

Competent Pain Management in the Elderly Person With Cancer

Jeannine M. Brant RN, MS, AOCN
Oncology Clinical Nurse Specialist and Pain Consultant
St. Vincent Healthcare - Billings, MT
Doctoral Student – University of Utah

Slide Not Available

Headlines!

- "Undertreatment of Pain Goes to Court as Elder Abuse"
- "Nurse Withheld Pain Medication From an Elderly Dying Patient"
- "Oregon Physician uses Tylenol to Treat an Elderly Man in Pain From Terminal Cancer"

Incidence of Pain in the Elderly

- 25-50% of community dwelling seniors
- 45-80% of nursing home residents
- 85% have at least one chronic condition that may cause pain
- 50% of cancer occurs in patients 65 and >

Bernabei et al., JAMA, 279: 1877-1882, 1998.

Pain in the Elderly – HCFA Demonstration Project

- 38% of nursing home residents with cancer reported pain daily
- 26% of these patients received no analgesics
- Patients who received analgesics:
 - 16% received WHO I analgesic
 - 32% received WHO II analgesic
 - 26% received WHO III analgesic

Bernabei et al., JAMA, 279: 1877-1882, 1998.

Predictors of Pain in the Elderly

- Patients > 85 years old more likely to receive no analgesia
- Other predictors of inadequate analgesia:
 - diverse ethnic group
 - low cognitive performance
 - # of other medications that the patient is already receiving

HCFA Demonstration Project, Bernabei et al., 1998

Pain in Patients With Cancer

- Cancer-related pain
 - Bone metastases, epidural spinal cord compression, plexopathies, peripheral neuropathies, abdominal pain
- Post surgical pain
- Treatment-related pain
 - Peripheral neuropathy
 - Mucositis
 - Postherpetic neuralgia
- Acute/procedural pain
- Chronic, nonmalignant pain

Cancer Pain in Adults and Children, American Pain Society, 2006.

Prevalence of Nonmalignant Pain Syndromes

- Back pain
- Arthritis
- Chronic Headaches
- Osteoporosis
- Osteoarthritis
- Diabetes
- Rheumatoid Arthritis
- Fibromyalgia

Slide Not Available

Case Study With Mr. G

- 72 year-old
- New dx. NSCLC & bone metastases
- Health Hx.
 - Osteoarthritis – Tylenol & Motrin
 - COPD - inhalers
 - Type II Diabetes – Glipazide & glucophage
- Social Information
 - Married
 - Retired professor
 - Cares for frail wife with cognitive impairment
 - Adult children at a distance

Case Study – Mr. G

- Pain
 - Presented with back and rib pain – refused medication
 - Hx. Osteoarthritis
 - Numbness and burning feet
- Increased SOB with exertion
- Poor appetite
- More lethargic than usual
- States that pain is not a problem

Barriers – Health Care Professionals

- Lack of education
- Lack of consistent assessment
- No focused geriatric education
- Pain is a natural outcome of age
- Pain perception diminishes with age
- Overestimates of the dangers of opioid use in the elderly
- Fear or misuse of terms: addiction, tolerance, physical dependence

Cancer Pain in Adults and Children, American Pain Society, 2006.

Definitions

- Addiction – a primary, chronic, neurobiologic disease, with genetic, psychosocial, and environmental factors influencing its development and manifestations. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.
- Physical Dependence – a state of adaptation that is manifested by a drug class specific withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, decreasing blood level of the drug, and/or administration of an antagonist.
- Tolerance – a state of adaptation in which exposure to a drug induces changes that result in a diminution of one or more of the drug's effects over time.

American Pain Society, 2003

Barriers – Patients and Families

- Believe that pain is inevitable with aging
- Fear that pain is an indication of progressive disease
- Do not want to distract provider from active treatment
- Do not want to be seen as bothersome or hypochondriacally
- Reluctance to use the word pain
- Reluctance to report pain

Cancer Pain in Adults and Children. American Pain Society, 2005.

Barriers – Patients and Families

- Reluctance to take prescribed medication
- Cultural or religious issues
- Concern about deleterious side effects
- Concerns about addiction
- Lack of access to pain management professionals
- Cost
- Lack of insurance coverage

Pathophysiological Changes in the Elderly: Implications for Pain Management

Cognitive Changes

Cognitive and Neurologic Changes in the Elderly

- Cortical atrophy
- Change in neuronal communication
 - Depression
 - Movement disorders
- Memory changes controversial
- Cognition
 - Intellect – acquired and new knowledge
 - Psychomotor

ACUTE CHANGE IN MS

Antiparkinsonian drugs	Antimicrobials
Corticosteroids	ASAIDS
Urinary incontinence drugs	Geropsychiatric drugs
Theophylline	ENT drugs
Emptying drugs	Insomnia drugs
CV drugs	Narcotics
H ₂ -blockers	Muscle relaxants
	Seizure drugs

Dementia v Delirium

	Delirium	Dementia
Onset	Acute	Insidious
Course	Fluctuating	Steadily progressive
Consciousness & orientation	Clouded, disoriented	Clear until late stages
Attention & memory	Poor short term memory; inattention	Poor short term Memory without marked inattention
Psychosis	Common	Less common

Types of Delirium

- Hypoactive
 - Sedative, subtle
 - Associated with opioid initiation, dehydration
- Hyperactive
 - Agitation, neurotoxicity association (myoclonus, hyperalgesia, allodynia, perceptual disturbances)
 - Associated with chronic opioid use, metabolite accumulation

Maigher et al. (1998). Relationship between etiology and phenomenologic profile in delirium. *J Geriatr Psychol Neurol*, 11, 146-149. Ross et al. (1991). Delirium: phenomenologic and etiologic subtypes. *Int Psychogeriatric*, 3, 135-147.

Pathophysiology

- Biochemical changes caused by the opioid
- Opioid metabolites
- Renal impairment
- Lack of tolerance
- Hepatic impairment?

Opioids – Impact on Cognitive Function

- Avoid the obvious
 - Meperidine, propoxyphene
- Morphine – metabolites M3G and M6G
- Hydromorphone – metabolite H3G ? role
- Fentanyl – case reports
- Methadone
 - Cumulative effect with protein binding may contribute to cognitive effects
 - Case reports of cognitive impairment

Vigano et al. (1998). Individualized use of methadone and opioid rotation in the comprehensive management of cancer pain associated with poor prognostic indicators. *Pain*, 67, 115-119. Bruera & Pereira. (1997). Acute neuropsychiatric findings in a patient receiving fentanyl for cancer pain. *Pain*, 69, 199-201.

Cognition Changes – Implications for Pain Management

- Assessment
 - Dementia versus Delirium
 - Depression – Anxiety
- Avoid medications with long ½ life
- Assess cognition
- Adjust plan of care for cognitive impairment

Cardiopulmonary Changes

Cardiac Changes in the Elderly

- Cardiac index decreases about 1% per year after age 30
- Slower circulation
- Slower onset to affect
- Consider history
 - Congestive heart failure – anthracyclines, other etiology
 - Cardiovascular disease
- Contribution to respiratory depression

Respiratory Changes in the Elderly

- Respiratory muscles weaken
- Increase in respiratory rate
- Decrease in vital capacity
- Decline in functional alveoli
- Difficulty clearing secretions
- Decreased response to hypoxemia or hypercapnea

Respiratory Changes - Implications for Pain Management

- Respiratory depression
- Desaturation
- Culprits
 - Opioids
 - Muscle relaxants
 - Benzodiazepines
 - Anticonvulsants
- **Start low and go slow!**

Be Careful With Duragesic

- Advantages: easy route, ? constipation
- 25 mcg Duragesic = approximately 75 mg oral morphine
- Do not use on opioid naïve patients!
- Elderly have higher fat/muscle ratio that can prolong the half-life of lipophilic drugs
- Naloxone drip needed for overdose

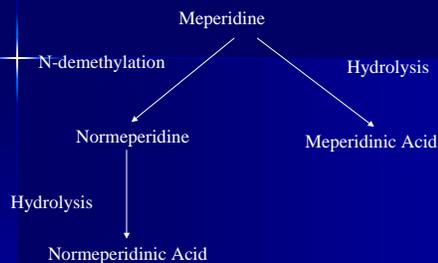
Renal Changes

Renal Changes in the Elderly

- Smaller kidneys
- Decreased renal blood flow and glomerular filtration rate (10% each decade beyond age 40)
- Risk for sodium depletion
- Dehydration
- Sensitivity to medications

Cox-1 versus Cox-2

- Activation of COX-1 leads to production of:
 - Prostacyclin
 - PGE₂
 - PGI₂
 - Thromboxane A₂
- COX-2 is induced in:
 - Macrophages
 - Fibroblasts
 - Endothelial cells
 - Chondrocytes
 - Osteoblasts
 - Synoviocytes



Renal Changes – Morphine

- Morphine-3-glucuronide (M3G)
 - conjugation accounts for over 50%
 - antagonizes analgesic effect of morphine and M6G
 - ? neurotoxic side effects
- Morphine-6-glucuronide (M6G)
 - conjugation accounts for over 5%
 - more potent analgesic activity than morphine
 - contributes to overall analgesic effect
- Higher concentrations of M3G and M6G after development of delirium

Accumulation of Morphine Metabolites

- Variable with route of administration
 - 1st pass hepatic glucuronidation higher M3G and M6G/morphine plasma concentration ratio
 - potentially more side effects with oral route
- Variable with repeated administration
 - results in accumulation of M6G and greater contribution to the analgesic effect and potentially more sedative side effects

Gastrointestinal Changes

Gastrointestinal Changes in the Elderly

- Swallowing less coordinated
 - Risk for aspiration
- Decrease in GI motility
 - Intestinal atrophy
 - Decrease in mucus secretion
- Liver –
 - Biotransformation of drugs occurs mostly in the liver
 - Glucuronidation rarely impaired in hepatic failure
 - Decreased ability to metabolize drugs
- Increased fat – decreased albumin

GI Changes – Implications for Pain Management

- Can the patient swallow oral medications?
 - Short term? Long term?
 - GI tract intact
 - How large are the pills?
 - Liquid versus pills
 - Morphine solution, Oxyfast solution
 - Sprinkled opioids

Constipation

- Compounded by age and opioids
- Decreased fluid in the bowel
- Decrease in peristalsis
- Increase in anal sphincter tone

- **Stool Softener + Stimulant!!**

Hepatic Changes

Hepatic Changes - Implications for Pain Management

- Beware
 - anticonvulsants, psychotropics, anticoagulants
- Danger of Acetaminophen – 4 Gm maximum/day
- Methadone
 - liver is the primary route of drug elimination
 - reports of hepatotoxicity
 - use with caution or avoid with hepatic failure

Methadone and Protein Binding Issues

- Large inter-individual variations
- Variations in individual patients from day to day and week to week!
- Methadone bound to Alpha 1-acid glycoprotein (AAG)
 - Can be displaced from AAG binding sites by propranolol, chlorpromazine, prochlorperazine, thioridazine, and imipramine ____enhance methadone effectiveness

NSAID Considerations for Elderly

- Elderly considerations
 - have low serum albumin levels
 - likely to have high serum NSAID levels
 - higher incidence of NSAID side effects

Considerations for Mr. G

- Renal function?
 - Bone metastases
- Liver function?
- History of opioid use
 - Refusal of medication significant
 - History of side effects?
 - Negative experience?

**Remember –
Start Low and Go
Slow!!!**