Neuropathic Pain in Adults

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Objectives

- Describe the burden of neuropathic pain in adult populations
- Contrast the characteristics of neuropathic pain when compared to other common forms of pain
- Refine assessment and early detection strategies for adults with neuropathic pain
- List evidence-based pain management measures to manage neuropathic pain, including common drug therapies.
“Pain as an Art Form”
# Know the Difference

## Acute Versus Chronic Pain

<table>
<thead>
<tr>
<th><strong>Acute</strong></th>
<th><strong>Chronic (Cancer)</strong></th>
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</thead>
<tbody>
<tr>
<td>• Often has a defined reason</td>
<td>• Linked to an ongoing process; may be degenerative in nature</td>
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<tr>
<td>• Usually time limited</td>
<td>• Exists over time with periods of waxing and waning…never really gone</td>
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<tr>
<td>• Usually a warning/reminder that injury (illness) has or will happen</td>
<td>• Suggests an ongoing process but may not be overt or easily explained</td>
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### Further Classification by Pathology

*(McCafferty & Paserto, 1999)*

#### Nociceptive Pain

**(Somatic or Visceral)**

1. **Nociceptive Pain**
   - Normal processing of sensory stimuli; reflects damage or potential damage; Usually responds to opioids; Assessment more likely linked to complaint

   - **a. Somatic** – occurs from bone, joint, muscle, skin or connective tissue. Often “aching, throbbing”…often well localized,

   - **b. Visceral** – occurs from visceral organs….crampy; dull ache

#### Neuropathic Pain

**(Central or Peripheral)**

2. **Neuropathic Pain**
   - Abnormal processing of sensory input. Peripheral or CNS; More response to adjuncts. Assessment may not match complaint

   - **a. Central** – usually injury CNS (EX: phantom limb pain)

   - **b. Peripheral** – occurs along the patterns of peripheral nerves; DM neuropathy; occurs after known injury
Neuropathic Language of Pain

- **Allodynia** – pain associated with nonnoxious stimuli; may be mechanical, dynamic or thermal
- **Radiculopathy** – nerve root pain
- **Dysesthesia** – spontaneous or evoked unpleasant sensation
- **Paresthesia** - non-painful, spontaneous/abnormal sensations…pins and needles
- **Hyperesthesia** – exaggerated response to sensation
- **Hypoesthesia** – reduction of normal sensation
Economic, Physical & Public Health

Burden of All Pain in Adults

- **Chronic pain is common**, reported by > 100 million Americans; > than CAD, cancer and DM combined *(Relieving Pain in America [2011], Institute of Medicine)*

- **Neuropathic pain** occurs in 1.5-7% of general population

- **2 of 3 older adults > 65** agree that pain keeps them from routine activities *(The Study of Pain and Older Americans, Harris & Associates, 1997; D’Arcy, 2010)*

- **44-80% of elders** in long term care report “substantial” pain *(AGS, 2002; Achtenberg et al., 2009; D’Arcy, 2010)*
Neuropathic Pain

“Definitions”

“Pain arising as a direct consequence of a lesion or disease affecting the somatosensory system” (Teede, et al., 2008)

“Pain caused by a primary lesion or dysfunction of the nervous system” (IASP)
Neuropathic Pain

Better described as....

...pain linked with disruption in neuronal function; may be from injuries such as compression, ischemia, or metabolic injury of nerve(s), disease state or from an unknown cause; pain may be stimulus independent.
# Features of Neuropathic Pain

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>DESCRIPTORS</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steady, Dysesthetic</strong></td>
<td>• Burning, Tingling</td>
<td>• Diabetic neuropathy</td>
</tr>
<tr>
<td></td>
<td>• Constant, Aching</td>
<td>• Post-herpetic neuropathy</td>
</tr>
<tr>
<td></td>
<td>• Squeezing, Itching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Allodynia common</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hyperesthesia</td>
<td></td>
</tr>
<tr>
<td><strong>Paroxysmal, Neuralgic</strong></td>
<td>• Stabbing</td>
<td>• Trigeminal Neuralgia</td>
</tr>
<tr>
<td></td>
<td>• Shock-like, electric</td>
<td>• Phantom limb pain</td>
</tr>
<tr>
<td></td>
<td>• Shooting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lancinating</td>
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Neuropathic Pain

Common Associations

- Diabetes Mellitus
- Facial Nerve pain (Trigeminal Neuralgia)
- Herpes Zoster (shingles)
- Amputation
- Alcoholism
- HIV infections
- Certain chemotherapies (platinum-containing agents)
- *Chronic back, leg and hip pain
- Multiple Sclerosis
Neuropathic Pain...

Adults at Risk...

- Diseases linked with neuropathic pain increase with age
- Older adults functional decline with aging … may delay reporting and options
- Older adults more sensitive to therapies; multiple medications ?
- Over 65 are underrepresented in drug trials… fewer RCTs
Pain Measurement

Common Scales and Measurements

- Usually required, all settings … “5th vital sign”
- Common tools
  - Short form-McGill Pain Scale (SF-MPQ)
  - Faces Scale
  - Brief Pain Inventory (BPI)*
  - PainAD,
  - Neuropathic Pain Scale (Galer et al.)
“Describing pain only in terms of its intensity is like describing music only in terms of its loudness…”

Common Pain Assessment Scales

Pain Assessment Scales

Neuropathic Pain: Beyond 1-10

Assessment

- Affect of patient
- Body position pain
- Skin change
- Evidence of atrophy
- Gait alterations
Assessment

Include the Patient

PAIN DRAWING FROM A PATIENT WITH DAMAGE TO THE RIGHT SUPERFICIAL PERONEAL NERVE

PAIN DRAWING FROM A PATIENT WITH CENTRAL NEUROGENIC PAIN DUE TO A THALAMIC INFARCT

Key:
- Aching
- Burning
- Radiating
- Numbness
- Pricking
DO NOT WRITE ABOVE THIS LINE

Brief Pain Inventory (Short Form)

Date __________/______/______

Name

[Diagram of body showing areas for shading]

1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these everyday kinds of pain today?

   1. Yes
   2. No

2. On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.

3. Please rate your pain by circling the one number that best describes your pain at its worst in the last 24 hours.

   0 1 2 3 4 5 6 7 8 9 10
   No Pain
   Pain as bad as you can imagine

4. Please rate your pain by circling the one number that best describes your pain at its best in the last 24 hours.

   0 1 2 3 4 5 6 7 8 9 10
   No Pain
   Pain as bad as you can imagine

5. Please rate your pain by circling the one number that best describes your pain on the average.
Follow-Up And Progress Notes

Pain Management Center-Follow-Up Visit

1/5/05

Temp: 96.7
Pulse: 85
Resp: 14
BP: 131/88
Wt: 110.6

Ambulatory: Yes
Assistive Devices: No

Pain / Chief Complaint: Fore-head, entire head, too, right eye

How long have you had this pain? Very long time, about 1996

Has pain changed in intensity and/or character since last visit? If yes, describe. Not much change.

Was in emergency Room New Years eve for pain

Where is it located? (Shade diagram, mark worst spot(s) with an X)

Mark Location

PAIN SCALE:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Worst</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
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Over the last week, rate:

Worst Pain: 0 1 2 3 4 5 6 7 8 9 10
Least Pain: 0 1 2 3 6 7 8 9 10
Usually: 0 1 2 3 4 5 6 7 8 9 10
Right Now: 0 1 2 3 4 5 6 7 8 9 10
Acceptable Level: 0 1 2 3 4 5 6 7 8 9 10

Current Medications: None
Not So New....

Ask About Common Factors

- Location
- Intensity
- Pattern
- Duration
- Character
- Effect on functioning and mobility
  - Impact on mood, sleep and social engagement
  - What makes it worse, better...time of day
Descriptors

Verbal, Behavioral Cues

**Verbal**
- Ache
- Soreness, tenderness
- Stiffness
- Crying, moaning
- Burning
- Painful
- Shooting, electric-like

**Behavior**
- Grimacing
- Agitation/restlessness
- Rubbing
- Withdrawal
- Sleeplessness
- Changes in activity/appetite
Frail or Cognitively Impaired

Behaviors Suggesting Pain...When

- Clenched teeth
- Verbalizations/vocalizations
- Non-verbal
- Body movements
- Restlessness, agitation, rocking
- Not eating or sleeping
- ? other causes of pain - infection, constipation, wound, undetected fractures, UTI
Work with Your Aides...

When to Ask, Observe for Pain?

- Before and after planned, unplanned activity
- During mealtimes, bath
- During transfers to and from room
- When new symptoms are noted
- When new medications are added, taken away

www.med-ic.org
Accurate Description

Dermatome Assessment
<table>
<thead>
<tr>
<th>Level</th>
<th>Function</th>
</tr>
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<tbody>
<tr>
<td>C3/C4/C5</td>
<td>Diaphragm</td>
</tr>
<tr>
<td>C5/C6</td>
<td>Deltoid/ biceps</td>
</tr>
<tr>
<td>C7/C8</td>
<td>Triceps</td>
</tr>
<tr>
<td>C8/T1</td>
<td>Finger flexion</td>
</tr>
<tr>
<td>T1-T12</td>
<td>Intercostal/ abdominal muscles</td>
</tr>
<tr>
<td>L2/L3</td>
<td>Hip flexion</td>
</tr>
<tr>
<td>L2/L3/</td>
<td>Hip adduction/quads</td>
</tr>
<tr>
<td>L4/ L5</td>
<td>Ankle dorsiflexion</td>
</tr>
<tr>
<td>S1/S2</td>
<td>Ankle plantar flexion</td>
</tr>
<tr>
<td>S2/S3/S4</td>
<td>Rectal Tone</td>
</tr>
</tbody>
</table>
Spot the Difference!
Change in Reflexes, Sensation

Dermatomes

www.1800wheelchair.com
Difficult...looking for Change

Cognitively Impaired Patient

Assume that nociceptive pain will coexist with known comorbidities

- Establish, document a baseline for behavior
- Watch for new indicators of pain (new complaints, obvious lesion, swelling, dysfunction)
- Follow new change closely
Neurogenic Pain

How is Management Different?

- Less responsive to traditional medications
- Unpredictable
- Frequent descriptors…
  - Electric shock-like episodes (54%)
  - Pins and needles
  - Numbness
  - Burning (54%)
  - Tingling (48%)
As Independent or Adjuvant

Non-Pharmacologic Interventions...

- Physical and occupational therapy
- Exercise, strengthening, stretching
- Hot and cold packs...
- Assistive devices - canes; braces; splints; wedges....SAFETY
- Education – patient and family
- Other support:
  - Social work, chaplain
  - Home care follow-up, rehabilitation...
  - Family meeting
Especially Elders...

Physiologic Changes in Adults

- Declining renal function
- Decreased lean body mass
- Diminished liver mass, < hepatic blood flow
- Fewer active drug-metabolizing enzymes
- Potential decrease in serum protein
- Declining function capacity
- See Beer’s Criteria for the elderly
Limited Knowledge Elders

What is Evidence-based?

- Few trials with frail elders >85 years
- Limited trials with those >65...included “healthy” (Dworkin et al., 2003; Attal et al., 2006, Moulin et al., 2007).
- Pain tolerance more variable
- Ethnicity, gender also factors
- Worry with frail elders ...no data

(Institute for Clinical Systems Improvement Health Care Guideline for Assessment and Management of Chronic Pain, 5th Ed., November, 2011)
Neuropathic Pain Treatment

- Use individual, disease specific measures
- **Examples:**
  - Optimal glycemic control
  - Infection control
  - Least complex medication program
  - Least invasive procedure(s)
  - Disease modifying medication (Multiple Sclerosis)

(Belgrade, 1999)
When **Back Pain** Presents…

- Vertebral neoplasm or metastases
- Spinal cord compression or cauda equina
- Epidural abscess, epidural hemorrhage
- Abdominal aortic aneurysm
- Compression fracture…osteoporosis, metastases
- Progressing neurological deterioration…bowel & bladder, loss of function, “can’t walk”…etc
Neuropathic Pain Treatment

Local, Regional Rx:

- **Topical Medications** (Capsacin; Lidocaine)
- **Regional Blocks** (sympathetic blocks; epidural blocks/pumps; selective nerve root blocks)
- **Stimulation Therapy** (TENS; acupuncture; spinal cord stimulation; massage)
- **PT/OT** (splinting; assistive devices; range of motion)
- **Ablative Therapies** (Nerve ablation; cordotomy/rhizotomy; radio frequency ablation)
If patient is able to participate...Behavioral Therapies, Biofeedback
- Hypnosis
- Imagery
- Relaxation
- Cognitive-behavior therapy
- $$$
Medications

- **Tricyclic anti-depressants** - amitriptyline (*Elavil*)
  inortriptyline (*Pamelor*)
- **SNRIs** Serotonin-Norepinephrine Reuptake Inhibitors
  (Duloxetine (*Cymbalta*); Venlafaxine (*Effexor*)
- **Clonazepam** (*Klonopin*)
- **Corticosteroids**
- **Opioids may work for some**
Establish clear diagnosis...plan, pain specialist

Initiate therapy with one, more…
- TCA (nortriptyline, desipramine /norpramin); or an SNRI (duloxetine, venlafaxine)
- Gabapentin or Pregablin
- Topical agent
- Perhaps opioids, Tramadol in combination for “cancer” pain; exacerbations

Reassess pain often, expect adjustments
It Takes a Team...
Roles for Nursing

- Engage patient, family in self management
- Nutrition, dietary intake, supplements
- Medication safety and compliance
- Practical and safe activity/exercise
- Transitions to home
  - Home safety evaluation (PT/OT)?
  - Home visiting nurse, equipment?
  - Assess supportive care needs
What Must Be Done...

Before Discharge Check

- Clinical pharmacist check
- Patient, family - use of pain tool, reporting pain, and following through with medication
- Describe treatment goals, usual course of illness
- Know reportable new symptoms, drug side effects
- Have an action plan
Neuropathic Pain

Two Examples

- **Herpes Zoster** (*shingles*)

- **Trigeminal Neuralgia** (*Tic Douloureux*)
Herpes Zoster (Varicella Zoster)
Unilateral Distribution
May Present as Pain First
Unilateral Pattern

Herpes Zoster
Zoster
Resolving Zoster
Ophthalmic Zoster
Herpes Zoster

Treatment Overview

- Diagnosis is “clinical” presentation
- Pain is a concern
- Early intervention...
- Pain > 30 days is worrisome
- Need intervention:
  - Local relief
  - Antiviral (Acyclovir, Famvir, Valacyclovir)
  - Pain medication
Suicide Disease

Trigeminal Neuralgia

Characteristics:
- Paroxysmal pain
- Trigger points
- Unilateral
- No discernable sensory deficit
- Pain in trigeminal nerve distribution
- No obvious other source or pathology
- Older, females
Trigeminal Neuralgia

Nerve Distribution

- http://ocw.tufts.edu/Content/41/lecturenotes/530729/530764
- www.searchhomeredemy.com
Trigeminal Neuralgia

- **5th cranial nerve**
- >50; women more than men; 12 cases per 100,000/year
- **Cause**: ? blood vessel or nerve impingement, trauma, injury; MS; other
- **Pain triggers** (touch, talk, eat, drink, wash)
- **Type TN1 “classic”** – extreme, sporadic, burning, shock-like
- **Type TN2** – often constant aching, burning, stabbing pain…lower intensity
  - Two types of TN may occur together
  - Physically and mentally incapacitating
Early Intervention

Trigeminal Neuralgia

- Diagnosis by clinical presentation; MRI
- Trial of improvement for TN1 - anticonvulsants - carbamazepine; (oxycarbazepine; topiramate; gabapentin, pregablin, others)...start low
- TN2, more complex …may respond to opioids; tricyclic antidepressants
- TN may become medication resistant
- Other options with care “rhizolysis”
  - radiofrequency ablation;
  - stereotactic radiosurgery;
  - microvascular decompression;
  - surgical resection for TNI
In Summary…

- Neuropathic pain is **common** in primary care and often unrecognized.
- Diagnosis is based on characteristics, symptoms.
- Neurogenic pain is complex, poorly understood and a source of suffering.
- Accurate assessment is critical to diagnosis and early treatment.
- Poorly controlled pain often exacerbates other co-morbidities.
Summary

- Less than half achieve success with any single drug
- Tolerable pain and preservation of emotional/physical functioning is critical
- Consider specialist if pain persists or remains poorly controlled
- Successful treatment requires a functional team, careful documentation, consistent sign-offs, teaching

More Information:
- Attached reference list