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Disclosures

There are no conflicts of interest or relevant financial interests in making this presentation.

Objectives

• Review pain pathways affected by spine surgery
• Describe where medications may be used in managing pain
• Define multimodal pain management

Disclaimers

• Not pain specialists
• Not physiology specialists
• Information applicable to non spine surgery
• Not always be focused on medications

Helpful Metaphors

What Makes Spine Pain Tough?

• Cause??
• Chronic pain +/- acute pain
• Psychologic relationship
• Often ranked #1 cause of disability, inability to work
• WHO: “Cure is the aim, but it may be difficult to achieve”
Types of Pain

- Somatic
  - Pinprick, stabbing, sharp
  - Localized, periphery
  - Bones, joints, muscles, connective tissue
- Visceral
  - Pressure, dull
  - Generalized, deeper innervation
  - Organs (e.g., appendicitis, angina)
- Neuropathic
  - Burning, prickling, tingling
  - Radiating, specific
  - Limb amputation, neuropathy

Case Study

- Patient: GM
- PMH: chronic pain, depression
- 3 months post spinal fusion
- Significant post-op pain continues (8/10)
- Engaged in TENS, acupuncture, therapy pool, local anesthetics
- Current takes gabapentin and Oxycontin
- Is there anything to additionally consider?

Opioids

- Mechanism of Action
  - Stops brain from receiving pain signals
  - Mimics body's own natural endorphins
- Side Effects
  - Sedation, constipation, respiratory depression
- Considerations
  - Which one?
  - How long?
  - How much?
  - What route?

Allina Clinic Goals for Opioid Use

- Controlled substance prescribing
- % of patients with at least eight orders for a narcotic in the past 12 months who have an Allina Health controlled substance agreement letter on file, documented on the problem list, an encounter in the past 4 months, and a ToxAssure® in the previous 12 months
- Allina Goal: 42%
Ketamine

- Mechanism of Action
  - Blockade of NMDA and more?
- Side Effects
  - Hallucinations, nightmares, dissociative thoughts
- Considerations
  - When to use?
  - How long?
  - Optimal dosing?
  - Evidence?

Back to Case

- Describes pain down leg that burns and tingles
- Describes pain that runs through neck and shoulders that ‘aches’
- Abdominal pain ‘diffuse’ and belly ‘just hurts’
- Chronic low grade headache
- Difficult encounter with adult son recently affecting current mood
- What to do at this point?

NSAIDs

- Mechanism of Action
  - Inhibit formation of prostaglandins
- Side Effects
  - GI bleeding, renal impairment, caution with CV disease
- Considerations
  - Celecoxib 200-400 mg, ketorolac 15-30 mg
  - ↓ opioid requirements
  - Impaired fusion rates?

Acetaminophen

- Mechanism
  - ‘Undefined’ and ‘not well understood’
- Side Effects
  - Generally safe
  - Liver issues
- Considerations
  - IV vs. PO
  - Scheduled dosing

Anticonvulsants

- Mechanism of Action
  - Inhibit release of neurotransmitters
  - Target neuropathic pain
- Side Effects
  - Dizziness, drowsiness, nausea
- Considerations
  - Gabapentin 600-900 mg, pregabalin 150-300 mg
  - ↓ opioid requirements
  - Adjust for renal dysfunction
  - Duration?

Muscle Relaxants

- Mechanism of Action
  - Reduce muscle spasms
- Side Effects
  - Wide and varied
- Considerations
  - Examples: diazepam, cyclobenzaprine, carisoprodol, baclofen, tizanidine, methocarbamol
  - Use with caution
Topical Medications

- Capsaicin cream/patch
- Diclofenac cream
- Lidocaine Patches
  - Considerations:
    - Local vs. systemic relief
    - Absorption
    - Type of pain
    - Cost

Other

- Dexmedetomidine (Precedex)
  - Improved anesthesia recovery time?
  - Less pain after procedure?
  - Opioid sparing?
- Liposomal Bupivacaine (Exparel)
  - Limited spine studies show no improvement
  - Chronic opioid user benefit?

Epidural & PCA

- Opioid +/- Local Anesthetic
- Reserve continuous rates for opioid tolerant
- Multimodal regimens vs. PCA or epidural

Case Final Thoughts

- Interventions to consider:
  - Have we maximized gabapentin dose?
  - Does patient have long term plan regarding opioids?
  - Schedule acetaminophen?
  - Is this patient constipated (abdominal pain)?
  - What treatments are being used for mood disorder (medications, CBT, hypnosis)?

How are these innovative?

References

- Allina Health Clinical Care Goals, 2016;
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