

Pain Management Issues for the Healthcare Professional

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Pain Complaints -

- The most common complaint seen in a doctor's office.
- Often not the primary concern if there are other medical, surgical and rehabilitation needs.
- Painful conditions can be a block to progressing with rehabilitation.
 - Block the ability to move
 - Block the desire to participate

Must ID to cause of the discomfort

- Physiologic
- Psychologic

Physiologic

- Pre-morbid conditions
- Direct injury to tissues
- Secondary injury from scar tissue
- Compression from bracing, w/c, prosthetics
- Effects of CNS injury
- Hypersensitivity from prolonged opioid use
- Complex regional pain syndrome

Pre-morbid conditions

- Arthritis
- Short leg syndrome
- Scoliosis

Direct injury to tissue

- Tendonitis
- Neuralgia
- Capsulitis
- Arthritis
- Scar tissue

Secondary injury

- Compression from P&O, DME
- Overuse from therapeutic exercise
- Sprain strain from contracted muscles and contractured joints

Effects of CNS/PNS injury

- Neuralgia
- Spasticity

Hypersensitivity from long term Opioid use

- Exogenous opioids suppress endorphins.
- Potential to permanently suppress endorphins if opioids taken for too long and at high a dosage.

Complex regional pain syndrome

- CRPS/RSD/Causalgia/Shoulder-hand syndrome
- Early on trauma causes vasospasm with
- Decreased blood flow to nerves and neuralgia
- Early swelling and late tissue shrinkage
- Muscle spasm
- Joint contracture
- Thinning of skin
- Sever pain with movement of the limb
- Allodynia: Hypersensitivity and pain to non-painful stimuli

Psychologic

- Hesitancy of movement due to fear of causing repeat injury or trauma
- Possible flash back to cause of injury
- Fear of re-injuring previously injured &/o operated areas
- May require psychologic intervention
 - Psychologic evaluations as MMPI, Beck Depression Testing

Acute Pain

- Characteristics
 - Due to medical changes, trauma, chronic posture
 - Inflammation
 - Swelling
 - Immobility ->
 - Muscle spasm ->
 - Decreased joint movement ->
 - Decreased synovial fluid production ->
 - Capsular contraction ->
 - Painful cycle repeats.

Acute Pain

- HR increases initially
- pAO2 decreases transiently
- Increase in stress hormones, as Epi & Norepi
- Usually A-delta fiber transmission

Chronic Pain

- Characteristics
 - Immobility
 - Decreased synovial fluid
 - Capsular contracture (24 48 hrs immobility to start)
 - No inflammation
 - Normal HR
 - Normal pAO2
 - Normal Epi & Norepi
 - Often burning, sore C-fiber type transmission

Opioid effects

- Analgesia
 - Blocks sharp A-delta fiber type pain
- Risk of Dependency to Addiction
- Acts exogenously to decrease endorphin production blocking feedback loop
- Suggested that permanent suppression of endorphins may occur with prolonged opioid use

Endorphins

- Def: "Endogenous morphine like substances" Endogenous opioid neuropeptides.
- Produced by CNS & pituitary gland.
- Multiple types: Alpha, Beta, Gamma, Delta, etc.
- Inhibit transmission of pain signals.
- Produce euphoria.

Endorphins

- Production blocked by opioids
- Production stimulated by
 - Endurance activities
 - Laughter
 - Medical Acupuncture Low frequency, High amplitude stimulation

Treatments – Primarily for Acute Pain

- Oral Medications:
- APAP
 - Analgesic
 - Not anti-inflammatory
 - Anti-pyretic
- NSAID's
 - Analgesic
 - Anti-inflammatory
 - Anti-pyretic
 - Anti-platelet usually
- Oral Steroids
 - Anti-inflammatory

Treatments – Primarily for Chronic Pain

- Antidepressants & Anticonvulsants
 - To treat neuropathic pain dysesthesias and allodynia, often with burning, pins & needles, and cold. Function primarily at neurotransmitters of descending inhibitory pathways from the brainstem to nociceptive pathways in the spinal cord, through dorsal horn
 - Tri-cyclics (Amitriptyline)
 - Serotonin Reuptake Inhibitors (Zoloft)
 - Gabapentin (Neurontin)
 - Pre-gabalin (Lyrica)
 - Current favorite: Duloxetine (Cymbalta) MSK pain & anti-depressant

Treatments - Injections

- Injectable medications:
 - Generally local anesthetic and steroid
 - May require guidance
 - Nerve Stimulator
 - U/S
 - Flouroscopy
 - Break the cycle of pain
 - Peripheral nerve block
 - Joint injection
 - Muscle injection
 - Tendon injection







Treatment – Musculoskeletal Injections

- Joint, tendon, muscle
- Decrease pain with local anesthetics
- Decrease inflammation with steroids
- Improve lubrication of joint with viscosupplementation, artificial synovial fluid











Treatments – Nerve blocks

- Block sensory fibers with anesthetic to decrease sensation and allow movement with less pain.
- Requires knowledge of surface anatomy for nerve pathways or
- Requires use of nerve stimulator or ultrasound to localize nerve.
- Sphenopalatine blocks to decrease migraine headaches.
 - Small amounts of local anesthetic placed on a cotton tip applicator
 - Inserted into nose between superior & middle turbinate
 - Left in for 15 mins + to numb the Sphenopalatine ganglion and break the migraine headache.
 - 70+% improvement.





Cubital Tunnel Syndrome





Saphenous n.





Treatments – Neurolysis & Chemodenervation

- Used to decrease spasticity.
- Spasticity causes pain from pull on periosteum and building up of metabolic waste products, as lactic acid, in muscles.
- Spasticity can block muscle action which is under voluntary control, decreasing functional re-training and improvement.
- Decrease in ROM from the spasticity sets up joint contractures which may then be a stimulus to more spasticity.
- Neurolysis Chemical destruction of nerve branch to spastic muscle.
- Chemodenervation Blocks re-uptake of Ach at the myoneural junction, causing muscle relaxation.







Neutraceuticals

- Research being done on many Herbal Neutraceuticals.
- National Institute for Complementary & Integrative Health supports research and has listing of what is known for many of these treatments.
- Migraine Headaches
 - Butterbur, Feverfew, Mg++, Coenzyme Q10, Riboflavin
- Msk Inflammation
 - Turmeric, Bromelian, Willow Bark, Omega-3 Fatty Acids, Devil's Claw, Ginger, Thunder God Vine
- Osteoarthritis
 - Glucosamine, Chondroitin sulfate

Treatments – Osteopathic Manipulative Medicine

• OMM

- Decrease muscle spasm
- Improve joint mobility
- Improve blood flow
- Decrease swelling
- Desensitize peripheral nerve pain

Treatment – Osteopathic Manipulative Medicine

- Craniosacral Therapy Very good for post-traumatic headaches
- Visceral Manipulation Improve GI motility
- Direct Techniques Take the joints and muscles to the area of tightness (barrier) and move though the barrier
 - Muscle energy or Contract/Relax
 - Myofascial Release
- Indirect Techniques Take the joints and muscles away from the area of tightness (barrier) and hold to allow relaxation
 - Counterstrain



Treatments – Medical Acupuncture

Medical Acupuncture

- Locally break muscle spasm mechanically
- Low Frequency High Amplitude
 - For musculoskeletal pain complaints
 - Stimulates endorphin production
 - 2 8 Hz, strong as tolerable
- High Frequency Low Amplitude
 - For chronic pain complaints, depression and substance abuse
 - Stimulates serotonin production
 - 300 3000 Hz, low level buzzing sensation





Treatment - Prolotherapy

- Injecting small amount of anesthetic and a sclerosing substance to cause localized scar.
- Decreases hypermobility.
 - Chronic strain
 - Enthesiopathy
 - Weakened ligaments
- Decreases pain of hypermobility,

Suggested treatment for voice and swallowing

- Research project with Dr. LaPine
- 50 subjects randomly chosen
- Tested cervical ROM then speech recorded "a" & "e"
- Treated w/ OMM to neck & upper trunk
- Speech recorded again and then cervical ROM tested again

Results

- Cervical ROM improved with OMM, as was expected.
- 80+% of subjects improved in vocal parameters, by analysis of the recordings.
- The techniques used were primarily Myofascial Release Techniques (soft tissue stretching) of the various muscles around the upper airway.





















Suggestion

- Utilize these techniques to improve
 - Vocal output
 - Swallowing ability

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