Pain Management for the Geriatric Patient

Geriatrics Grand Rounds
August 7, 2015
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Disclosures

• Dr. Way has no potential or actual conflict of interest to disclose
Objectives

• Identify and discuss causes of pain in the geriatric patient population
  • aging and immobility
  • disease states including dementia, frailty, osteoarthritis
• Define pharmacologic and non-pharmacologic treatments for pain
• Formulate a plan of care for pain relief in the geriatric patient
  • Use knowledge of different pain medication mechanisms to provide adequate pain relief to at risk geriatric populations
Identify and discuss causes of pain in the geriatric patient population aging and immobility disease states including dementia, frailty, osteoarthritis
Mary

- 70 year old female
- PMH spinal stenosis with left leg pain and weakness. Not a surgical candidate
- Lives alone in 3 story home. Independent ADLs and IADLs, but uses single point cane successfully for balance
Does Mary have pain?

- How would one describe it?
- What else does Mary need to tell us?
Joe

- 90 year old man recently admitted to nursing home for rehabilitation post hospitalization for fall.
- PMH moderate dementia. Dependent in IADLs, able to feed and dress self if set up provided. Ambulation/transfers not steady, but he is impulsive and cannot use a walker. He keeps leaving it behind and “wall walks” using rails in halls. Requires extensive assistance of one person with toileting and bathing.
- “New” diagnosis of prostate cancer with local invasion to bladder and distant metastases to bone. When asked, he denies pain, but he has been losing weight and is frequently seen grimacing and rubbing his upper legs.
Does Joe have pain?

• How would one describe it?
• Is there anything else we can do to assess his pain?
• Is there anything else we need to know in addition to confirming goals of care?
David

- 86 year old nursing home resident with end stage dementia
- Bed bound, contracted, dependent in all ADLs
- FAST stage 7C
- Eating less, accelerating weight loss, moans with care
- New Stage 3 sacral decubitus ulcer
Does David have pain?

- How would one describe it?
- What else can we do to assess his pain?
- Is there anything else we need to know in addition to confirming goals of care?
Pain – a very brief review

- Acute pain
- Chronic Persistent pain
- Nociceptive pain
- Neuropathic pain
- Total pain
Pain caused by disease states

- Degenerative joint disease
- Degenerative disc disease
- Spinal stenosis
- Diabetes mellitus
- Cerebrovascular disease
- Osteoporosis
- Cancer
- Heart disease
- Polymyalgia rheumatica
- Wounds
- PHN
- PAD
- End of life
Pain caused by immobility

- Loss of functional status due to
  - Dementia
  - CVA
  - DJD
  - Fracture
  - Surgery
  - Amputation

- Neuropathy
- Peripheral vascular disease
  - Edema
  - Pain

Geriatric Palliative Care 2014
Red flags

• Constitutional symptoms
• Pain that wakes patient up
• Immunosuppression
• Severe or progressive neurologic deficit
• Cold, pale mottled or cyanotic limb
• New bowel/bladder dysfunction
• Severe abdominal pain or signs of shock/peritonitis

Geriatric Palliative Care. 2014.
What is the living situation of the person?

- Home
- Long term care continuum
- Frequent medical visits
  - Physician office
  - Emergency department
What are the support systems?

- Is the person independent?
- If not, who provides support and care?
- Who is the provider of medical care?
What comes next?

• What might pain management look like as a person moves along the care continuum?
A brief review of pharmacology and aging
Aging: Absorption

- Reduced GI motility and GI blood flow
- Gastric acid secretion decreased - elevated gastric pH
- Increased use of medications alter pH
- First-pass metabolism drugs
- Aging and absorption => minimal effect
Aging: Distribution

- Proportion relates the amount of drug in the body to concentration measured in biological fluid
  - Protein binding
  - pH
  - Molecular size
  - Water
  - Lipid solubility

Aging: Distribution

- ↓ Muscle mass
- ↑ Proportion of body fat increases
- ↓ Total body water- water soluble drugs
- ↓ Albumin – protein bound drugs

Aging: Metabolism

• Liver primary organ – convert substances believed to be harmful into form that can easily be eliminated

• Aging- hepatic blood flow

• Aging- liver mass and intrinsic metabolic activity

Aging: Excretion/Elimination

• Kidney- primary organ

• ↓ blood flow, kidney mass, number of functioning nephrons

• ↓ glomerular filtration rate- considered one of the most important changes with aging
  • Cockcroft-Gault & MDRD

Define the difference between opioid vs non-opioids, types of pain medications, and appropriate uses for each type
http://www.avert.org/hiv-related-pain.htm
## Analgesics- At a glance

<table>
<thead>
<tr>
<th>Opioid (Narcotic) Analgesics</th>
<th>Non-Opioid (Non-Narcotic) Analgesic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act centrally</td>
<td>Act peripherally</td>
</tr>
<tr>
<td>Addiction, dependence, tolerance</td>
<td>Not-habit forming</td>
</tr>
<tr>
<td>Schedule II,III controlled drugs</td>
<td>Not controlled drugs</td>
</tr>
<tr>
<td>Notable adverse effects: sedation, respiratory depression, constipation</td>
<td>Notable adverse effects: gastric irritation, bleeding, renal toxicity</td>
</tr>
<tr>
<td>No anti-inflammatory effects</td>
<td>Anti-inflammatory effects</td>
</tr>
<tr>
<td>No ceiling effects</td>
<td>Ceiling effects: increase in dose doesn’t increase analgesia but increases side effects</td>
</tr>
</tbody>
</table>

# Receptor Effects of Opioid Analgesics

<table>
<thead>
<tr>
<th>Receptors:</th>
<th>Responses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mu (μ)</td>
<td>Analgesia, respiratory depression, euphoria, reduced GI motility</td>
</tr>
<tr>
<td>Kappa</td>
<td>Analgesia, dysphoria, psychosis, delusion/delirium, miosis, respiratory depression</td>
</tr>
<tr>
<td>Delta</td>
<td>Analgesia</td>
</tr>
</tbody>
</table>

Opioids

• Derived/related to opium
• Bind to opioid receptors – 4 groups
• Act directly on CNS system
• Reduce the perception of pain
Opioids

- Codeine (Tylenol#3®)
- Fentanyl (Duragesic patch®)
- Hydrocodone (Lortab®, Vicodin®)
- Hydromorphone (Dilaudid®)
- Methadone (Dolophine®)
- Morphine (MSIR®, MsContin®, Kadian®)
- Oxycodone (OxyIR®, Percocet®, Percodan®, Oxycontin®)
The person who cannot swallow

- Parenteral routes of delivery
  - Topical
  - Rectal
  - IV
  - Subcutaneous
  - “Trans mucosal”
  - Transdermal
Opioids - Parenteral

- Morphine sulfate:
  - 10mg/1ml, 4mg/1ml, 2mg/1ml, 1mg/1ml
- Hydromorphone:
  - 10mg/1ml, 4mg/1ml, 2mg/1ml, 6mg/30ml pca
- Fentanyl:
  - 1,250mcg/125ml (10mcg/1ml)
- Methadone:
  - 10mg/1ml
Long-Term Use

Benefits

• Pain reduction
• Fewer episodes of severe pain “spikes”
• Increase in functionality

Risks

• Dependence
• Addiction
• Overdose
• Withdrawal
• Constipation
• Delirium
• Worsening of pain

Prevention and treatment of side effects

- Choosing the “two-fer”
- Opioid rotation
- Pharmacologic interventions
- Non-pharmacologic interventions
  - Education
A word about tramadol

- Binds to mu opioid receptors
- Inhibits reuptake of serotonin and norepinephrine
  - Serotonin syndrome
- Parent drug and metabolites renally excreted
- Schedule IV drug
  - Has potential for abuse
- New suggestions that use may lead to hypoglycemia
- May cause seizures even at therapeutic doses

Lewis. Tramadol and Hypoglycemia: One More Thing to Worry About JAMA Intern Med 2015
Opioid sparing medications

• Medications that are used to treat pain
  • Analgesics
  • Adjuvant medications
Non-Opioids

- Analgesic, anti-inflammatory, antipyretic
- Peripheral tissues to inhibit formation of pain causing substances
- NSAIDS: block production and inhibits cyclooxygenase (COX)
- Do not bind to receptors
Non-Opioids

- Salicylates
- Acetaminophen (Tylenol®)
  - Pain and fever
  - Good first line, little anti-inflammatory
  - Caution: alcohol use, liver, kidney impairment

- NSAIDs
- COX-2 Inhibitors
  - Decreases inflammation
  - Abdominal side effects, constipation, cramps
  - Should take with food

- Steroids
- Other

Recommended starting doses

• Salicylates
  • Choline magnesium trisalicylate 500 mg every 8 hours
• Acetaminophen 325-500 mg every 4 hours
• NSAIDs
  • Ibuprofen 200 mg three times daily
  • Celecoxib 100 mg daily
  • Naproxen 220 mg twice daily
  • Diclofenac 50 mg twice daily
Adjuvant Medications

• Antidepressants
  • Increase transmission in spinal cord to reduce pain signals
  • Nerve pain
  • Does not work right away, dizziness, drowsiness, decreased appetite, dry mouth

• Anticonvulsants
  • Gabapentin (Neurontin®)
  • Phenytoin (Dilantin®), Carbamazepine(Tegretol®)
  • Topiramate(Topamax®)
  • Nerve pain
  • Drowsiness, dizziness, headache, weight gain

Adjuvant Medications

- **Skeletal Muscle Relaxants**
  - Baclofen (Lioresal®), Carisoprodol (Soma®), Cyclobenzaprine (Flexeril®), Methocarbamol (Robaxin®), Tizanidine (Zanaflex®)
  - Muscle pain, tension headaches, lower back pain
  - Drowsiness, dizziness, dry mouth, constipation

- **Topical**
  - Capsaicin Cream
  - Menthol- Methyl Salicylate Cream (Bengay®)
  - Lidoderm 5% Patch

*all work for shorter period of time

Non-pharmacologic considerations

- Topical menthol
- Massage/Range of motion
- Physical therapy
- Relaxation techniques
- Hypnosis
- Acupuncture/Acupressure

- Radiation
- Nerve blocks
- Heat/Cold
- Aromatherapy
- Psychotherapy
- Yoga/Tai Chi
Opioid Conversion
Barriers to the use of opioids

- Fear of side effects
- Fear of addiction
  - Concept of pseudo-addiction
  - The patient with current or past substance abuse
- Fear of death
- Care plan adherence due to functional limitations
- Not the best drug for chronic pain
Opioid dosing in the elderly

- Initial dosing
- Up-titration
- “Maximum dose”
  - For acute pain
  - For persistent pain
  - For cancer pain
  - For other end of life pain

Guay, Opioid Analgesics for Persistent Pain in the Older Patient: Parts I and II. Clinical Geriatrics 2010.
Recommended starting doses

- Morphine, oxycodone, hydrocodone
  - 2.5 mg every 4 hours
- Scheduled vs scrupulous prn dosing
- When do you start long acting opioids?
Patient controlled analgesia

• Barriers
• The built in safety
  • Negated by proxy dosing
  • Consider provider administered bolus
• Hospital
  • Post op
  • Pain crisis
• End of life
  • Transition to home
# Opioid Conversion

<table>
<thead>
<tr>
<th>Drug</th>
<th>Parenteral</th>
<th>Oral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>10mg</td>
<td>30mg</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>1.5mg</td>
<td>7.5mg</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>----</td>
<td>20-30mg*</td>
</tr>
<tr>
<td>Codeine</td>
<td>130mg</td>
<td>200mg</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>----</td>
<td>30mg</td>
</tr>
<tr>
<td>Methadone</td>
<td>1.5-2.5mg</td>
<td>3-5mg</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>0.1mg</td>
<td>----</td>
</tr>
</tbody>
</table>

*Above 300mg morphine, oxycodone and morphine are 1:1

Formulate a plan of care for pain relief in the geriatric patient

Define pharmacologic and non-pharmacologic treatments for pain
Cases
Mary

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Jack

65 year old man with squamous cell lung cancer with progressive right sided pelvic pain in region of known pelvic metastases. He describes dull aching pain rated at 8/10 in the lateral pelvis and sharp shooting pain that radiates down the right leg. The pain limits mobility and awakens him from sleep.

He has no focal motor or sensory deficits. An X-ray shows a large lytic metastasis in the lateral pelvis. He is referred to radiation oncology who recommends a course of palliative XRT.
Jack continued

Jack has been taking immediate release morphine, 30 mg every four hours. This worked until last week. He currently takes this dose every four hours. However, his pain only decreases from 8/10 to 6/10 for one to two hours at best.
Jack continued

- What type of pain is he having?
- How can you change his opioid prescription to provide better pain control?
- Would you use an anti-depressant as an adjuvant?
- What other adjuvant drugs might you consider?
- What non-pharmacologic treatments might you consider?
John

• John is taking 12 oxycodone/acetaminophen tablets (5/325) per day with only partial relief. The most appropriate next step in drug therapy for this patient would be to discontinue this medication and start....
Conversion

• For patients on chronic opioids, the most appropriate equi-analgesic conversion ratio between oral and intravenous morphine is:
Martha

• An 87 year old woman with advanced osteoporosis who has chronic back and hip pain, poorly controlled on 2 tablets of oxycodone 5/acetaminophen 325 6 times each day.

• The single best reason NOT to increase the number of these tablets is:
References

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