MYOFASCIAL PAIN

- History lesson
- Dr. Janet Travell (1901 – 1997)… credited with bringing MTrPs to the attention of healthcare providers.
- Cardiologist & Medical researcher
- Interest in muscle pain after reading several article on referred pain
- Reports of myofascial pain go back as far as the 16th century however!
MYOFASCIAL PAIN

- History lesson
  - Dr. Janet Travell
    - 1940’s developed and published injection techniques of MTrPs
    - 1952 described the myofascial genesis of pain… with detailed referred pain patterns for 32 muscles
    - (Note other clinicians had work that paralleled in describing the characteristics of MTrPs & effective manual therapies)

- Dr. Janet Travell + Dr. John Mennell founded the North American Academy of Manipulative Medicine.
- She often promoted integrating myofascial treatment with articular treatments
- 1960’s collaboration with Dr. David Simons, which led to the Trigger Point Manuals (1983 & 1992 – 1st eds)
What is myofascial pain?
What are trigger points?

MYOFASCIAL PAIN

- Myofascial Pain Syndrome
  - A regional pain syndrome characterized by muscle pain caused by MTrPs.
- Myofascial Trigger Point
  - A tender point located in the endplate zone, and characterized by a taut band of muscle, referred pain, & a local twitch response.
MYOFASCIAL PAIN

○ Myofascial Trigger Point Region
○ Sensory Component:
  ○ Local pain, referred pain, and local twitch response when the locus is mechanically stimulate with pressure
○ Motor Component:
  ○ Spontaneous electrical activity
  ○ & Endplate noise
○ Physical Component
  ○ TOGETHER = the taut band

MYOFASCIAL PAIN

○ Myofascial Trigger Point Region
○ Thoughts:
  ○ Endplate Noise is the result of excessive ACh leakage.
  ○ Combined with sarcomere shortening & release of sensitizing substances... can lead to an energy crisis
  ○ = local ischemia & hypoxia
MYOFASCIAL PAIN

- Myofascial Trigger Point region
- **Etiology:**
  - Low-level continual muscle contraction (i.e. poor posture)
  - Direct trauma
  - Unaccustomed eccentric contractions
  - Over-use of unconditioned muscles
  - Arthritis / pain in an adjacent joint
  - Stress / Pain
  - Spinal DJD & nerve root compression

MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- **Spinal Cord Mechanisms**
  - A strong noxious stimulus can send an impose to the corresponding dorsal horn neurons... causing release of substance P & calcitonin gene-related peptide.
  - Which increases pain signaling of other receptors supplied by the same dorsal horn neurons...
  - = Central Sensitization
MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- Central Sensitization:
  - Increased responsiveness to nociceptive neurons in the central nervous system to their normal or sub-threshold afferent input

MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- Altered Nerve Conduction (NR compression)
  - Decreased sympathetic outflow to muscles
    - Motor Signs
      - Increase in ACTH receptors in a zone of degeneration & supersensitivity
      - Alignment & Postural Affects (banding or tightening)
    - Muscle tissue changes
      - Hypertonicity, Muscle fasciculation, Tight bands of muscle, Trigger points
  - ROM deficits (due to tight bands / shortened muscles)
  - Altered Reflexes
    - BRISK (not necessarily hyper-reflexic)
MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- **Altered Nerve Conduction** (NR compression)
  - Autonomic Nervous System Changes
    - Vasomotor (cold & clammy skin)
    - Sudomotor (increased sweating)
    - Cutaneous circulatory changes
    - Pilomotor effect (goosebumps along dermatomes)
  - Tropic changes
    - Skin dystrophy & edema
    - Skin rolls, denting, peau d’orange
    - Match stick sign, reduced skin rolling
    - Increased skin creases,
    - Dermatomal hair loss

MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- **Neural Mechanosensitization** (Peripheral origin)
  - Peripheral neuritis occurs with minimal peripheral nerve injury, with no axonal loss or changes in nerve conduction
  - Nerve sheath inflammation can cause pain behaviours, hyperalgesia, and allodynia on sensory testing
  - The lesion site shows an increase in mechanosensitization of $A_\beta$ fibres, C-fibres, and deep nociceptor axons.
  - = PERIPHERAL Sensitization
MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- Peripheral Sensitization:
  - Increased responsiveness and reduced threshold of nociceptors to stimulation of their receptive fields

MYOFASCIAL PAIN

- Myofascial Trigger Point Region
- Neural Mechanosensitization (Peripheral origin)
  - The inflammation and resultant mechanosensitization may cause spontaneous firing of the Aβ fibres & C-fibres
  - Subsequently, can result in spontaneous firing from the associated dorsal root ganglia
  - Spontaneous firing triggers a cascade of events in the CNS that can lead to chronic pain
    - (and Central Sensitization...)

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Diagnosis

MYOFASCIAL PAIN

- Myofascial Trigger Points
- Diagnosis
  - Manual Palpation & Clinical Judgment
  - Spot tenderness, taut band, pain recognition
  - Confirmed by referred pain and local twitch response

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MYOFASCIAL PAIN

- Myofascial Trigger Points
- Diagnosis
  - Interrater reliability?
  - Most reliable was referred pain sensation & Jump sign on testing
  - Least reliable were finding a nodule in a taut band, and eliciting a local twitch response
- Where to look next in research?
  - Biochemical measurements
  - Sonography
  - MRI
  - EMG

MYOFASCIAL PAIN

- Myofascial Trigger points – clinically
  - Test on yourself…
    - Trapezius
    - Extensor muscles of your forearm
    - Lateral or medial head of gastrocs
    - Lateral side of your thigh
MYOFASCIAL PAIN

- Myofascial Trigger points – clinically
  - Test on someone else...
    - Trapezius
    - Infraspinatus
MYOFASCIAL PAIN

- Myofascial Trigger points – clinically
  - Next Time...
    - Palpation on a dog...
    - & Dry needling on a dog

See ya next week!