CHRONIC PAIN & CENTRAL SENSITIZATION

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NO DISCLOSURES
CHRONIC PAIN COSTS THE UNITED STATES

$635 BILLION

THIS IS MORE THAN COSTS FOR CANCER, HEART DISEASE & DIABETES COMBINED

• What is Central Sensitization?
• How do you diagnose it in your patients?
• How do you treat it?
• How this relates to trigger points
PERIPHERAL SENSITIZATION

Inflammatory soup

C fibre

Substance P
CGRP
Neurokinin A

Histamine

Mast cell

Prostaglandin
Bradykinin
Histamine

Skin

Capillary

Substance P
CGRP
Neurokinin A

Prostaglandin
Bradykinin
Histamine
CENTRAL & PERIPHERAL NERVOUS SYSTEM
HOW ONE NERVE TALKS TO ANOTHER

WIND-UP

Amplified message
CENTRAL SENSITIZATION
[CHINESE WHISPERS]

Brain Pain Networks

**PAIN**

Stimulus detection by sensory nerve endings

Action potential propagation

Final message reaching brain

Synaptic transmission to the CNS

Processing and plasticity in spinal dorsal horn

Dorsal root ganglion

Cortex

Thalamus

Parabrachial

Spinthalamic and spinoparabrachial tracts
EXPANSION OF
RECEPTOR FIELD
Note: schematic demarcation of dermatomes shown as distinct segments. There is actually considerable overlap between adjacent dermatomes.
Fight & Flight
WHAT HAPPENS LONG TERM...

Diagram showing pain level over time with labels for injury moment, healing time (days/weeks), inflammation, scarring, remodelling, pain more associated with the nervous system, pain more associated with tissues.
Figure 1. Currently proposed members of the CSS family with overlapping relationships and a common pathophysiological link of CS. IBS, irritable bowel syndrome; T-T headache, tension-type headache; TMD, temporomandibular disorders; MPS, myofascial pain syndrome; RSTPS, regional soft-tissue pain syndrome; PLMS, periodic limb movements in sleep; MCS, multiple chemical sensitivity; FUS, female urethral syndrome; IC, interstitial cystitis; PTSD, posttraumatic stress disorder. Depression may also be a member (see text). Modified from reference 198.
HOW DO TRIGGER POINTS FIT IN?
DOES YOUR PAIN DO ITS OWN THING?

• Length
• Cause
• Nature of pain
• Sleep & fatigue
• Autonomic symptoms.
• Anxiety & Depression
EXAMINATION

- PPT - 4kg/sq.cm

Hyperalgesia

Allodynia
RETRAIN YOUR PAIN SYSTEM!
Therefore my heart rate went up, my breathing increased. I started sweating.
Downgrade importance of Pain message
Primary Afferent Pathways and Their Connections in the Dorsal Horn

- Spinal cord dorsal horn
- 2nd order WDR neuron
- Descending inhibitory neuron
- Inhibitory interneuron (GABA)
- Glia cell
- Mechanoreceptive A fibers

CENTRAL NEUROMODULATORS

• Noradrenaline-Low dose TCA- amitriptyline & nortriptylene
• Serotonin – SSRI- less effective
• Serotonin & Noradrenaline- SNRI-venlafaxine [duloxetine etc]
• GABA- gabapentin & pregabalin
• Opioid- morphine, oxycodone etc
ONE SINGULAR FACT

MY PAIN SYSTEM IS MAINTAINING MY PAIN
BY CONSTANTLY AMPLIFYING MESSAGES FROM
MY BODY
THOUGHTS & BELIEFS

“CATASTROPHIZING”
Movements are smooth & natural
Aerobic exercise program
Sleep
Disability
WHAT ABOUT ME?
MYO- Skeletal muscle

FASCIA- Connective tissue covering
MYOFASCIAL TRIGGER POINT

is a

HYPER-IRRITIBLE LOCUS WITHIN A

TIGHT BAND OF SKELETAL MUSCLE
Trigger Point Complex

- Taut band
- Nodule
- CTrP
ACTS LIKE THE “TRIGGER” OF A GUN
EFFECTING A REMOTE TARGET.
SETTING OFF A PAIN PATTERN
WHICH IS SPECIFIC TO EACH
TRIGGER POINT
Taut (palpable) bands in muscle

A

Local twitch response

B

Local twitch of band
Management

Inactivate the Trigger Point

• Ischaemic compression/acupressure
• Spray/cold - followed by heat.
• Dry needling
• Focal injection

Stretch muscle to length

• Neuromuscular – PIR
UNDERSTANDING PAIN, WHAT TO DO ABOUT IT IN LESS THAN 5 MINUTES
WHAT ABOUT ME?
BIBLIOGRAPHY


