This month’s stumper

A 56-year-old woman comes to the physician because of a two-year history of a burning sensation in her legs. She has occasional sharp, lancinating pains that shoot up her legs, for which hydrocodone and acetaminophen provide some relief. She has had no weakness, headaches, confusion or memory loss.

She has a 22-year history of hypertension, chronic kidney disease and type 2 diabetes mellitus with retinopathy and diabetic gastroparesis. Current medications include insulin, metformin, lisinopril, and hydrochlorothiazide. She had a myocardial infarction four years ago. Serum creatinine is 2.8 mg/dL and hemoglobin A1c level is 11.6%.

Which of the following is the most appropriate pharmacotherapy for this patient's leg pain?

A. Acetaminophen.
B. Ketorolac.
C. Lorazepam.
D. Pioglitazone.
E. Pregabalin.

The correct answer is E.

Kaplan Medical explains why

This patient's chronic pain is caused by peripheral neuropathy, a complication of diabetes. Peripheral neuropathy is characterized by numbness, burning, and tingling in the extremities. Poor glucose control increases the risk for complications from diabetes, such as peripheral neuropathy, retinopathy and chronic kidney failure. Chronic neuropathic pain can be difficult to treat. A variety of mechanisms
contribute to neuropathic pain.

As with sensitized primary afferent nociceptors, damaged primary afferents, including nociceptors, become highly sensitive to mechanical stimulation and begin to generate impulses in the absence of stimulation or ongoing tissue damage. There is evidence that this increased sensitivity and spontaneous activity caused by an increased concentration of sodium channels.

Many agents are used in the treatment of peripheral neuropathy. First-line agents include tricyclic antidepressants, duloxetine, pregabalin and controlled-release oxycodone. Other medications that have been shown to be effective include carbamazepine, gabapentin, lamotrigine and tramadol.

Why the other answers are wrong

**Choice A:** Acetaminophen can be used as an adjunct medication but is unlikely to control this patient's chronic pain.

**Choice B:** Ketorolac is a nonsteroidal anti-inflammatory drug (NSAID) that can be given orally or intravenously. NSAIDs are contraindicated, however, with chronic kidney disease.

**Choice C:** Lorazepam is a benzodiazepine that acts on GABA-ergic neurons. It is used in the treatment of seizures and in the short-term treatment of anxiety. Benzodiazepines are not used to treat neuropathic pain.

**Choice D:** Pioglitazone is used in the treatment of type 2 diabetes mellitus. It is a partial agonist of the peroxisome proliferator-activated receptor-gamma. Although treatment with pioglitazone may improve this patient's glucose control, it will not treat her pain.

**Tips to remember**

- Peripheral neuropathy is caused by microvascular damage in those with poorly controlled diabetes mellitus.
- It presents with numbness, paresthesia, pain, absent reflexes or loss of vibratory sense.
- First-line agents include tricyclic antidepressants, duloxetine, pregabalin and controlled-release oxycodone.
- Other medications include carbamazepine, gabapentin, lamotrigine and tramadol.

For more prep questions on USMLE Steps 1, 2 and 3, view other posts in this series.

URL: https://www.ama-assn.org/residents-students/usmle/kaplan-usmle-step-2-prep-how-treat-burning-sensation-legs

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