Pain management

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Pain management

**Subjects:**
- Pain definition, score and its types
- Pathophysiology of pain
- Gate control theory
- Pharmacological treatment of pain - Opioids - non-opioids - adjuvants
- Choice of drugs in treatment of acute and chronic pain
Learning objective for the first part:

- Defined the pain terminology
- Know deferent pain classification
- Understand the pathophysiology of pain
- Ability to determine pain score for different cases
Pain definition

- According to The International Association for the Study of Pain

- **Pain**: an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.
Pain classifications

- **Chronic vs. acute**: according to duration and participation of nociception, psychological and behavioral factors.

- Pain may also be classified according to pathophysiology (e.g., nociceptive or neuropathic pain), etiology (e.g., arthritis or cancer pain), or the affected area (e.g., headache or low back pain).
Acute pain

- Acute pain is caused by noxious stimulation due to injury, a disease process, or the abnormal function of muscle or viscera.
- It is almost always nociceptive.
- This type of pain is typically associated with a systemic neuroendocrine stress response that is proportional to the pain’s intensity.
- Myocardial infarction, pancreatitis, post-traumatic, postoperative.
- Unrelieved or healed could progress to chronic pain.
Chronic pain persists **beyond the usual course** of an acute disease or after a reasonable time for healing to occur, typically 1 to 6 months.

Patients with chronic pain often have attenuated or absent neuroendocrine stress responses and have prominent sleep and affective (mood) disturbances.

Diabetic neuropathy, spinal cord injury, rheumatoid arthritis are examples of chronic pain.
Pathophysiology of the pain

- Pain classified according to pathophysiology:
  1) nociceptive
  2) neuropathic pain
Nociceptive

- noci (Latin for harm or injury)
- Nociceptive pain is experienced when intact functioning nervous system detects of noxious stimuli by pain receptors (nociceptors).

  This involves the activation of these receptors by external stimuli (mechanical, thermal or chemical). Eg, bone fractures, burns, MI

- These receptors are found in both somatic and visceral structures.
Two types of acute (nociceptive) pain—somatic and visceral—are differentiated based on origin and features.

1. **Somatic pain**: classified as superficial (skin) or deep (muscle, tendon, joint, bone). It is characteristically well-localized and described as a sharp, pricking, throbbing, or burning sensation.

2. **Visceral pain**: due to a disease process or abnormal function involving an internal organ or its covering.
Neuropathic

- Primary lesion dysfunction of the nervous system.

- With neuropathic pain, the nerve fibers themselves might be damaged, dysfunctional or injured, and these damaged nerve fibers send incorrect signals to other pain centers. e.g., systemic sclerosis, spinal cord injury, pain after stroke, Phantom limb pain

- Pathogenesis of neuropathic pain:
  1. Peripheral mechanism
  2. Central mechanism
Some pictures of modulation

- **Hyperalgesia**: is increased painful response to noxious stimulus at a normal threshold, as occurs in patients with neuropathy.

- **Allodynia**: is pain due to a nonnoxious stimulus e.g., sunburn, inflammation, or trauma.

- **Hypoalgesia**: is decreased sensitivity to noxious stimuli, as occurs in feeling scared.
Pain score

- measures a patient's pain intensity.

- Pain measurements help determine the severity, type, and duration of the pain, and are used to make an accurate diagnosis, determine a treatment plan, and evaluate the effectiveness of treatment.

- Pain assessments are often regarded as "the 5th Vital Sign".
## COMPARATIVE PAIN SCALE CHART (Pain Assessment Tool)

<table>
<thead>
<tr>
<th>Pain Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Pain Free</td>
</tr>
<tr>
<td>1</td>
<td>Very Mild</td>
</tr>
<tr>
<td>2</td>
<td>Discomforting</td>
</tr>
<tr>
<td>3</td>
<td>Tolerable</td>
</tr>
<tr>
<td>4</td>
<td>Distressing</td>
</tr>
<tr>
<td>5</td>
<td>Very Distressing</td>
</tr>
<tr>
<td>6</td>
<td>Intense</td>
</tr>
<tr>
<td>7</td>
<td>Very Intense</td>
</tr>
<tr>
<td>8</td>
<td>Utterly Horrible</td>
</tr>
<tr>
<td>9</td>
<td>Excruciating Unbearable</td>
</tr>
<tr>
<td>10</td>
<td>Unimaginable Unspeakable</td>
</tr>
</tbody>
</table>

### No Pain
- Feeling perfectly normal
- Nagging, annoying, but doesn't interfere with most daily living activities. Patient able to adapt to pain psychologically and with medication or devices such as cushions.

### Minor Pain
- Interferes significantly with daily living activities. Requires lifestyle changes but patient remains independent. Patient unable to adapt pain.

### Moderate Pain
- Disabling; unable to perform daily living activities. Unable to engage in normal activities. Patient is disabled and unable to function independently.
References:
- Morgan & Mikhail's Clinical Anesthesiology
- Up to date
- The International Association for the Study of Pain
- American Academy of Pain Medicine