Cancer Pain

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The University of Texas
MD Anderson Cancer Center
Prevalence of the Most Common Symptoms in Advanced Cancer (1000 Adults)

<table>
<thead>
<tr>
<th>Symptom</th>
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<tbody>
<tr>
<td>Pain</td>
<td>82</td>
<td>Lack of Energy</td>
<td>59</td>
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<tr>
<td>Easy Fatigue</td>
<td>67</td>
<td>Dry Mouth</td>
<td>55</td>
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<tr>
<td>Weakness</td>
<td>64</td>
<td>Constipation</td>
<td>51</td>
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<tr>
<td>Anorexia</td>
<td>64</td>
<td>Dyspnea</td>
<td>51</td>
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<tr>
<td>&gt;10% Wt Loss</td>
<td>60</td>
<td>Early Satiety</td>
<td>50</td>
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*Donnelly and Walsh*  
*Semin Oncol, 1995*
Pain definition

Pain is an emotional and sensory experience or described in those terms.
Incidence Of Cancer Pain

• 50 % of all cancer patients
• 70-80 % of all advanced cancer patients
• 50 % will have moderate to severe pain
• 30 % will have severe pain
Types Of Pain in Cancer

• Related to direct tumor involvement-60-65 %
• Related to cancer treatment-20-25 %
• Unrelated to cancer-10-15 %
Pain Syndromes

**NOCICEPTIVE:**

**A. Somatic:**
Sharp, localized, aching, throbbing, gnawing

**B. Visceral:**
Dull, poorly localized, crampy, nauseous, squeezy, pressure

**NEUROPATHIC:**
Burning, tingling, shooting, stabbing, itching, electric like, numb
Types of pain

- Nociceptive pain:
  - somatic;
  - Post-op bone pain
  - chest pain
  - mucositis

- Visceral:
  - PCP, Liver mets, pleural

- Neuropathic pain:
  - Peripheral neuropathy
    - PHN
    - Brachial
    - Lumbosacral plexopathy
  - Central:
    - Stroke&MS,Tum

Pain Assessment

Detailed pain history-

- **Site**
  - intensity
  - Factors influencing pain
  - Breakthrough Pain
  - Medication history
  - Associated neurological deficits
  - Psychosocial history
  - Assessment of other symptoms
Intensity Of Pain

0-10 (Verbal numeric scale)
Mild, moderate, severe

0-10cm Line (Visual analogue scale)

Faces

Fruits

Currency

Sometimes cannot quantify
Assessment Of Pain

Questionnaires:

**Wisconsin Brief Pain Inventory:** (Cleeland)

(BPI)
Captures pain at different times
Functional interference is assessed
Other symptoms are assessed
Well tested, easy to administer
Assessment Of Pain

Graphic Scale:

• Edmonton Symptom Assessment Scale (ESAS):
• Easy to administer, captures other symptoms on a 0-10 scale format.
• Easy follow through and can act as a flow chart.
### Symptom Control & Palliative Care Symptom Assessment Scale

#### Referral Date:
- **Date:** March

<table>
<thead>
<tr>
<th>Date</th>
<th>01</th>
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* 0 = No Symptom/Best, 10 = Worst Imaginable

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**M.D. Anderson Cancer Center**

**FOLLOW-UP AND PROGRESS NOTES**

**Symptom Control & Palliative Care Symptom Assessment Scale**

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Assessment Of Cancer Pain

Pain:
“A new pain or a change in character of an old pain in cancer patient is always because of cancer unless otherwise proved”--Reddy
Multifactorial Nature of Pain

- Neuropathic Mechanisms
- Somatic or Visceral Nociception
- Psychological State and Traits
- Loss of Work
- Physical Disability
- Fear of Death
- Psychosocial Influences
- Social/Family Functioning
- Financial Concerns

(PAIN) SUFFERING TOTAL PAIN

(Adapted from Portenoy, 1988)
Treatment of Cancer Pain

Pharmacotherapy
Opioids & Non-opioids
Non-Pharmacotherapy
Behavioral treatment
Physical therapy
Counselling
Anesthetic procedures
Pharmacotherapy of cancer pain

**Non-opioid drugs:**
- NSAIDS
- Antidepressants
- Anticonvulsants
- Corticosteroids
- Phenothiazines
- Benzodiazepines

**Opioid drugs:**
- Weak opioids
- Strong opioids
Adjuvant Analgesics (Step 1 WHO)

Non-Steroidal anti-inflammatories (NSAIDS)
Antidepressants (TCA)
Anticonvulsants/Anti-epileptics (AEDs)
Corticosteroids
Bisphosphonates
Anesthetics-Lidoderm Patch
N-Methyl D-aspartate antagonists (NMDA)
Radiopharmaceuticals
Phenothiazines
Benzodiazepines
NSAIDS

• Acetaminophen (Paracetamol) can cause liver damage if dose exceeds 3-4 gm a day
• Liver damage risk increased in alcoholics and pre-existing liver damage.
• Acetaminophen (Paracetamol) has been shown to cause renal damage

Insel PA: Goodman Gillman ed 8 1990
**NSAIDS (Ibuprufen, Naprosyn)**

- Acts by inhibiting cyclooxygenase to decrease prostaglandin synthesis
- May have central action at the spinal cord level
- Exhibit ceiling effect
- Tolerance and physical dependence is not seen
- Cause end organ toxicity
- Cox-2 inhibitors cause less GI and Platelet dysfunction (Other side-effects same) (Celecoxib)
  - Vane JR: Inhibition of prostaglandin synthesis as mechanism of action of aspirin like drugs.
Weak opioids/Step2 WHO/C3

• Codeine
• Hydrocodone
• (Propoxyphene)
• Tramadol

• Used for mild to moderate pain
• Not available as a single agents
• Dose limited by acetaminophen dose
WHO Analgesic Ladder

- Step 1:
  - Non opioids + adjuvants
  - Step 1

- Step 2:
  - Weak opioids + Step 1

- Step 3:
  - Strong opioids + Step 1,2
  - Step 3
Agonists-Antagonists

- Pentazocine
- Nalbuphine
- Butorphanol
- Buprenorphine

- Demonstrate ceiling effect
- Precipitate withdrawal symptoms
- Dose-dependent psychotomimetic effects
Strong opioids (Step 3 WHO)

- Used for all pain types
- Available as short acting and long acting
- Opioids with long half-life not the 1st choice
- Morphine - drug of first choice, different formulations available
- SRM-15, 30, 60, 100 and 200mg.
- M.S. - 10, 15, 30, 60mg.
Step 1:

Pain syndrome: Any or specific type of pain

Pain intensity: mild, 0-4/10

Medications used: acetaminophen, anti-inflammatory, TCA/AED

Response: somatic/neuropathic pain syndromes respond mildly.
WHO Ladder

Step 2:
Pain syndrome: Any or specific type
Pain intensity: moderate, 4-7/10
Medications: Mild opioids/NSAID’s /TCA/AEDs
Response: Varies.
WHO Ladder

Step 3:
Pain syndrome-Any or Specific
Pain intensity: moderate to severe, 7-10/10
Medications: Strong opioid (Morphine class) + NSAIDs, AEDs, TCA etc
Response: Good, 80-90 %
Incidence Of Cancer Pain

• 50 % of all cancer patients
• 70-80 % of all advanced cancer patients
• 50 % will have moderate to severe pain
• 30 % will have severe pain
WHO Ladder Principles

The five essential concepts in the WHO approach to drug therapy of cancer pain are:

By the mouth
By the clock
By the ladder
For the individual
With attention to detail
Morphine

Gold standard for opioids
Acts as mu agonist in spinal cord, brain, and periphery
Metabolized to M6G, and M3G (May be responsible for excitatory side-effects)
Metabolites accumulate in renal dysfunction - Hence adjust the dose
Available in all formulations and all routes
Start with 10-15 mg q 4 hrs initially and titrate the dose. Introduce sustained release form once pain is stable
Use IV for acute titration
Transdermal Fentanyl

Fentanyl in a patch form
Forms depot under the skin and releases fentanyl slowly into the system
Takes 18 hrs to form depot
Changed every 72 hrs, in some every 48 hrs-convenient
Useful for stable pain
Difficult to titrate in acute situations
?causes less constipation
Selecting The Route

• Oral is the preferred route
• Transdermal route useful in patients with stable pain and cannot swallow, due to oral pathology or intractable nausea / vomiting
• Rectal route used for short term if N/V is due to GI pathology. M.S. can be given rectally
• IV Route for acute pain situations
WHO Analgesic Ladder

Strong opioids
+ Step 1

Weak opioids
+ Step 1

Non opioids + adjuvants

Step 1

Step 2

Step 3
PRINCIPLES OF PHARMACOTHERAPY

• Match drug to pain syndrome
• Have low threshold to prescribe opioids
• Add adjunct medications where appropriate
• Oral route should be the route of choice
• Use IV route for acute titration
• Treat side-effects before switching opioids
Treatment of somatic pain

- NSAIDs
- Mild opioids
- Physical modalities
- Psychotherapy
- Stronger opioids
- Interventions
Treatment of Neuropathic pain

- Adjuvants: TCA, Gabapentin, Steroids, NSAID
- Stronger opioids
- Methadone
- IV Lidocaine/Mexilitene
- NMDA receptor antagonist: Ketamine/Dextromethorphan
- Interventions: Regional, Sympathetic blocks,
- Neuro-axial medications: opioids, clonidine, local anesthetic
Difficult Pain Syndrome/Intractable Pain

Intractable pain syndrome is defined as persistent pain despite reasonable efforts to treat it.
Adverse-effects of opioids

**Common:**
- Constipation
- Nausea/vomiting
- Somnolence
- Cognitive effects
- Dysphoria
- Myoclonus
- Itching
- Urinary retention

**Rare:**
- Histamine release
- Chest wall rigidity
- Decreased immunity
- Headaches
- Blurring of vision
- Respiratory depression
- Seizures
Practice

• Pharmacotherapy treats majority of pain (90%).
• Occasionally need anesthetic intervention either as an adjunct or prime reliever of pain (10%).
• Define pain syndrome before block.
• Never deny a patient of alternative pain therapy.
Principles of anesthetic procedures in cancer pain

• Usually reserved for patients who fail extensive pharmacological trials
• Should fail to show any dose response or develop dose limiting side-effects, which are resistant to treatment
• Neurolytic or destructive procedures are usually done in terminal patients due to adverse effects
Anesthetic Procedures

The most useful Procedures:

1. Celiac plexus block
2. Epidural infusions
3. Vertebroplasty
4. Intra-thecal neurolytic blocks
5. Intrathecal pumps
Issues in patients on chronic opioid medications

1. Tolerance
2. Physiological dependence
3. Psychological dependence
Multifactorial Nature of Pain

Somatic or Visceral Nociception
Psychological State and Traits
Loss of Work
Physical Disability
Fear of Death

Neuropathic Mechanisms
Psychosocial Influences
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PAIN
TOTAL PAIN
SUFFERING

(Adapted from Portenoy, 1988)