

# Visceral sensation & Referred pain

1. Which substance enhances the sensitivity of pain receptors but does not directly excite them?

- A) Bradykinin
- B) Serotonin
- C) Potassium ions
- D) Prostaglandins

Answer: D

2. Interneurons that utilize the neurotransmitter enkephalin to inhibit afferent pain signals are most likely to be found in which region of the central nervous system?

- A) Dorsal horn of spinal cord
- B) Postcentral gyrus
- C) Precentral gyrus
- D)  $\delta$ -type A
- E) Type C fiber
- F) Ventral horn of spinal cord

Answer: A

3. Neurons located in which area release serotonin as their neurotransmitter?

- A) Periaqueductal gray area
- B) Interneurons of the spinal cord
- C) Periventricular area
- D) Nucleus raphe magnus

Answer: D

4. A 10-year-old boy cuts his finger with a pocketknife and immediately applies pressure to the damaged area with his other hand to partially alleviate the pain. Inhibition of pain signals by tactile stimulation of the skin is mediated by which type of afferent neurons from mechanoreceptors?

- A)  $\alpha$ -type A
- B)  $\beta$ -type A
- C)  $\delta$ -type A
- D) Type C

Answer: B



5. Which of the following is a group of neurons in the pain suppression pathway that uses enkephalin as a neurotransmitter?

- A) Postcentral gyrus
- B) Nucleus raphe magnus
- C) Periaqueductal gray area
- D) Type AB sensory fibers

Answer: C

6. Which of the following is the basis for referred pain?

- A) Visceral pain signals and pain signals from the skin synapse with separate populations of neurons in the dorsal horn
- B) Visceral pain transmission and pain transmission from the skin are received by a common set of neurons in the thalamus
- C) Visceral pain signals are rarely of sufficient magnitude to exceed the threshold of activation of dorsal horn neurons
- D) Some visceral pain signals and pain signals from the skin provide convergent input to a common set of neurons in the dorsal horn

Answer: D

7. Which statement concerning visceral pain signals is correct?

- A) They are transmitted along sensory fibers that course mainly with sympathetic nerves in the abdomen and thorax
- B) They are not stimulated by ischemia in visceral organs
- C) They are transmitted only by the lightly myelinated  $\delta$ -type A sensory fibers
- D) They are typically well localized

Answer: A

8. Pain from the stomach is referred to which area of the body?

- A) Upper right shoulder area
- B) Abdominal area above the umbilicus
- C) Proximal area of the anterior and inner thigh
- D) Abdominal area below the umbilicus

Answer: B

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