Persistent Non-Cancer Pain Management In the Older Adult

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MO, an 83-year old woman with spinal stenosis, osteoarthritis, hypertension, and hypothyroidism, presented with a three week history of left hip and lower back pain. She described the pain as dull, non-radiating, and not associated with paresthesia, numbness, or bladder dysfunction. Radiographs of the spine and hip confirmed osteoarthritis and suggested spinal stenosis. Initial management strategies included initiation of acetaminophen up to 3 grams per day, application of cold and hot packs, referral to physical therapy, therapeutic exercise, and application of a lidocaine patch to the left hip.

Pain is a complex phenomenon derived from sensory stimuli and modified by individual memory, expectations, and emotions. It has been defined by The International Association for the Study of Pain has defined "pain" as an unpleasant sensory and emotional experience associated with actual or potential tissue damage.[1,2]

Older adults more frequently experience persistent pain than younger adults, typically from musculoskeletal disorders including arthritis and spinal stenosis, which are further complicated by medical comorbidities. The prevalence of pain, ranging from mild to severe, may be as high as 50% in community-dwelling older adults and 80% in long-term care residents.[3,4] Sawyer reported that nearly 75% of community-dwelling older adults complained of pain, and half reported decreased function.[5] Pain contributes to diminished quality of life, functional decline, recurrent falls, social isolation, depression, impaired cognition, sleep disturbance, polypharmacy, caregiver distress, and increased healthcare costs and resource utilization.

Pain is classified by its duration: 1) acute pain, which results from an illness or injury that is time-limited and of recent onset; 2) subacute pain, which usually lasts for up to three months; and 3) chronic pain, which persists for longer than three months.[2,6,7] Pain is also classified by underlying pathophysiologic mechanism: 1) nociceptive pain, 2) neuropathic pain, 3) mixed pain, and 4) psychogenic pain.[3] Nociceptive pain is derived from stimulation of pain receptors. It is divided into somatic (skin and deep tissues) and visceral pain (internal organs). Neuropathic pain results from peripheral or central nervous system pathology, while the mixed type is a combination of both nociceptive and neuropathic. Psychogenic pain is modified by the presence of psychological disorders.[3] For this patient, the pain is nociceptive-somatic, caused by osteoarthritis and spinal stenosis.

A thorough assessment is crucial to understanding the causes of chronic pain. This assessment includes a comprehensive history, physical examination, neurologic assessment, psychological evaluation, and appropriate diagnostic testing. Commonly used pain scales include but are not limited to visual analog, faces, numerical, and verbal descriptor scales.[3,8]

Management of chronic pain combines pharmacologic and non-pharmacologic interventions. Although older adults are more likely to experience adverse reactions, analgesic drugs are safe. The rule of starting low and going slow is generally followed and is appropriate, especially for medications known to have extensive side-effect profiles.[3,9,10] Table 1 highlights the most common opioid, non-opioid, and adjuvant medications for pain management.

In 1986, the **World Health Organization (WHO)** developed a stepwise treatment guide for cancer-associated pain, known as the WHO analgesic ladder. Its use has been extended to other kinds of pain, including persistent pain from non-cancer causes.[10,11] For intermittent mild pain, it is recommended to begin treatment with non-opioid analgesics. Acetaminophen is generally preferred over NSAIDs due to a narrower adverse effect profile and is recommended as first-line therapy for pain.[9] A mild opioid (e.g., hydrocodone, oxycodone) may be added for persistent mild to moderate pain, and may be titrated to a higher potency opioid (e.g., morphine) for moderate to severe pain.

Non-pharmacologic interventions for pain management include, but are not limited to physical therapy, therapeutic exercise, cognitive-behavioral therapies, heat and cold therapy, massage, acupuncture, trigger-point therapy, biofeedback, relaxation training, **and transcutaneous nerve stimulation (TENS)**.[3,8]

After a month, MO's lumbosacral and left hip pain continued, only partially relieved with acetaminophen. She was in enough pain to be limited in her activities and felt she needed a stronger analgesic regimen. A combination of hydrocodone-acetaminophen (Vicodin) was started. She was told about possible opioid side effects and a bowel regimen was prescribed.

Opioid analgesics exert their action on opiate receptors, and modulate the ascending and descending pain-related pathways. When mild to moderate pain is not relieved with non-opioid analgesics alone, a fixed-dose combination of opioid with acetaminophen or NSAID may be used. If the maximum safe acetaminophen or NSAID dose is reached without adequate pain relief, one may opt to switch to a non-combination opioid preparation to avoid toxicity.

After initiation of analgesia with opioids, patients should

be closely monitored for drug efficacy and side effects, with careful dose titration for pain relief. The most common and persistent side effect of opioids is constipation. A bowel regimen, such as a bulking agent or stimulant laxative, is therefore added. Other side effects include nausea, vomiting, delayed gastric emptying, bladder dysfunction, pruritus, sexual dysfunction, sedation, impaired cognition, delirium and fatigue.[10,12] Respiratory depression, muscle rigidity and myoclonus are seen with higher doses of opioids.

After three weeks, MO reported continued pain in spite of regularly dosed Vicodin. She was then started on long acting morphine every twelve hours, in addition to a short acting morphine as needed for breakthrough pain. She had substantial improvement with this regimen.

Higher potency opioids such as morphine may be used to relieve moderate to severe pain. Opioids are prescribed around the clock for continuous pain.[11] For opioid-naïve patients, short-acting opioids are initiated every three to four hours as needed. Then the total number of short-acting opioid doses is calculated over 24 hours and divided in two or three doses for the transition to the long-acting agent. The new rescue dose is approximately 10% to 15% of the total daily dose and scheduled as often as every hour, as needed to achieve immediate analgesia. Long-acting opiods should never be started in opioid-naïve patients.

After a few months of good control on scheduled morphine, MO reported a return of continuous pain. She had also developed back spasms. She was referred to a spine surgeon for further evaluation and management, possibly to include corticosteroid injection or neurolytic blockade if warranted. Subsequent spinal MRI ruled out any nerve involvement. MO refused corticosteroid injection as this afforded minimal relief

Table 1. Pharmacologic Agents in Persistent Pain Management

Drug	Recommended Starting Dosage	Comments
NON-OPIOIDS		
Acetaminophen	325-500 mg q4hrs 500 mg – 1g q6hrs	Maximum dose of 3 g. Reduce dose to 50%-75% with liver disease and alcoholics
Celecoxib	100 mg daily	Higher doses associated with GI and cardiac effects
Naproxen sodium	220 mg bid	GI and kidney effects. Less cardiotoxic
Ibuprofen	200 mg tid	GI, kidney, antiplatelet effects
Diclofenac sodium	50 mg bid or 75 mg ER daily	Higher cardiovascular risk due to COX-2 inhibition
Opioids		
Hydrocodone (eg Lorcet, Vicodin, Lorta, Norco, Vicoprofen)	2.5-5 mg q4-6 hrs	Daily dose limited by fixed-dose combinations with acetaminophen or NSAIDs
Oxycodone (eg Percocet, OxyIR, Percodan, Tylox)	2.5-5 mg q4-6 hrs	Useful for acute, recurrent, breakthrough, or episodic pain. Limitations similar to hydorcodone in fixed dose combinations
Oxycontin	10 mg q12 hrs	Usually started after calculating cumulative short acting oxycodone doses over 24 hrs
Morphine immediate release (MSIR, Roxanol)	2.5-10 mg q3-4 hrs	Effective for acute, subacute, and chronic pain
Morphine sustained release (MS Contin, Avinza, Kadian)	15 mg q8-12 hrs	Caution in kidney impaired patients Significant interactions with food and alcohol
Hydromorphone (Dilaudid)	1-2 mg q3-4 hrs	For breakthrough or around the clock dosing
Methadone (Dolophine)		Variable half-life. Non-linear dose equivalents. Prescribed by experienced clinicians. Not a first line agent.
Transdermal Fentanyl	12-25 mcg/h patch q48-72 hrs	Peak effect takes 18-24 hrs. Started only after initial dose determined by effects of immediate release opioids
ADJUVANTS		
Tricyclic antidepressants (Desipramine, Nortriptyline)	10 mg at hs	Anticholinergic effects
Duloxetine (Cymbalta)	20 mg daily	Cause dizziness, cognitive deficits. Drug-drug interactions
Venlafaxine (Effexor)	37.5 mg daily	Dose-related increases in blood pressure and heart rate
Gabapentin (Neurontin)	100 mg at hs	Causes sedation, ataxia, edema
Pregabalin (Lyrica)	50 mg at hs	Causes sedation, ataxia, edema
Prednisone, Methylprednisolone, Dexamethasone	Dose depending on the type of steroid	Monitor for fluid retention, glycemic effects, bone demineralization
Lidocaine 5% patch	1-3 patches for 12 hours on and 12 hours off	Monitor for rash or skin irritation
Baclofen (Lioresal)	5 mg tid	Muscle relaxant. Causes muscle weakness, sedation, urinary problems
Tramadol (Ultram)	12.5-25 mg q4-6 hrs	Mixed opioid and SNRI. Caution with monoamine oxidase inhibitors. Caution with liver and kidney impairment

when given in the past. Low dose baclofen was added to a higher morphone dose.

Adjuvant drugs, including antidepressants, anticonvulsants, and other agents that alter neural membrane potentials, ion channels, cell surface receptor sites, synaptic neurotransmitter levels and other pain signal processes help address pain particularly of a neuropathic nature.[3,8,9] Other drug classes, including corticosteroids, muscle relaxants, benzodiazepines, calcitonin, bisphosphonates, topical analgesics and cannabinoids have been used as co-analgesics for pain management.

In this case, baclofen, a gamma aminobutyric acid B agonist, was chosen and found to be helpful. It is often instituted in patients with severe spasticity resulting from CNS injury and demyelinating conditions. Common side effects include dizziness, somnolence, and gastrointestinal symptoms. Discontinuation after prolonged use requires slow tapering to prevent delirium and seizure.

Corticosteroid injection was offered to this patient as a co-analgesic. These injections can be effective for rheumatic conditions, autoimmune arthropathies, and vasculitides. Corticosteriods are also used in cancer-related bone pain, nerve compression, and bowel obstruction. The well-known side effects and serious toxicity of short and long term use of corticosteroids often limit their use. Currently, there is no clear evidence to guide us regarding initiation, dosing and duration of epidural steroid injections. Treatment decisions should be determined in part by patient preference.[14]

Over the next few days, MO reported that she was doing well with the new regimen of high dose morphine and baclofen in addition to physical therapy and the use of hot and cold packs.

Chronic use of opioids, when medically indicated, is not generally associated with addictive behavior. Under-treatment of pain, however, may result in "pseudoaddictive behavior" wherein a patient complains of pain and requests for opioids or dose escalation. This can be avoided through active listening, careful pain assessment, titration, and monitoring of the narcotic regimen.[10]

In Summary:

1. Pain is a prevalent symptom affecting as many as 50% of community-dwelling older adults.
2. Pain affects quality of life, functional status, cognition, mood, sleep, and well-being.
3. A multimodal approach to pain management consists of both non-pharmacologic and pharmacologic interventions.
4. Prescribing analgesics is safe and effective in older persons if done judiciously by starting low and titrating slowly while monitoring closely for potential side effects.

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