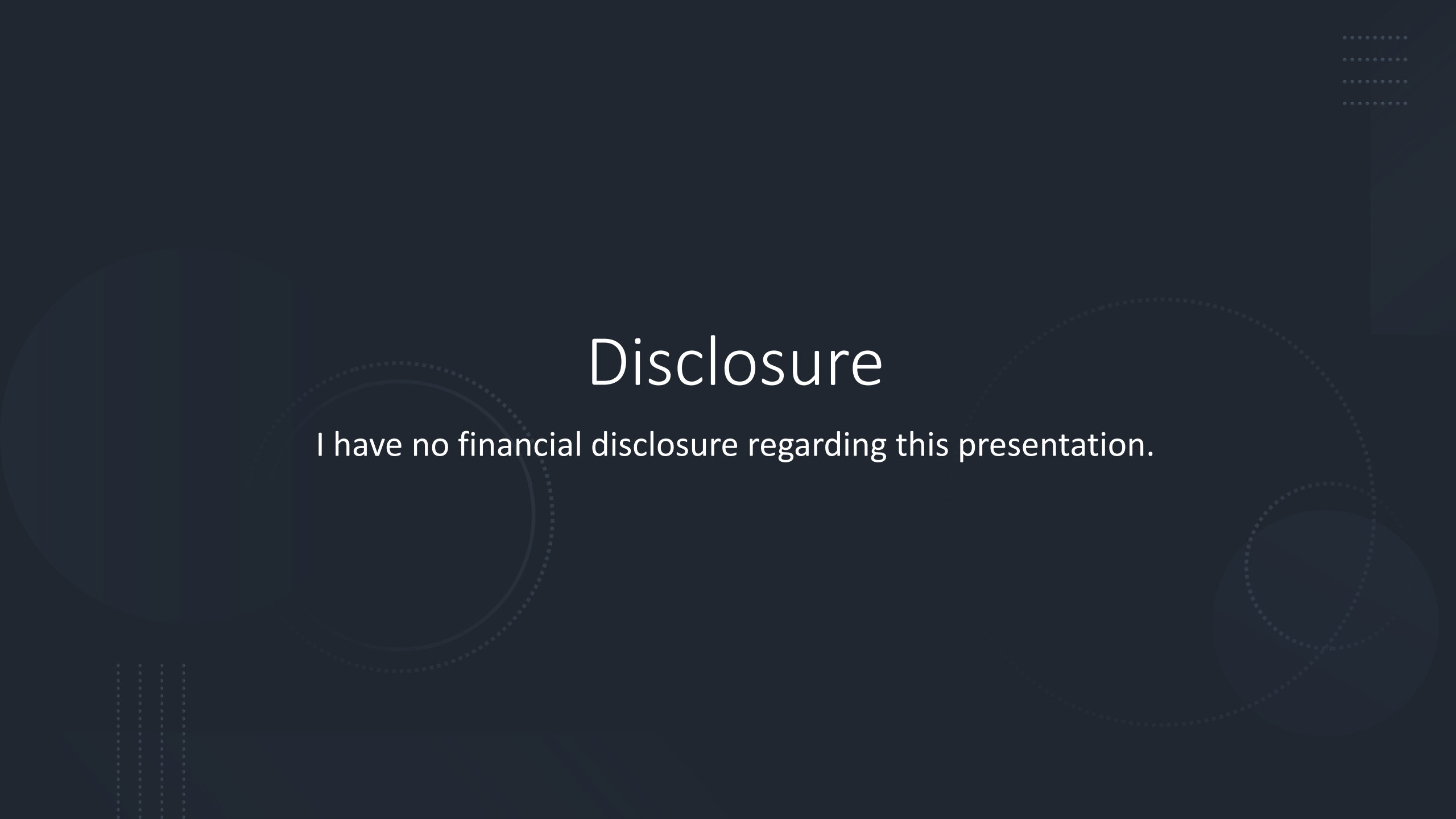


Paresthesia and Numbness

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Disclosure

I have no financial disclosure regarding this presentation.

Outline of Presentation

Definition

Cases

Approach

Neuroanatomy

Sensory
Examination and
Localization

Investigation

Pain
management

Definition

Paresthesia—

- Feeling of tingling, pins and needles.

Numbness—

- Loss of feeling in part or parts of body

Case- 1

- 28 y.o. male with 1 month h/o progressive gait disturbance. He noted patch of intermittent numbness/tingling on his left thigh that became constant followed by numbness/tingling in his feet that progressed proximally, now involves up to lower abdomen. He noted urinary urgency, constipation, and increased sensitivity to touch. Recalls having "a viral infection" with oral sores 1-2 weeks before symptom onset. Drinks 6-9 drinks per week. Uses marijuana daily and tobacco occasionally, denies other drug use.
- On examination, ankle reflexes were diminished, impaired vibration up to ankles bilaterally and patchy pin prick sensory loss in arms and upper trunk. Remarkable truncal ataxia with inability to stand without support with wide based gait.

Case- 2

- 41 y.o. male with alcohol use disorder and alcohol liver disease who in late 2009 noted trouble gripping pen initially which spread into legs over 4-6 weeks, so he was not able to turn keys to start his truck. He predominantly noted difficulty going downstairs even till today. There was no dizziness with weakness. He noticed muscle soreness in legs but no tingling numbness or sharp shooting pain.
- He noticed burning stabbing pain couple of years later predominantly in his lower extremities involving feet and legs. Pain can happen randomly in fingers, sides as well as face. There is history of heavy drinking in the past which he quits in 2023. There is history of erectile dysfunction for some time. He is currently using IVIG with reported improvement in fatigue and weakness, also using gabapentin 2700 mg a day without much relief.
- On examination, deep tendon reflexes were diminished in upper and absent in lower extremities. Vibration is impaired in toes (less than 50%) compared to upper extremities. Pinprick is impaired in upper extremities and improve above elbow compared to fingers 20%. Pinprick is impaired in lower extremities up to knee and keeps on improving in thighs.

Approach

History

Examination

Differential diagnosis

Investigations

Treatment

Prognosis

Supportive care

Neuroanatomy

Sensory system connects individual with environment.

Somatic and special senses.

Exteroceptive, interoceptive, proprioceptive.

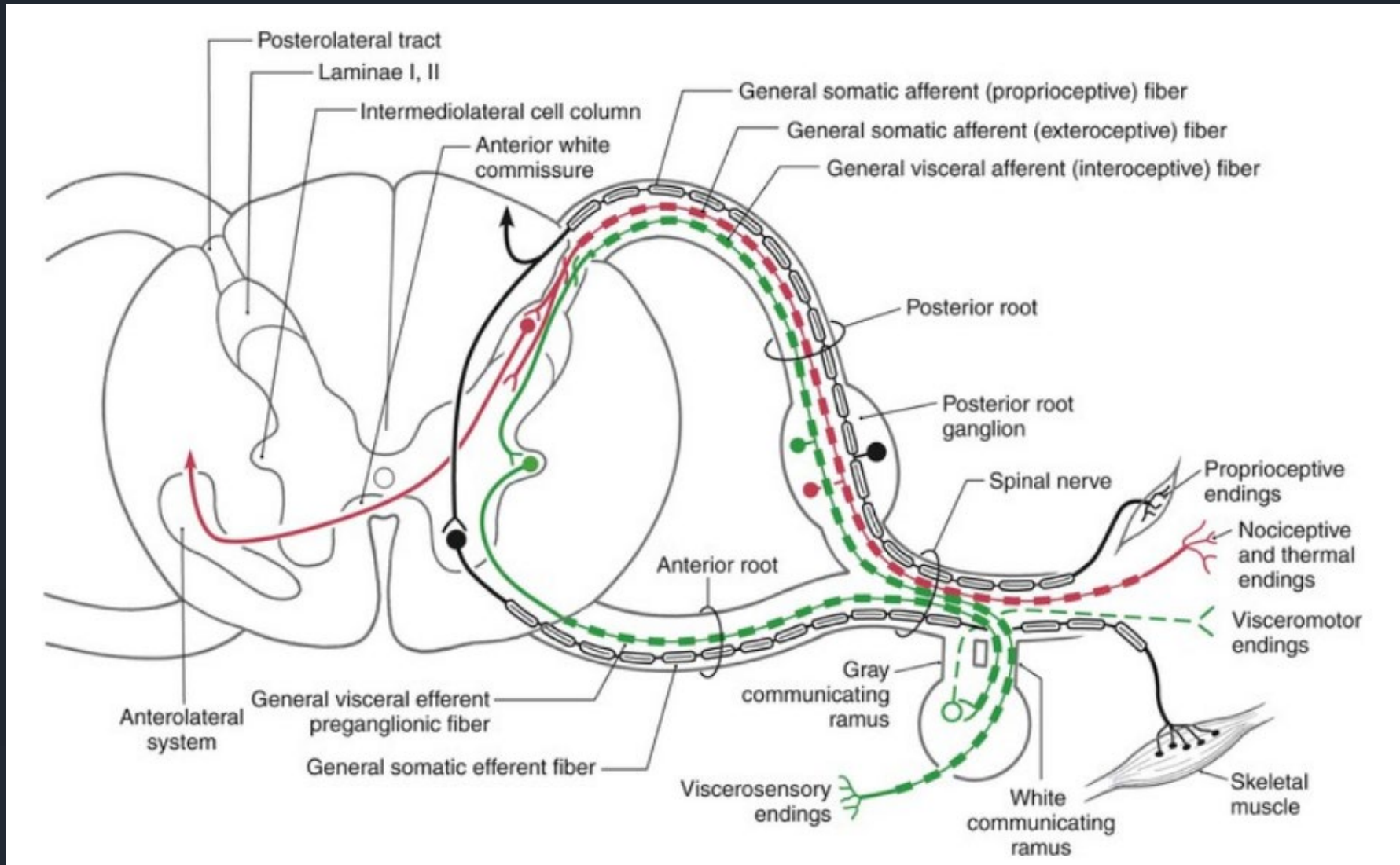
Somatic and Visceral.

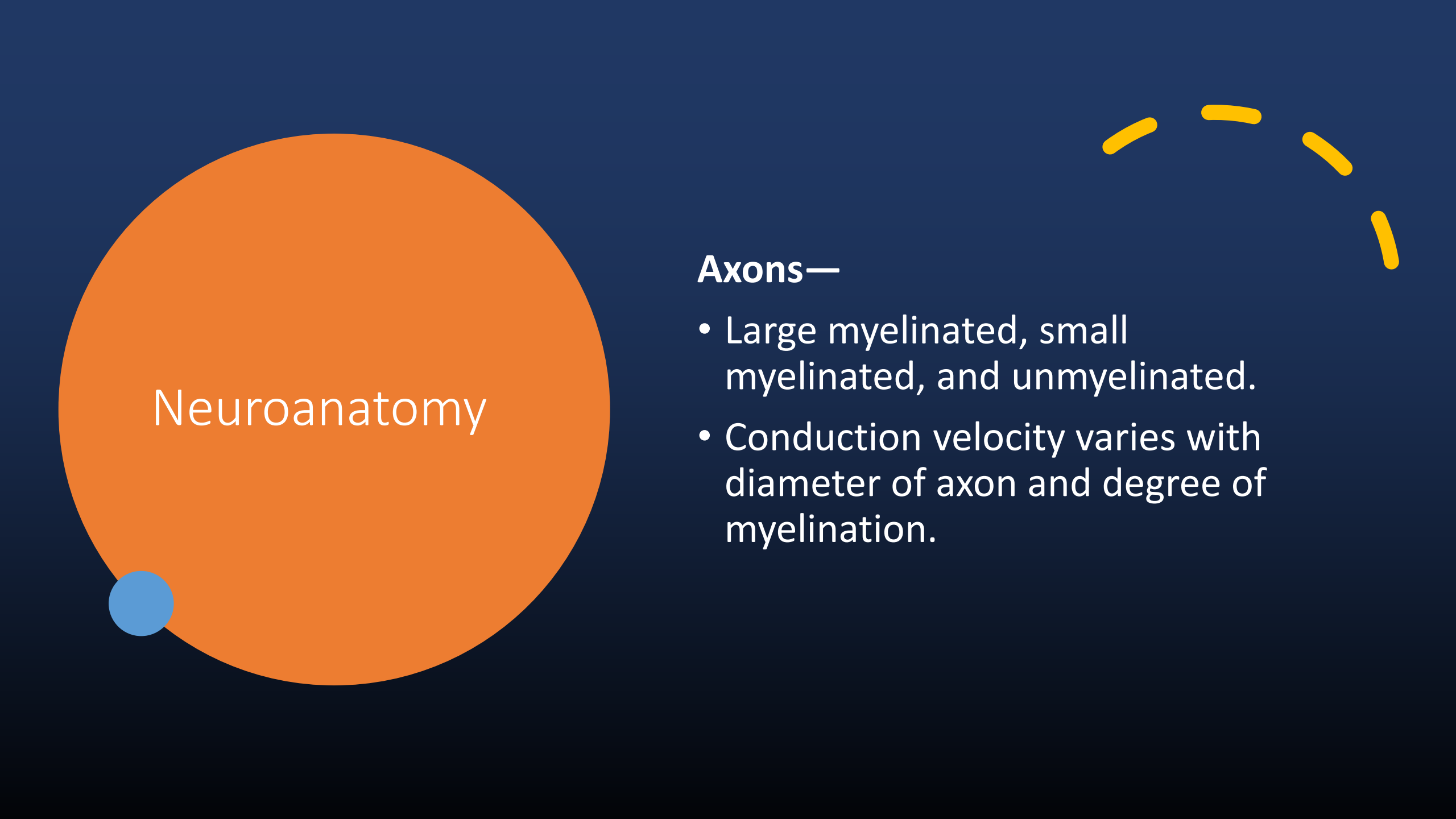
Conscious and unconscious component.

Receptors—

Mechanoreceptor, thermoreceptor, chemoreceptor, photoreceptor, osmoreceptor.

Neuroanatomy





Neuroanatomy

Axons—

- Large myelinated, small myelinated, and unmyelinated.
- Conduction velocity varies with diameter of axon and degree of myelination.

Sensory examination

Positive or negative symptoms.

Pain/Temperatures, light touch/pressure,
vibration/position sense/proprioception

Sensory examination

Most difficult and tedious, subjective.

Side information like withdrawing, ticklish or painful etc

Avoid distraction or do shielded examination.

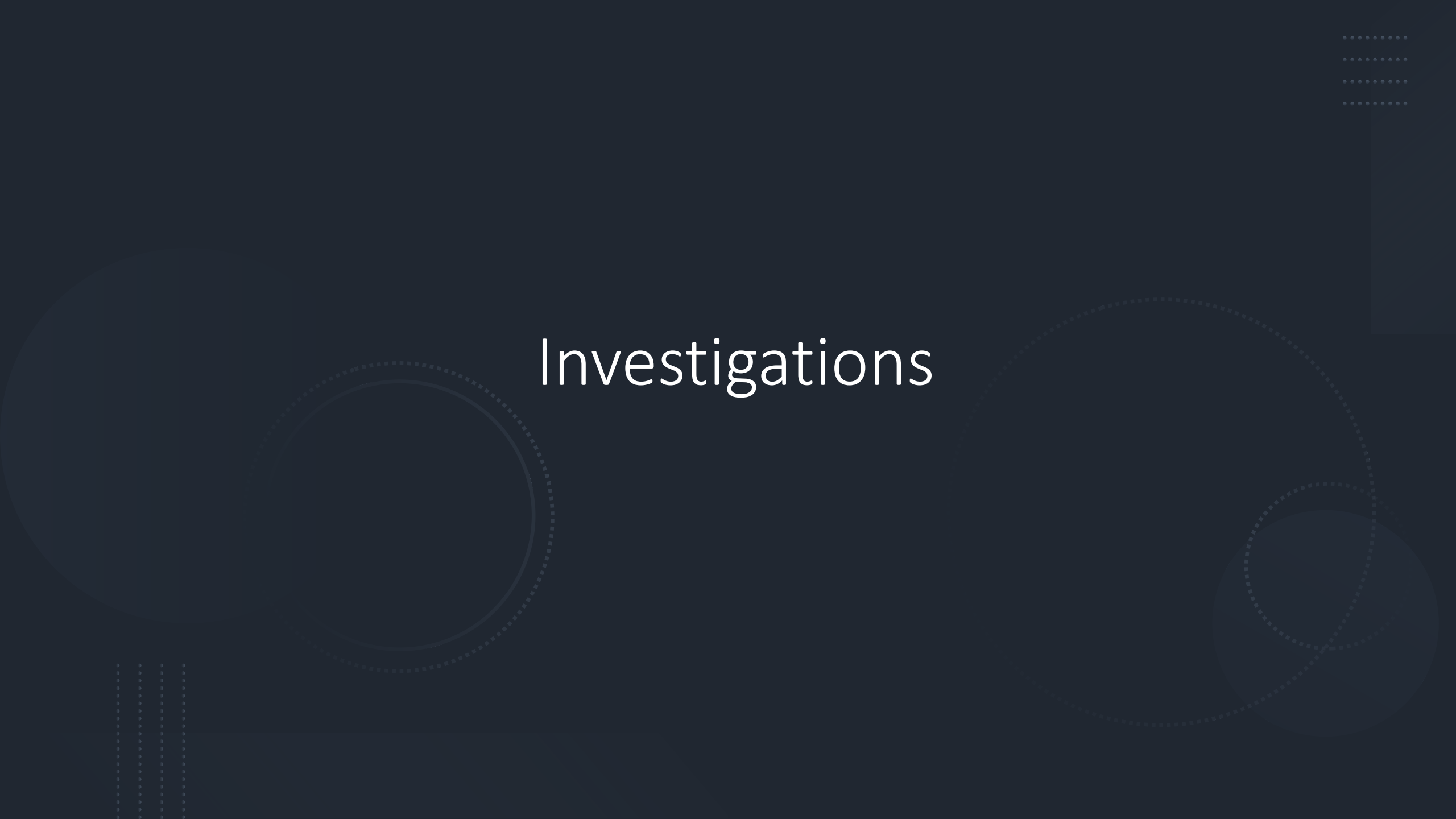
Non-organic abnormalities are associated with inappropriate Affect.

Trophic changes

Demonstrate in normal region first

Too much or too little.

Investigations

The background is a dark charcoal gray. It features several abstract geometric elements: a large, faint, solid circle on the left; a smaller, faint, dotted circle overlapping it; a large, faint, dotted circle on the right; and a smaller, faint, solid circle overlapping the dotted one on the right. In the top right corner, there are four horizontal rows of small white dots. In the bottom left corner, there are three vertical lines of small white dots.

Peripheral Nerves

A1c (Diabetes 9.4%, prediabetes-33.9%, Metabolic syndrome-34.2%)

Ganglioside Antibodies- GD1B, GQ1B

Anti-MAG antibodies

Protein and immunofixation
electrophoresis

Angiotensin converting enzymes

Peripheral Nerves

ANA

SSA/SSB

Anti-DsDNA

Tissue transglutaminase antibodies, Anti-gladiadin Antibodies

Anti-smooth muscle antibodies

Anti-Hu, Anti-CCRMP-5 Antibodies

Pyridoxine Deficiency or excess

Chemotherapy, antibiotics

Dorsal root ganglion

Frataxin mutation

POLG mutation

Vitamin E deficiency

Hypertriglyceridemia

ATP-6 mutation

HIV, HTLV-1, VZV

Leprosy

Dorsal Column involvement

Vitamin B12 level, MMA, homocystein

Copper level

Folic acid level

Thiamine level

Vitamin E level

FTA- ABS

HTLV-1 and II

General

Nerve conduction
study/Electromyography

Lumbar Puncture

Somatosensory evoked potentials (SSEP)

Brain and Spine MRI

Genetic testing

Skin and Nerve Biopsy

Neuropathic pain Management

Pregabalin

Gabapentin

Venlafaxine

Duloxetine

Tricyclic anti-depressants

Capsaicin cream/Patch

Lidocaine cream/Patch

Alpha-lipoic acid

Opiates

Valproic acid

Carbamazepine

Mexiletine

Neuropathic pain Management

Exercise¹

Spinal cord and nerve stimulation

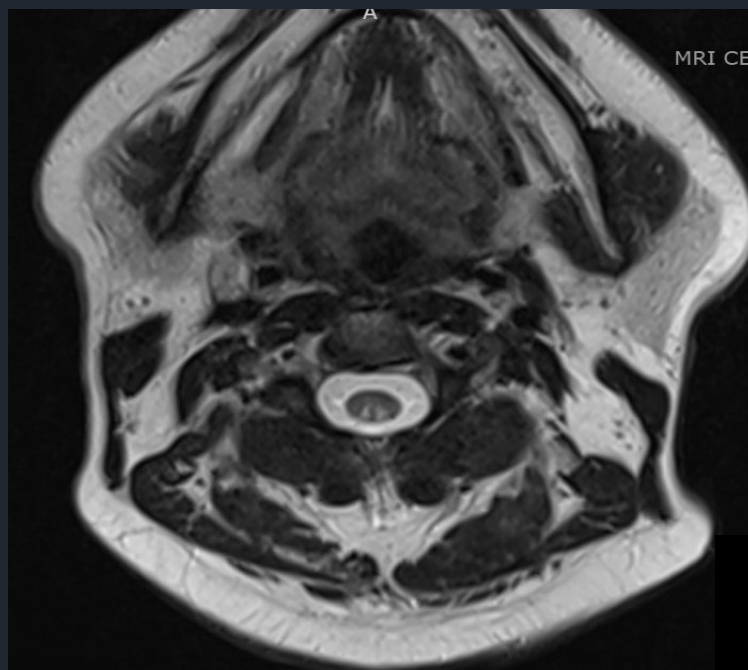
Acupuncture

Botulinum Toxin²

1. Singleton et al. *Ann Clin Transl Neurol* 2014;1:844-9. 10.1002/ acn3.125.

2. Waldfogel et al. *Neurology* 2017;88:1958-67. 10.1212/

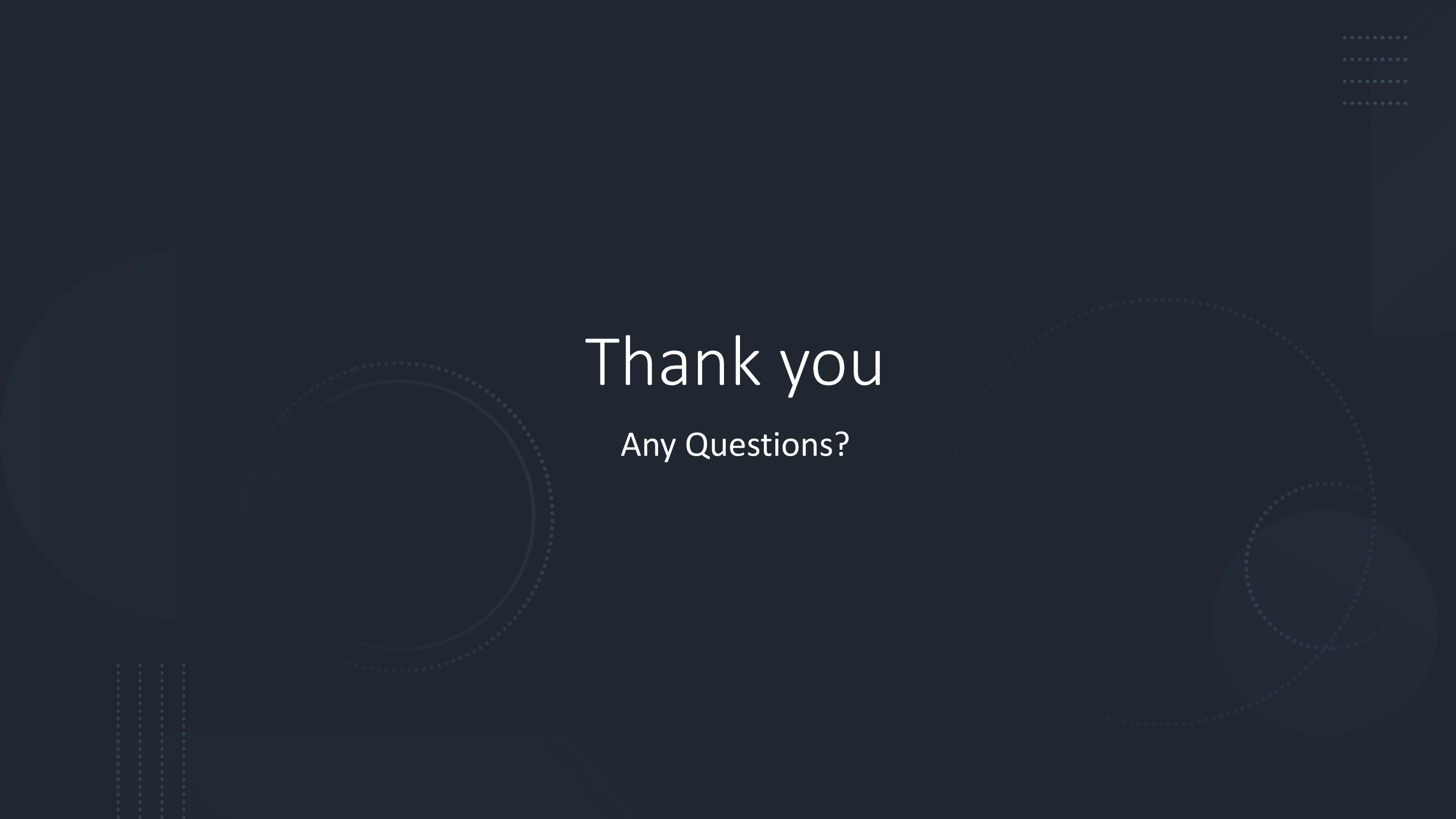
Case 1—
B12 level- 94.



Case-2

PETH level 671 (normal is up to 10), Folate level 2.5 low,
Gd1B positive





Thank you

Any Questions?

Acknowledgement

- Ochsner Neuroscience colleagues and support team.
- Non-Ochsner Neurosciences Colleagues.
- Non-Ochsner Internists, Family physicians, General practitioners.

Together We can make a positive change in the lives of our patients