



Pain Mechanisms

Post-Assessment

Questions:

1. Which of the following are accurate statements about ways to reduce pain?
 - a. Eliminate chemicals from the site of peripheral tissue injury.
 - b. Activate the descending pain inhibitory mechanisms.
 - c. Use massage to stimulate the small sensory afferent fibers and thereby inhibit the large afferent fibers transmitting messages about nociception.
 - d. All of the above statements are accurate.
 - e. a and b are accurate statements.

2. Malignant tumor growth can occur in somatic, visceral, neural tissue or all three types of tissue. Which of the following are accurate statements about the type of tissue involved by a tumor?
 - a. Somatic tissue involvement results in referred pain syndromes that can be identified by using a body outline to locate the pain.
 - b. Neural tissue involvement produces a type of pain that is not responsive to even large doses of opioid drugs.
 - c. Visceral tissue involvement results in pain being reported in well-localized areas.
 - d. NSAIDs often are effective in management of somatic tissue involvement, such as bone metastases.

3. It is well known that many chemicals (peripheral soup ingredients) can cause pain fibers to be activated or sensitized. Blocking synthesis or release of those chemicals can improve pain relief. Which of the following are accurate statements about blocking peripheral soup ingredients?
 - a. Zostrix (capsaicin) helps to eliminate substance P.
 - b. Pharmacological or psychological calming strategies may help to eliminate norepinephrine release from the sympathetic nervous system.
 - c. Steroids and NSAIDs inhibit synthesis of prostaglandins, which are potent sensitizers of the primary afferent nociceptor.
 - d. All of the above statements are accurate.
 - e. None of the above statements are accurate.

4. Descending pain modulation mechanisms are important to pain relief. Which of the following are accurate statements about descending pain inhibition?
 - a. Tricyclic antidepressants can improve depression in the person with cancer pain but probably have little effect on the transmission of nociceptive stimuli.
 - b. Placebos are believed to activate the descending pain inhibitory system through the endogenous opioid systems.
 - c. Intrathecally administered morphine provides pain relief by binding to opioid receptors in the spinal cord, in much the same way as endogenous opioids relieve pain.
 - d. a and b are accurate statements.
 - e. b and c are accurate statements.

5. Optimal pain control in persons with cancer often requires multiple modalities that provide analgesia via different mechanisms. Which of the following combinations of therapies provide analgesia via different mechanisms?
 - a. Massage and TENS
 - b. Massage, NSAID, tricyclic antidepressant, opioid, hypnosis
 - c. Systemic and spinal opioids
 - d. Two different opioids

Answers:

1. Which of the following are accurate statements about ways to reduce pain?

Answer: e) a and b are accurate statements.

c) is incorrect because massage is non-noxious and stimulates large fibers, not small fibers which are those that transmit pain sensation.

2. Malignant tumor growth can occur in somatic, visceral, neural tissue or all three types of tissue. Which of the following are accurate statements about the type of tissue involved by a tumor?

Answer: d) NSAIDs often are effective in management of somatic tissue involvement, such as bone metastases.

a) is incorrect because visceral not somatic tissue injury is referred from the site of injury to another area

b) is incorrect because larger than usual doses of opioids can relieve neuropathic pain, e.g. 25 mg IV morphine relieved post-herpetic pain in elderly males.¹

c) is incorrect because visceral tissue is not well localized, it often spreads in a diffuse area

3. It is well known that many chemicals (peripheral soup ingredients) can cause pain fibers to be activated or sensitized. Blocking synthesis or release of those chemicals can improve pain relief. Which of the following are accurate statements about blocking peripheral soup ingredients?

Answer: d) All of the above statements are accurate.

4. Descending pain modulation mechanisms are important to pain relief. Which of the following are accurate statements about descending pain inhibition?

Answer: e) b and c are accurate statements

a) is incorrect because tricyclic antidepressants have been shown to relieve pain even in people without depression. These drugs inhibit reuptake of serotonin and norepinephrine in the central nervous system and allow them to inhibit the transmission of nociceptive stimuli.

5. Optimal pain control in persons with cancer often requires multiple modalities that provide analgesia via different mechanisms. Which of the following combinations of therapies provide analgesia via different mechanisms?

Answer: b) Massage, NSAID, tricyclic antidepressant, opioid, hypnosis

a) is incorrect because massage and TENS both are believed to control pain by activation of the large fiber inhibitory systems; they provide analgesia via similar mechanisms

c) is incorrect because systemic and spinal opioids both control pain by binding to opioid receptors, a similar not different mechanism. The locations of binding may differ but item b) lists therapies that control pain via different mechanisms and is the best answer to this question.

d) is incorrect because two different opioids also provide pain control by binding to opioid receptors, a similar not different mechanism. The type of opioid receptor may differ but item b) lists therapies that control pain via different mechanisms and is the best answer to this question. There is limited evidence to suggest that two different opioid drugs are more effective than increased doses of one opioid. Current recommendations are to use one opioid, increasing the dose to obtain the desired level of analgesia rather than to use two different opioids in smaller doses. The latter is common practice, especially when providers are uncomfortable with increasing doses of opioids. Fewer calculation problems arise when using the one opioid rather than converting two different opioids to a common unit for dose escalation.

Reference

1. Rowbotham, M. C., Reisner-Keller, L. A., & Fields, H. L. (1991). Both intravenous lidocaine and morphine reduce the pain of postherpetic neuralgia. *Neurology*, 41(7), 1024-1028.