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Neurodynamics of the Upper Extremity: Evaluation and Treatment Strategies

It's Not Just About the Hand

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- I. Introduction (15 minutes)
 - A. What is causing the problem?
 - 1. The process of clinical interpretation
 - 2. Common musculoskeletal conditions that often have a neural component
 - B. Classification of nerve injuries
 - C. The function of nerves can be altered
- II. Anatomy and physiology (50 minutes)
 - A. Peripheral nervous system
 - 1. Peripheral nerve complex
 - a. Epineurium
 - b. Perineurium
 - c. Endoneurium
 - 2. Connective tissue and neural tissue
 - 3. Vascular supply of the peripheral nerve
 - 4. Axoplasmic transport and flow
 - 5. Nerve conduction
 - 6. Pressure gradients
 - a. From around the nerves
 - b. From within
 - 7. Injury to nerve
 - 8. Venous flow pressure
 - B. Role of nervous system in pain and dysfunction
 - C. The nervous system and movement
 - 1. Characteristics
 - a. Intraneural
 - b. Extraneural
 - 2. Involvement in nerve injuries
 - D. Central nervous system
 - 1. Connective tissue
 - 2. Spinal cord
 - E. The nervous system
 - 1. Nerve root complex
 - 2. Spinal canal anatomy
 - 3. Nervous system continuum
 - 4. Nervous system tissue
 - 5. Movement and strain
 - F. Pain responses
 - 1. Defining pain responses
 - 2. Peripheral nerve sensitivity changes
 - 3. Pain language

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4. Abnormal impulse generative sites (AIGS)
 - a. Stimuli
 - b. Abnormal sensations associated with neuropathic pain
 5. Double crush
- III. Neurodynamics and Upper Limb Tension Tests (ULTT) (33 minutes)
- A. The ULTT
 1. Protective posture
 2. Hand moving
 3. Symptoms provoked and decreasing
 4. Range and pain improvement
 - B. What is neurodynamics?
 1. Understanding the relationship between nerve physiology and nerve mechanics
 2. Nervous system movement
 3. Research
 4. Nerve testing procedures
 5. Points to remember
 6. Neuro Orthopedic Institute Terminology (NOIT)
 - C. When is a neurodynamic test positive?
 1. Prevalent signs with neural tension tests
 2. Adverse neurodynamics
 3. Nervous system movement
 - a. Decreased movement
 - b. Examples
 4. Relationship of nerve roots and peripheral nerves
 5. Common UE neural pathodynamic problems
 6. Points to remember: Musculoskeletal dysfunction and neuro vascular problems
 7. Common pathway for nerve and tissue damage
 - D. Guidelines on the management of neural pathodynamics (Butler 1991)
- IV. Neuropathodynamics tests, or Upper Quadrant Neural Tissue Sensitizing Tests
- A. Why use ULTT? (8 minutes)
 1. Benefits
 2. Nervous system movement
 3. Research
 - B. Nervous system movement: The slump test (4 minutes)
 - C. The median nerve (60 minutes)
 1. Common entrapments/syndromes
 2. The active quick test
 3. Median nerve bias
 - a. ULTT1
 - i. Proximal
 - ii. Distal
 - iii. Distal to proximal
 - iv. Reversed

- b. ULTT2
 - i. Shoulder girdle sensitivity
 - Passive
 - Active
 - ii. Median nerve abduction bias
 - Self management
 - Treatment for decreased range in shoulder abduction
- D. Ulnar nerve (20 minutes)
 - 1. Common entrapments/syndromes
 - 2. Active quick test
 - 3. ULTT3 from shoulder first
 - 4. ULTT3 from wrist first
 - 5. ULTT3 passive technique
 - 6. ULTT3 slider technique
 - 7. Self management
- E. Radial nerve (15 minutes)
 - 1. Common entrapments/syndromes
 - 2. Active quick test
 - 3. ULTT2 passive
 - 4. ULTT2 seated variation
 - 5. ULTT2 wrist first
 - 6. Self management
- F. Musculocutaneous nerve (5 minutes)
 - 1. Common entrapments/syndromes
 - 2. Active quick test
 - 3. Passive test
 - 4. Home program
- V. Tight musculature and muscle imbalance (15 minutes)
 - A. Consequences of both
 - B. Forward head position
 - 1. Abducted resting position of scapula
 - 2. Neural consequences
 - 3. Muscle dysfunction
 - 4. Upper extremity muscle connections
 - 5. Stretches
 - a. Rectus capitis
 - b. Scalene
 - C. Tight pectoralis minor
 - 1. Stretches
 - 2. Exercises
 - D. Upper trapezius tightness
 - E. Levator scapulae tightness
 - F. Myofascial pain
- VI. Case studies (45 minutes)
 - A. Lateral elbow pain or nerve entrapment
 - 1. Clinical reasoning
 - 2. Evaluation
 - 3. Tests done
 - 4. Treatment

B. Complex regional pain syndrome

1. Case history
2. Examination
3. Treatment

C. Medial arm pain

1. Case history
2. Examination
3. Tests done
4. Treatment

D. Positive brachial plexus sign

1. Postural deviations
2. Exercises
3. Treatment
4. Rehabilitation
5. Home program
6. Strategies

VII. Review (15 minutes)

Notes

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