The Facts About Effectively Managing Intractable Cancer Pain

Brian Kahan, D.O.
FAAPMR, DABIPP,DABPM, DAOCPMR
The Kahan Center
For Pain Management
www.thekahancenter.com
Objectives

- Describe cancer pain
- Incidence of cancer pain
- Identify a team approach to treatment of cancer pain
- Define the roles of intrathecal drug delivery systems and neuromodulation in treating cancer pain
Sources of Pain in Cancer Patients

Cancer pain comprises:
- Acute pain
- Chronic pain
- Tumor-specific pain
- Treatment-related pain

Existence of pain due to cancer

More than two thirds of cancer patients report pain which they attribute to their cancer

Total (n=4947)
- Pain: 73%
- No pain: 27%

Pain sufferers by cancer type:
- Lung: 87%
- Pancreatic: 93%
- Brain Tumour: 87%
- Bone/Muscle: 92%
- Blood Borne: 82%
- Non-Hodgkins: 86%
- Head/Neck: 86%
- Bowel/Colorectal: 82%
- Testicular: 82%
- Blood borne: 77%
- Gynae cancer: 77%
- Lymphomas: 75%
- Breast cancer: 62%
- Leukemia: 66%
- Prostate: 53%

Base: all screened – (individual base sizes shown on chart)

S4. Have you suffered any pain due to your cancer?
Where We Are Today in Managing Cancer Pain?

- Minorities, women, and the elderly are particularly at risk for cancer-related pain.¹

- One survey found that while health care providers believe they are doing a good job at managing pain and its symptoms, families do not.²

- Cancer pain still pervasive in adults and children.³

- Cancer pain is undertreated in all settings where patients with cancer are managed.³

---

Patients with cancer are often reluctant to report the extent of their pain.  
- Fear that reporting pain will take physician time away from their treatment  
- Concern about addiction  
- Beliefs that “good” patients do not complain about pain  
- Concern about side effects with escalating doses  

Result = under-treatment of pain

The Effects of Pain

- A majority of patients experience pain at some point during their course of cancer treatment.¹
- Cancer pain impairs quality of life and functionality.¹
- The cost of inadequate pain control and related side effects (of pain medications) is high, both in terms of impaired function and quality of life.²⁻⁴
- Pain interferes with all activities of daily living.⁵

---

Pain as the “Fifth Vital Sign”

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) issued a comprehensive description of patients’ rights and standards of care for pain management.

- **Recommendation:** make pain assessment/management priority in daily practice
- **Consider pain intensity the 5th vital sign:** measure along with temperature, pulse, respiration, and blood pressure
- **Patients’ rights:** full pain workup when pain is not easily characterized or treated
Start with a Comprehensive Pain Assessment

The National Cancer Institute recommends that the clinician help the patient describe pain:\(^1\):

- Location
- Changes in pattern
- Intensity or severity
- Aggravating and relieving factors
- Cognitive response to pain
- Goals for pain control

These are essential to the initial assessment:\(^1\):

- Detailed history\(^1\)
- Physical examination\(^1\)
- Psychosocial assessment\(^2\)
- Diagnostic evaluation\(^1\)

Assessment Goals

- Characterize the pathophysiology of pain
- Determine intensity of pain
- Determine impact on patient’s ability to function

Cancer Pain Therapy: The Oncologist’s Perspective

- Systemic pharmacologic therapy
- Collaboration with pain medicine and palliative care specialists
- Good pain management facilitates good cancer management

Multidisciplinary Approach to Chronic Pain Management

- Pain specialists
- Psychologists
- Nurses
- Social workers
- Rehabilitation specialists
Cancer Pain Management Strategies

- Pharmacologic strategies
  - Nonopioid analgesics
  - Acetaminophen
  - Nonsteroidal anti-inflammatory drugs
  - Opioid analgesics
  - Coanalgesics (adjuvant analgesics)
  - Corticosteroids

- Physical strategies
  - Massage
  - Exercise
  - Transcutaneous electrical nerve stimulation (TENS)
  - Acupuncture

- Psychological strategies
  - Hypnosis or relaxation with imagery
  - Cognitive-behavioral methods

- Nerve blocks/Radiofrequency

- Radiation therapy

- Chemotherapy

Pharmacological strategies

- Non-opioid analgesics
  - Decadron and oral corticosteroids
    - Significant reduction in edema and good for acute metastatic disease and brain involvement
  - NSAID’s
    - Additive effect by inhibiting COX-1 and COX-2 pathways and possibly COX-3
  - Acetaminophen
    - Inhibiting COX-1
  - Anti-epileptic medications
    - Gabapentin has a synergistic effect when combined with morphine (N Engl J Med 2005;352:1324-34)
- Bisphosphonates
- Cannabis
Psychological strategies

- Coping skills
- Biofeedback
- Meditation
- Family or group
Opioid Analgesics for the Treatment of Cancer Pain

- Used most often in the management of severe pain because:
  - Effectiveness
  - Ease of titration
  - Favorable risk-to-benefit ratio

- Routes of administration
  - Oral
  - Transdermal
  - Parenteral: Intravenous or subcutaneous
  - Intraspinal: Epidural or intrathecal
    - Consider when other routes of administration cannot control pain or when side effects limit further dose escalation

2. Ibid., p 64.
Intervention techniques

- Vertebroplasty/Kyphoplasty
- Radiofrequency
  - Splanchnic nerves
  - Peripheral nerves
  - C2 Cordotomy
- Intrathecal drug delivery systems
- Spinal cord neuromodulation
Radiofrequency

- Splanchnic nerves
  - Pancreatic cancer
  - Abdominal cancer
  - Chronic abdominal pain
- Case
  68 y/o male with history of neuroendocrine tumor with metastatic mass compressing celiac plexus and resistant abdominal pain.

Raj, Prithvi et al
Radiofrequency

- Peripheral nerves
- Case
  - 70 y/o female with history of facial squamous cell CA with radical facial resection and chronic neuropathic pain in left infraorbital region. Failed to respond to opioids, AED’s, NMDA medications
Advanced Strategies for Intractable Cancer Pain Management

80-90% Adequate Pain Control

10-20% Invasive Therapy Needed

Spinal Anatomy

- Epidural Space
- Arachnoid Membrane
- Intrathecal Space (Subarachnoid Space)
- Dura
- Pia Mater
- Spinal Cord
- Nerve Root
Epidural vs. Intrathecal Space

Intrathecal Space (Subarachnoid Space)

Epidural Space
Physiology of Spinal Opioids

- Nociceptors carry a “pain” signal to the dorsal horn.
- In the dorsal horn neurons release substance P.
- Substance P triggers ascending neurons that carry this signal to the brain.
- Opioids inhibit the release of substance P, blocking the pain transmission.
- Perceived pain is reduced.
# Epidural vs. Intrathecal Opioids

## Table: Pros and Cons of Epidural vs. Intrathecal Opioids

<table>
<thead>
<tr>
<th>Pros</th>
<th>Intrathecal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced risk of respiratory</td>
<td>Faster onset of analgesia</td>
</tr>
<tr>
<td>depression and other serious</td>
<td>Lower risk of catheter failure</td>
</tr>
<tr>
<td>complications</td>
<td>Allows for CSF sampling</td>
</tr>
<tr>
<td></td>
<td>Longer intervals between refills</td>
</tr>
<tr>
<td>80-90% of drug is systemically</td>
<td>Potential CSF leakage leading to spinal</td>
</tr>
<tr>
<td>absorbed</td>
<td>headache</td>
</tr>
<tr>
<td>Possible dural fibrosis can</td>
<td>Increased risk of meningeal infection or neural</td>
</tr>
<tr>
<td>occlude catheter</td>
<td>injury</td>
</tr>
<tr>
<td>Greater dose requirement</td>
<td>Risk of inflammatory mass</td>
</tr>
<tr>
<td>Slower onset of analgesia</td>
<td></td>
</tr>
<tr>
<td>compared to intrathecal delivery</td>
<td></td>
</tr>
</tbody>
</table>

What is successful pain management?

Success = Pain relief – Unmanageable side effects
Approximate Equivalent Daily Doses of Morphine Administered by Various Routes

<table>
<thead>
<tr>
<th>Route of Administration</th>
<th>Relative Potency (mg)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>300</td>
</tr>
<tr>
<td>Intravenous</td>
<td>100</td>
</tr>
<tr>
<td>Epidural</td>
<td>20</td>
</tr>
<tr>
<td>Intrathecal</td>
<td>1</td>
</tr>
</tbody>
</table>

*Relative approximations based on clinical observations

Reduce Dose → Reduce Side Effects

1 mg intrathecal morphine = 300 mg oral morphine

I. Symptoms of pain due to advanced stage cancer at presentation, with a minimum life expectancy of >3 months\textsuperscript{1-4}

II. Refractory to conventional pain management because of drug toxicity or unsatisfactory analgesia\textsuperscript{1-4}

III. Visual analog scale (VAS) of \( \geq 5 \), despite 200 mg/day of oral morphine or the analgesic equivalent\textsuperscript{1,3,4}

Consider those on lower doses if opioid side effects are refractory to conservative treatment and severe enough to prevent upward titration.\textsuperscript{1,3,4}

IV. Consider early evaluation of intrathecal drug delivery for those with pelvic tumors who may have eventual nerve compression.\textsuperscript{2}

Contraindications to Intrathecal Drug Delivery

- When infection is present
- When pump implant depth exceeds depth specified in pump labeling
- Intrathecal Drug Delivery Contraindications
  - When body size is not sufficient to accept pump bulk and weight
  - When contraindications exist relating to the drug
  - Drugs with preservatives
  - Do not use the patient control device, if applicable, to administer opioid to opioid-naïve patients or to administer ziconotide

For a complete list of contraindications, refer to the manufacturer labeling for the specific device.
Medications available

- FDA approved- first line
  - Morphine
  - Baclofen
  - Ziconotide

- Not FDA approved- second line
  - Fentanyl
  - Morphine/hydromorphone + ziconotide
  - Morphine/hydromorphone + bupivacaine/clonidine

- Third line
  - Clonidine
  - Morphine/hydromorphone/fentanyl\bupivacaine + clonidine + ziconotide

- 4th line
  - Sufentanil
  - Sufentanil +bupivacaine + clonidine + ziconotide

- 5th line
  - Ropivacaine, buprenorphine, midazolam, meperidine, ketorolac

- 6th line
  - Experimental agents like gabapentin
Which medication to use

- Hydrophilic better than hydrophobic
- Morphine > hydromorphone > fentanyl > bupivacaine > clonidine
- Know where catheter tip is
## Recommendations for cancer pain patients based on disease state

<table>
<thead>
<tr>
<th>Patient category</th>
<th>Patient characteristics</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient category 1</td>
<td>Comprises those patient whose life expectancy is significantly compromised by their disease and the goal of therapy is palliative</td>
<td>A pretrial/internalization psychological evaluation should be considered optional. It should be done at the discretion of the physician, with focus on identifying cancer-and/or pain-related psychological factors potentially amenable to psychological intervention that may facilitate patient adjustment and analgesia rather than to clear the patient psychologically for IT therapy</td>
</tr>
<tr>
<td>Patient category 2</td>
<td>Consists of patients whose disease process has been arrested, but wherein there is significant probability of recurrence</td>
<td>A pretrial/internalization psychological evaluation is encouraged with an emphasis on periodic psychological consultation/intervention to assist with changes in disease process/recurrence and coping</td>
</tr>
<tr>
<td>Patient category 3</td>
<td>Comprises patients whose cancer has been eradicated by surgery or other therapies, but who have residual chronic pain secondary to the medical tx</td>
<td>Patients should undergo a pretrial/internalization psychological evaluation approached in much the same way as those with chronic noncancer pain. Whenever possible the primary caregiver should be included to assess the type and degree of support</td>
</tr>
</tbody>
</table>