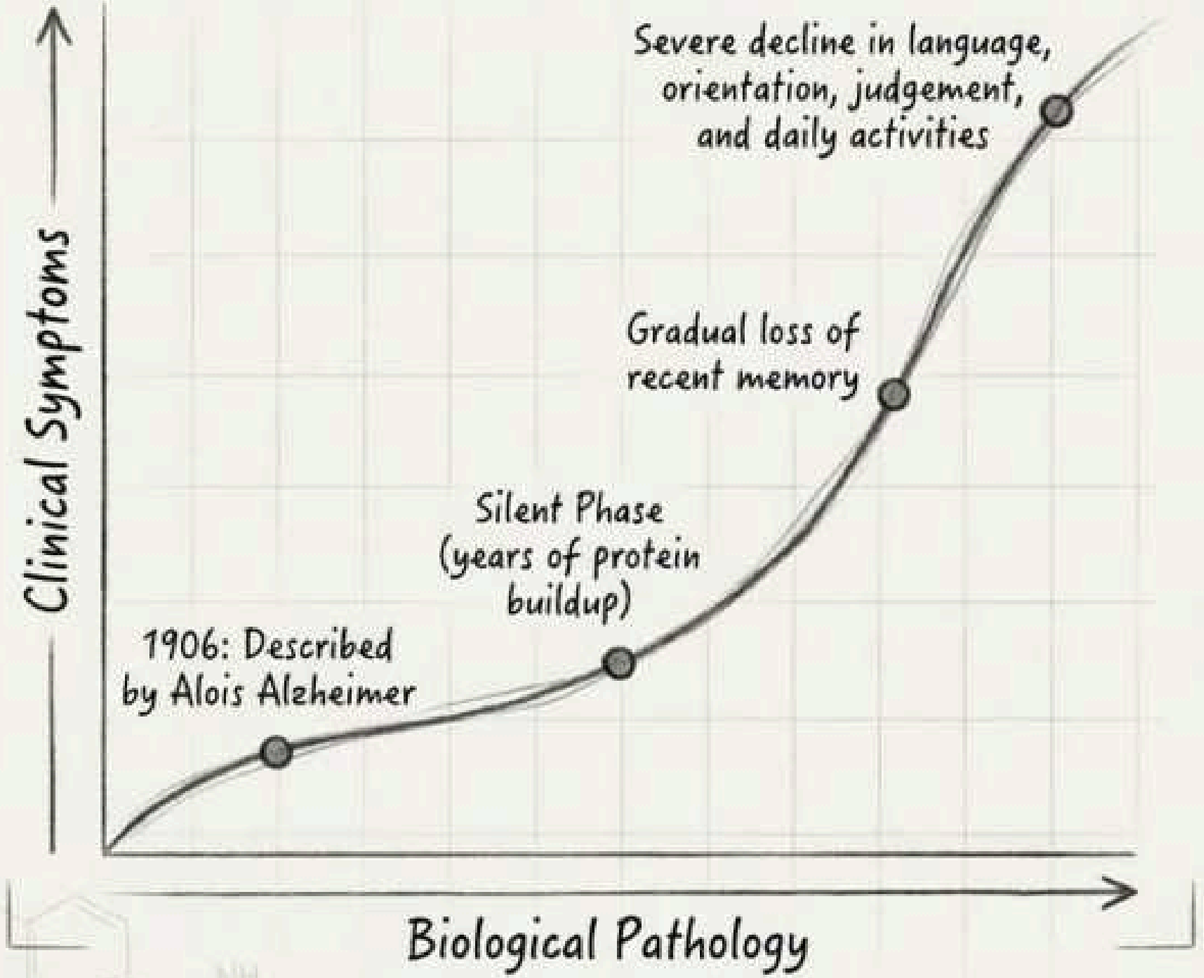
Vascular Dementia
(Strokes, small vessel disease)



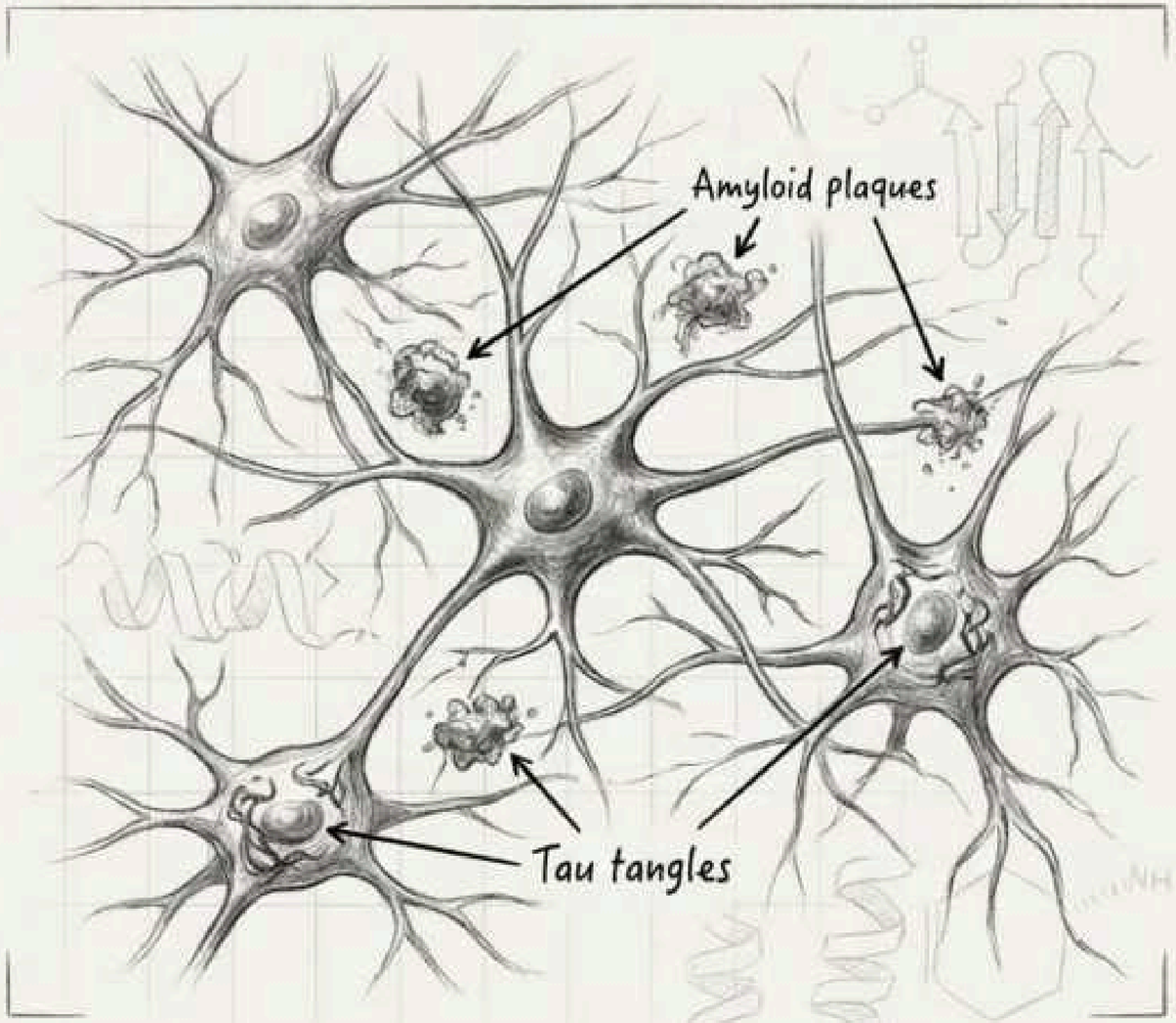
Frontotemporal Dementia
(Early onset, behaviour/language impact)



The Clinical Timeline



The Microscopic Pathology



Step 1: History (Patient + Reliable Informant)

Step 2: Cognitive Testing

Step 3: Blood Tests

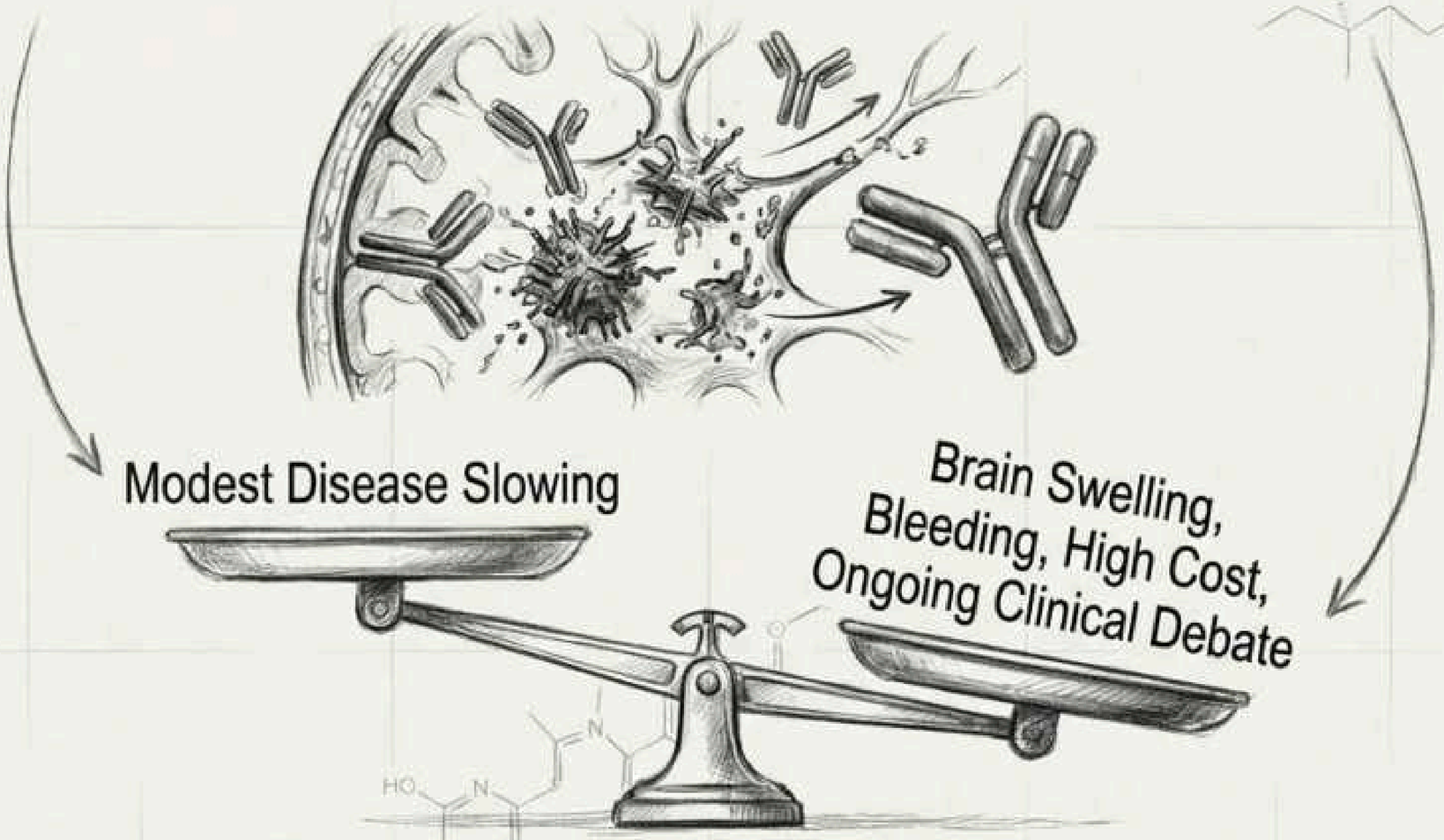
- Exclude treatable contributors: Thyroid disease, Vitamin B12 deficiency

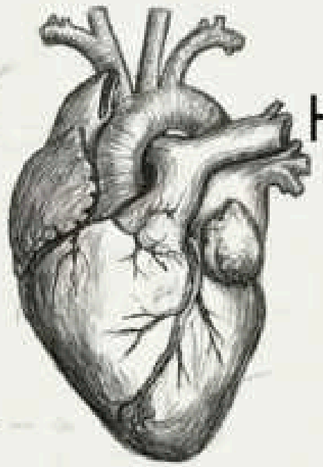
Step 4: Brain Imaging

Critical Differential Diagnoses

Depression
Delirium
Medicines

Late 1990s	2023 Breakthrough
Modest symptomatic benefit (e.g., Donepezil)	Disease-modifying antibodies (e.g., Lecanemab, USA approved)



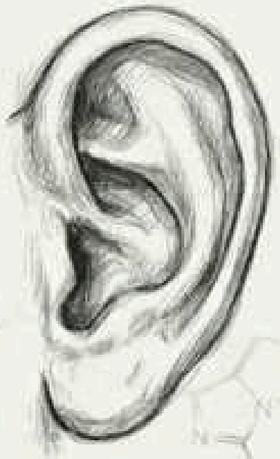


Physical

High blood pressure
Obesity
Physical inactivity
Diabetes
High cholesterol

Sensory

Hearing loss
Untreated vision loss



~40% of dementia cases are linked to modifiable risks

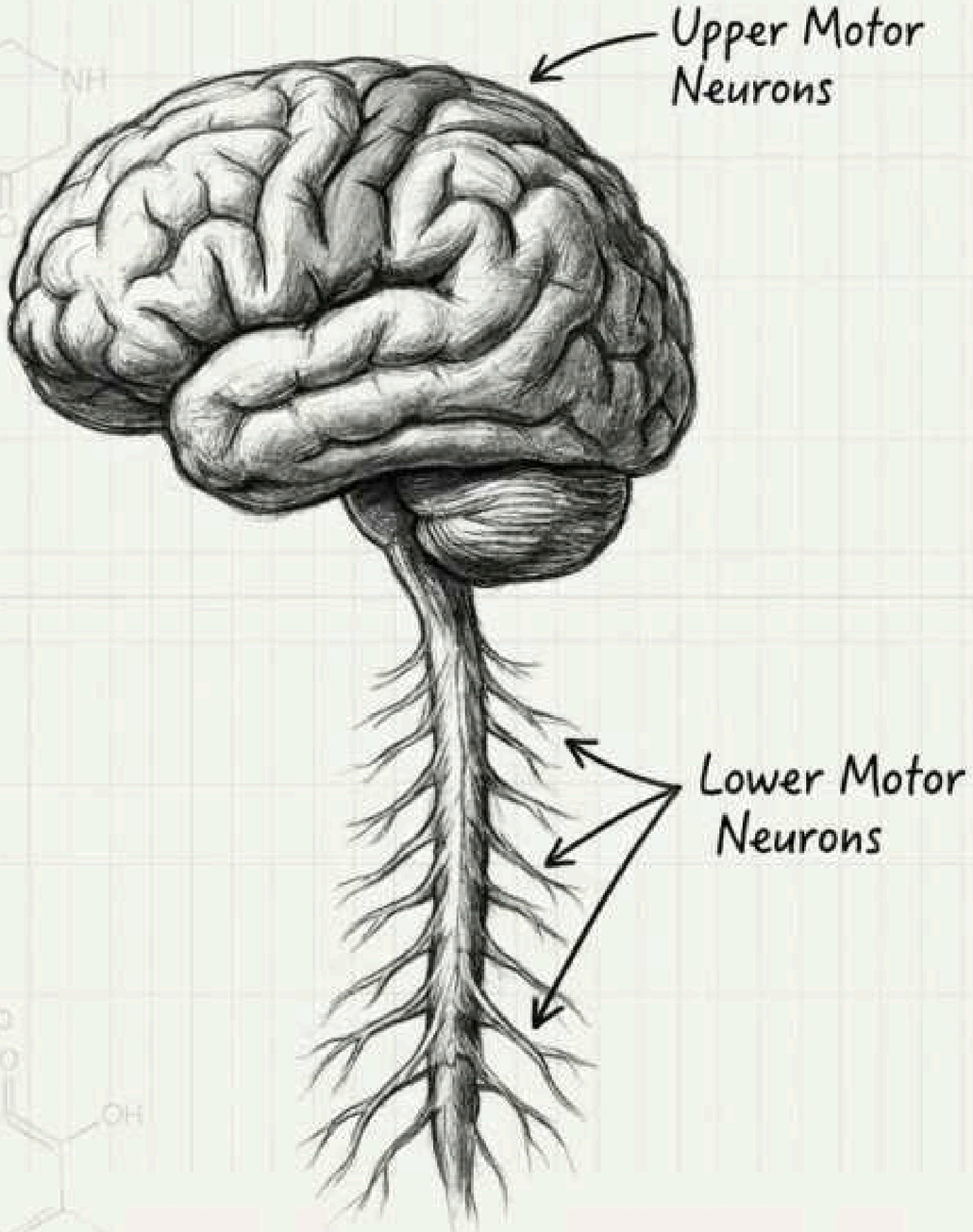
Lifestyle

Smoking
Excess alcohol
Air pollution
Head injury

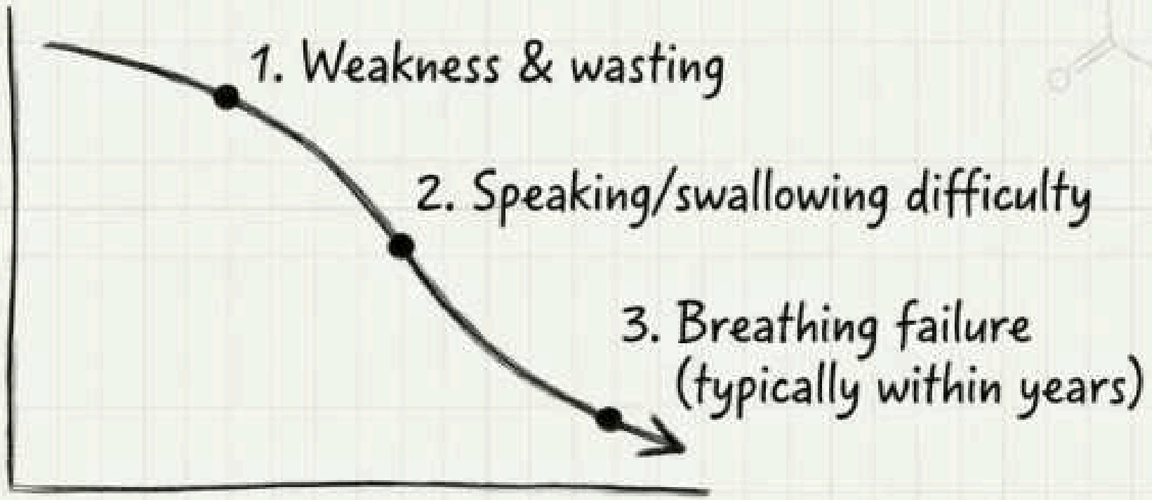
Psycho-social

Less early-life education
Depression
Social isolation

Good Care = Dignity + Support for Carers + Advance Care Planning

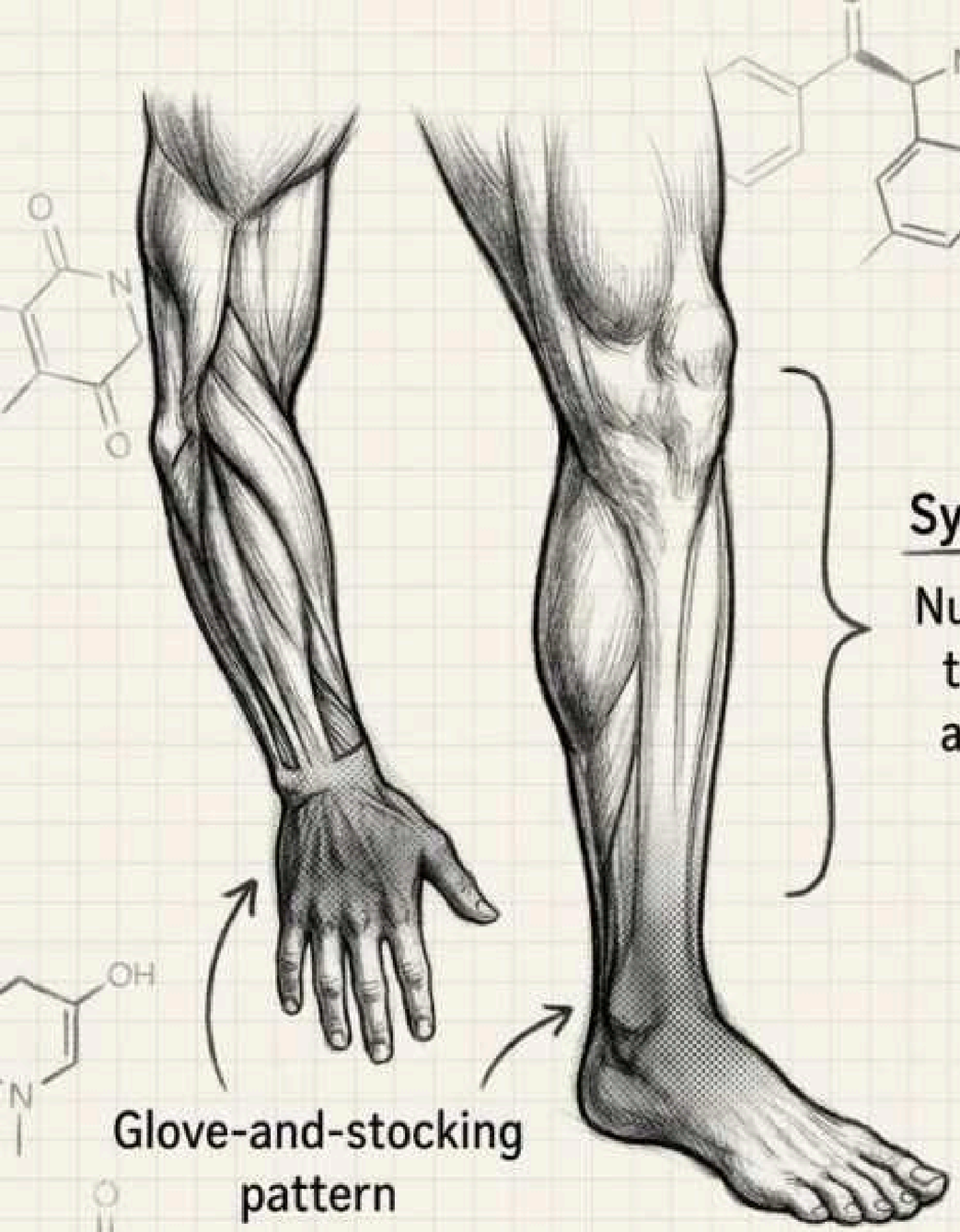


Motor Neuron Disease (ALS):
Degeneration of muscle-controlling nerve cells. Combines Upper and Lower motor neuron signs.



Management:
Symptomatic focus, nutrition, breathing support, coordinated specialist team. Modest drug effects; gene-targeted therapy for one inherited form.

¶ 6.7



Glove-and-stocking pattern

Symptoms

Numbness, tingling, and pain

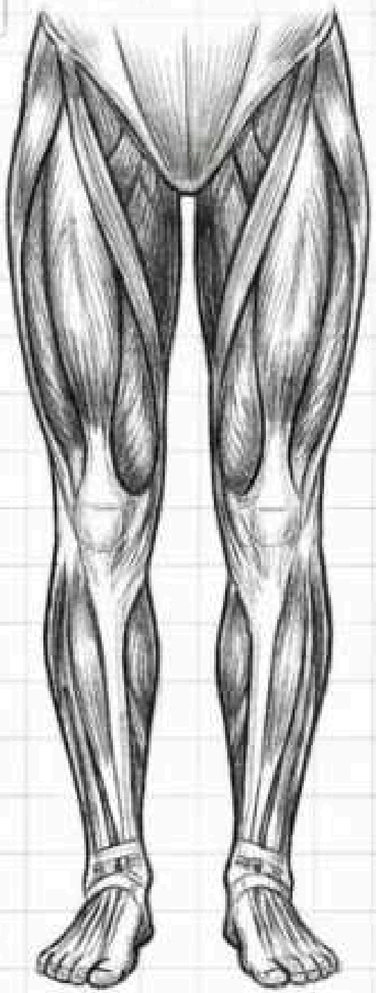
Etiology Tree

- **Primary Causes:** → Diabetes (Ref: MED 531 B), Excess alcohol
- **Secondary Causes:**
  - Vitamin B12 deficiency
  - Kidney failure
  - Chemotherapy
  - Inherited/Inflammatory conditions

Treatment Triad

1. Address underlying cause → 2. Rigorous foot care → 3. Nerve pain management

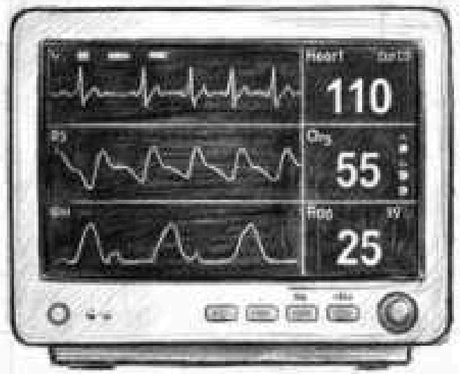
Guillain-Barré Syndrome





Pathology: Acute inflammatory neuropathy (immune system attacks peripheral nerves), often triggered by a preceding infection.

Ascending Weakness (starts in legs, rises over days) + Loss of reflexes.



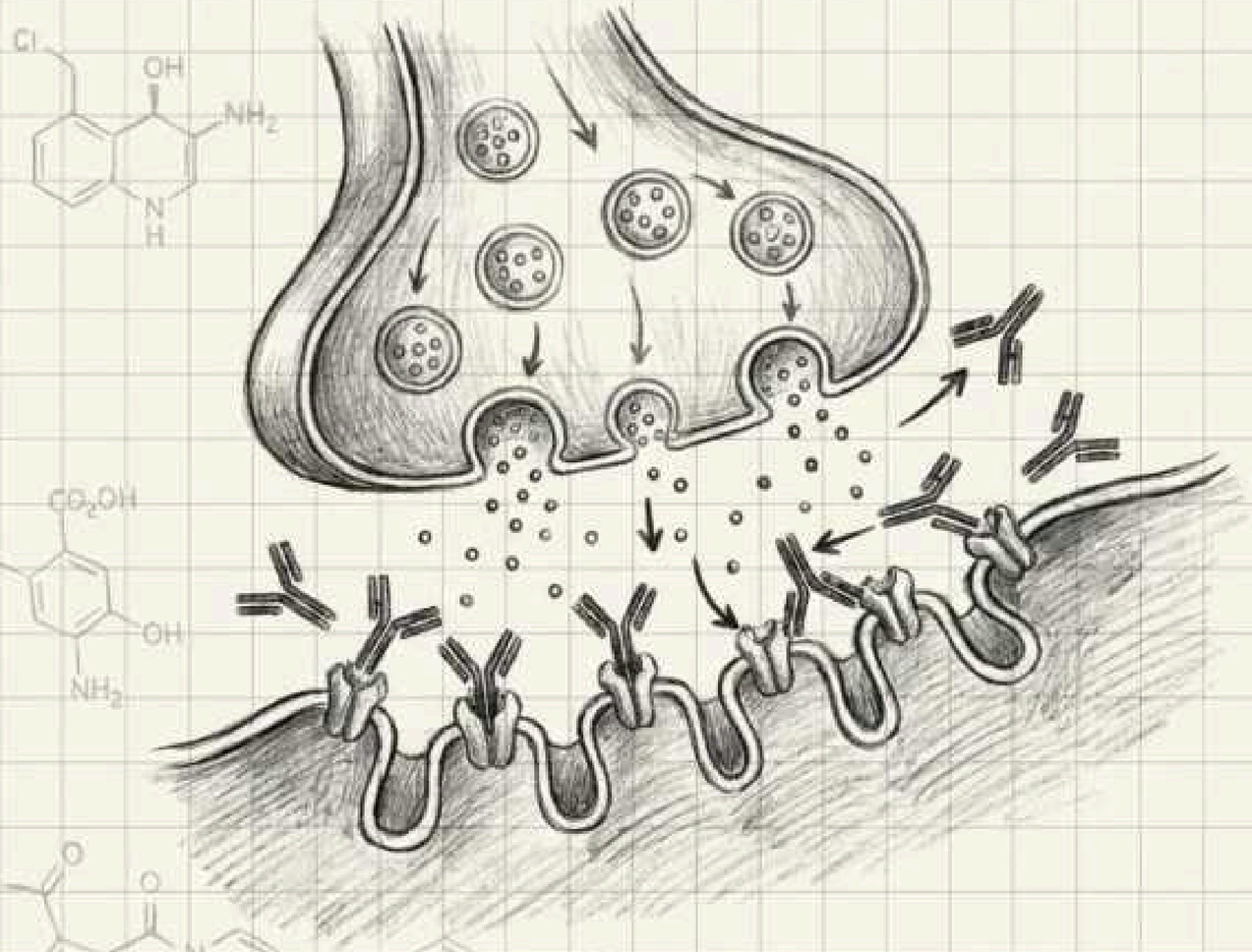
Critical: Can affect muscles of breathing — capacity must be monitored closely.

Treatment: Intravenous immunoglobulin (IVIG) or plasma exchange speeds recovery. Most patients recover well over months.

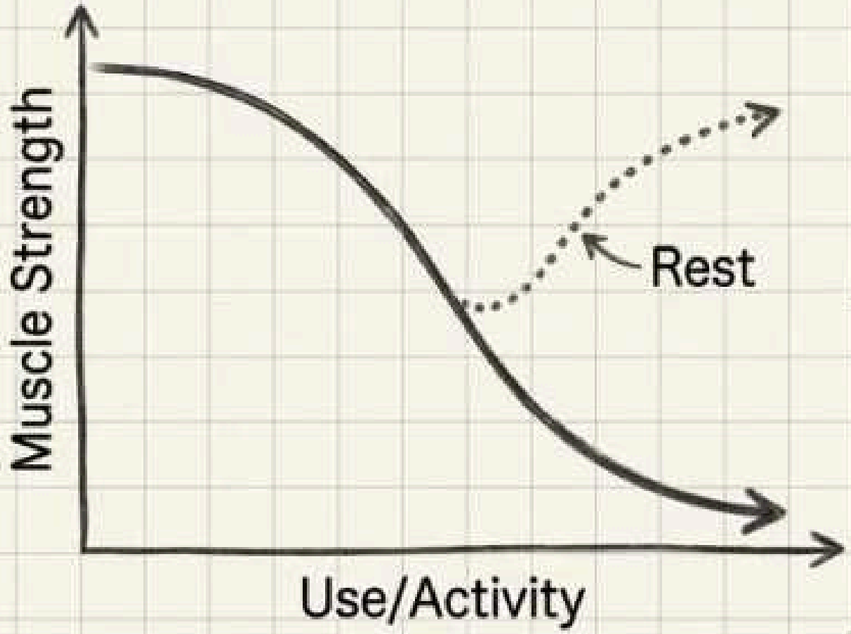
Master Clinician's Whiteboard

¶ 6.9

Myasthenia Gravis Mechanism:
Antibodies block nerve-muscle junction signaling.



Fatigue Curve



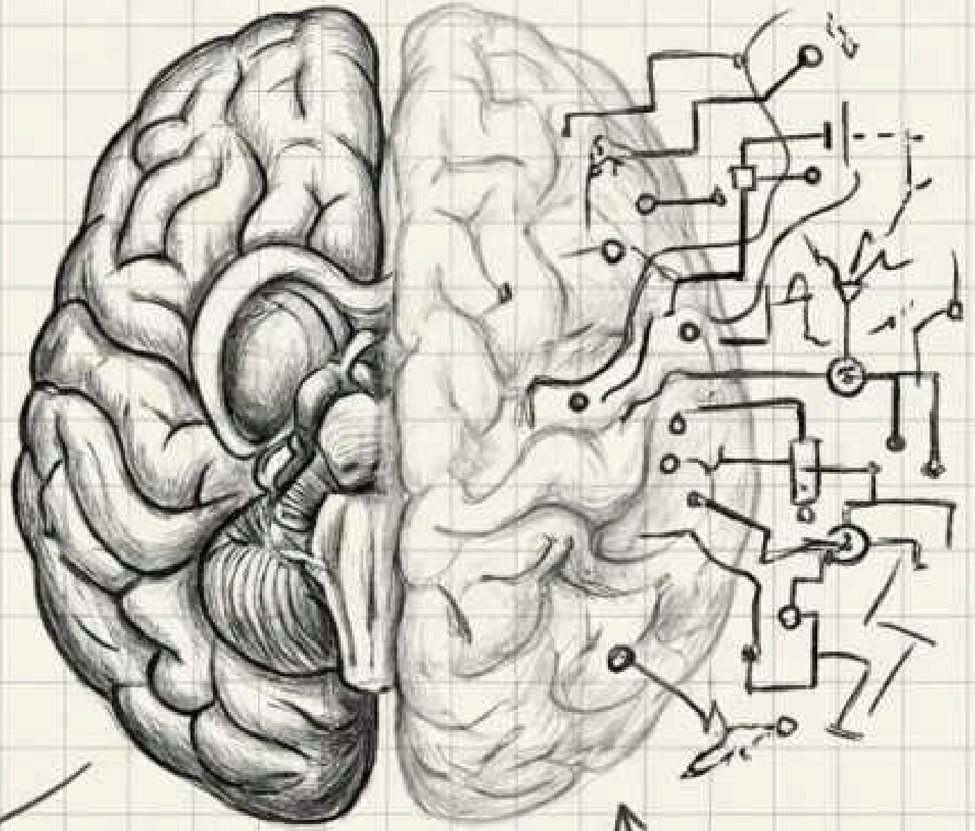
Symptoms: Ptosis (drooping eyelids), Diplopia (double vision), Swallowing/breathing issues.

Treatments: Nerve-muscle signalling drugs, immune-suppressants, thymectomy (removal of thymus gland).

Functional Neurological Disorder (FND)

¶ 6.10

Hardware:
Structurally Intact



Software:
Functional Glitch

Definition

Real, physical neurological symptoms (weakness, tremor, seizures, walking problems) caused by a problem with system function, not structure.

Diagnostic Rule

Diagnosed by positive clinical signs (e.g., weakness varying with attention) — not merely by excluding other diseases.

Treatment Pillars

Clear clinical explanation, Physiotherapy, Psychological therapies.

Functional Neurological Disorder (FND)

¶ 6.11

The Old Paradigm

Patients routinely dismissed. Symptoms incorrectly labeled as as imaginary or faked.

Modern Neurology

FND is fully recognized as a genuine, often severely disabling condition sitting at the interface of neurology and psychiatry.



Good care begins with believing the patient and explaining the diagnosis respectfully.

The 7 Core Rules of Neurology:

- [x] 1. Diagnostic Anchor: Always ask: Where is the problem? What is it?
- [x] 2. Stroke: Time is Brain. Treat as an absolute emergency.
- [x] 3. Headache: Vigilantly recognize red flags.
- [x] 4. Blackouts: Require a careful witness history. Always remember to check the heart.
- [x] 5. Chronic Diseases: Treat MS early; treat Parkinson's effectively.
- [x] 6. Dementia: Aggressively address modifiable risks.
- [x] 7. Functional Disorders: Recognize positively, treat respectfully.