

# test questions PharmaCE™

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See page 433.

## SODIUM OXYBATE FOR CATAPLEXY

### Goal

To evaluate the published literature concerning the use of sodium oxybate in reducing the number of cataplexy attacks associated with narcolepsy while understanding limitations of the drug's use as it relates to its unique history of misuse/abuse, adverse events, and closed distribution system.

### Objectives

After reviewing this article, the reader should be able to:

1. explain the pharmacology of sodium oxybate as it relates to the treatment of cataplexy;
2. list the most common treatments for cataplexy;
3. describe the pharmacokinetics/pharmacodynamics of sodium oxybate and recognize the implications as related to dosing and patient counseling;
4. discuss the conclusions from short- and long-term studies with sodium oxybate;
5. understand the Xyrem Success Program used by physicians and patients with a centralized pharmacy;
6. list the potential adverse effects, precautions, warnings, and contraindications of sodium oxybate.

### Test Questions

#### 1. All of the following may be symptoms of narcolepsy *except*:

- (a) excess hypocretin.
- (b) sleep paralysis.
- (c) hypnagogic hallucinations.
- (d) EDS.
- (e) cataplexy.

#### 2. A 39-year-old male is diagnosed with cataplexy. Which of the following medications is *not* utilized for the treatment of cataplexy?

- (a) clomipramine
- (b) fluoxetine
- (c) modafinil
- (d) sodium oxybate
- (e) protriptyline

#### 3. Which of the following statements concerning the mechanism of action of sodium oxybate for the treatment of cataplexy is *true*?

- (a) Endogenous effects of GHB are well defined.
- (b) Exogenous administration of GHB decreases dopamine levels and decreases serotonin turnover.
- (c) Sodium oxybate increases hypocretin levels in patients with narcolepsy.
- (d) It is unknown whether sodium oxybate increases hypocretin levels.
- (e) Both a and c are correct.

#### 4. A 32-year-old male has taken a large amount of GHB in an apparent suicide attempt. The patient is experiencing persistent bradycardia. Which of the following antidotes may help with GHB-induced bradycardia?

- (a) flumazenil
- (b) naloxone
- (c) atropine

- (d) activated charcoal
- (e) magnesium sulfate

#### 5. The serum half-life of sodium oxybate is:

- (a) 0.25–0.5 hour.
- (b) 0.5–1 hour.
- (c) 1–2 hours.
- (d) 2–4.5 hours.
- (e) 4.5 hours.

#### 6. A 41-year-old male was started on sodium oxybate 4.5 g given in divided doses nightly one week ago for the treatment of cataplexy. The patient does not feel this dose is working and would like the dose increased. Based on the approved product information of sodium oxybate, which of the following would be the *best* suggestion?

- (a) Increase the dose by 1 g every week.
- (b) Increase the dose by 1.5 g every day.
- (c) Increase the dose by 1.5 g every 2 weeks.
- (d) Increase the dose by 2.5 g every week.
- (e) Increase the dose by 2.5 g every 2 weeks.

#### 7. When reviewing the studies with sodium oxybate, a confounding factor in the majority of patients is that they were receiving concomitant:

- (a) SSRIs.
- (b) TCAs.
- (c) narcotics.
- (d) stimulants.
- (e) benzodiazepines.

#### 8. Which of the following secondary objectives from the studies with sodium oxybate failed to produce significant improvement?

- (a) ESS
- (b) CGI-C
- (c) hypnagogic hallucinations
- (d) sleep paralysis
- (e) Both c and d are correct.

#### 9. Which of the following statements concerning clinical trials with sodium oxybate is *true*?

- (a) Efficacy with 4.5 g was demonstrated in one short-term trial.
- (b) The most significant improvement in cataplexy symptoms occurred less than one week after starting therapy.
- (c) Weekly dose titration significantly increased the incidence of adverse events.
- (d) Patients were allowed to continue other cataplexy medications during the trials.
- (e) Upon abrupt discontinuation of sodium oxybate, the number of cataplexy attacks increased significantly compared with baseline attacks.

#### 10. The most commonly reported adverse effect with sodium oxybate is:

- (a) euphoria.
- (b) headache.
- (c) sexual arousal.
- (d) vomiting.
- (e) diarrhea.

11. Which of the following may decrease sodium oxybate concentrations by 50%?

- (a) CYP450 interaction with zolpidem
- (b) CYP450 interaction with modafinil
- (c) CYP450 interaction with protriptyline
- (d) taking sodium oxybate on an empty stomach
- (e) taking sodium oxybate following a high-fat meal

12. Based on sodium oxybate's mechanism of action and pharmacodynamic profile, which of the following agents may potentially interact with sodium oxybate?

- (a) fluoxetine
- (b) alcohol
- (c) modafinil
- (d) clomipramine
- (e) protriptyline

13. A 52-year-old male presents with cataplexy associated with narcolepsy that has failed to improve with imipramine and fluoxetine. His current diagnoses include type 2 diabetes, liver disease, renal insufficiency, and hypertension. Which of the following statements concerning dosing of sodium oxybate in special populations is *false*?

- (a) Reduce the initial dose by half due to liver insufficiency.
- (b) Monitor sodium intake with hypertension.
- (c) Monitor sodium intake with renal insufficiency.
- (d) Reduce the initial dose by half due to renal insufficiency.
- (e) The dosage does not need to be adjusted based on gender.

14. A 39-year-old male with poorly controlled hypertension and narcolepsy with cataplexy is to be started on sodium oxybate. His latest blood pressure readings range from 140/90 to 145/95 mm Hg. What would your recommendation be regarding the effect of sodium oxybate on this patient's blood pressure?

- (a) Sodium oxybate contains 1.6 g of sodium per 9 g dose and may increase his blood pressure.
- (b) The patient should be cautioned about postural hypotension when starting sodium oxybate.
- (c) Sodium oxybate is contraindicated in patients with hypertension.
- (d) Sodium oxybate contains 0.5 g of sodium per 9 g dose and would have a minimal effect on blood pressure.
- (e) Both a and c are correct.

15. A 40-year-old female is to be started on sodium oxybate for the treatment of cataplexy. The provider has contacted the pharmacist with questions about the Xyrem Success Program. Which of the following statements regarding the program is *true*?

- (a) Providers do not have to register with the program prior to writing a prescription for sodium oxybate.

- (b) Patients may obtain sodium oxybate from any pharmacy of their choice.
- (c) Patients do not have to register with the program.
- (d) Specialized forms are required for writing prescriptions for sodium oxybate.
- (e) Both a and c are correct.

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See page 479.

### HEPATITIS C IN HIV-POSITIVE PATIENTS

#### Goal

To present the prevalence, natural history, and treatment of HCV infection in patients coinfecting with HIV, review the hepatotoxicity associated with antiretroviral therapy and safety of anti-HCV therapy in coinfecting patients, and provide a summary of treatment guidelines and unique treatment-related issues that will aid in the optimal management of coinfecting patients.

#### Objectives

After reviewing this article, the reader should be able to:

1. identify from a list the factors that increase the risk of antiretroviral-associated hepatotoxicity;
2. given a case study, select from a list the most appropriate management of antiretroviral-associated hepatotoxicity;
3. given a case study, identify from a list the factors/conditions that would prevent treatment of HCV infection;
4. given a case study, identify from a list the antiretroviral drugs that may interact with anti-HCV therapy;
5. given a case study, identify early virologic response with PEG-IFN and ribavirin therapy and recommend appropriate treatment duration.

#### Test Questions

1. In the US and Europe, the prevalence of HCV in HIV-infected persons is approximately:

- (a) 0–5%.
- (b) 15–30%.
- (c) 50–60%.
- (d) 70–85%.
- (e) 90–100%.

2. Which of the following statements regarding the HCV disease course in coinfecting persons (compared with HCV-monoinfected persons) is *false*?

- (a) The risk of severe liver disease is higher.
- (b) The rate of progression of liver fibrosis is faster.
- (c) HCV RNA viral levels tend to be lower.
- (d) Coinfecting persons are less likely to clear HCV RNA from the blood following acute HCV infection.
- (e) None of the above is false.

3. Which of the following is *not* an important predictor of drug-associated hepatotoxicity in patients initiated on antiretroviral therapy?

- (a) coinfection with HCV
- (b) coinfection with HBV
- (c) alcohol use
- (d) younger age
- (e) higher baseline aminotransferase levels

4. Which of the following protease inhibitors has been shown to be an independent risk factor for the development of antiretroviral-related hepatotoxicity in cohort studies?

- (a) indinavir
- (b) ritonavir
- (c) nelfinavir
- (d) amprenavir
- (e) saquinavir

5. Which of the following statements regarding nevirapine and risk of asymptomatic liver enzyme elevations is *false*?

- (a) The risk is approximately 10%.
- (b) The risk is most common after 6 months of therapy.
- (c) Coinfection with HBV increases the risk.
- (d) Coinfection with HCV increases the risk.
- (e) Elevated baseline aminotransferase levels increase the risk.

6. Which of the following NRTIs has the greatest potential for mitochondrial toxicity?

- (a) didanosine
- (b) abacavir
- (c) tenofovir
- (d) lamivudine
- (e) zidovudine

Questions 7 and 8 refer to the following case:

A 43-year-old man who is coinfecting with HCV and HIV is initiated on antiretroviral therapy with zidovudine, lamivudine, and lopinavir/ritonavir (baseline CD4+ cell count 20 cells/ $\mu$ L). Prior to initiating therapy, his aminotransferase levels were within the normal range. After 2 months of treatment, the ALT level increased to 2 times the upper limit of normal. The patient had no other signs or symptoms of liver injury. He stated that he has been drinking more alcohol recently (~4–5 beers/day). Other laboratory investigations revealed that he is hepatitis B surface antigen negative, hepatitis C surface antibody positive, and hepatitis A antigen antibody positive.

7. Which of the following is *least* likely to have contributed to the elevated aminotransferase levels?

- (a) immune reconstitution syndrome
- (b) alcohol use
- (c) antiretroviral therapy
- (d) HCV infection
- (e) HBV infection

8. With respect to the patient's antiretroviral drugs, what would be the most appropriate course of action?

- (a) Discontinue antiretroviral drugs; do not restart due to the high risk of severe liver disease.
- (b) Withhold antiretroviral drugs until the aminotransferase levels return to baseline.
- (c) Switch the antiretroviral drug regimen to one less hepatotoxic (eg, zidovudine, lamivudine, efavirenz).
- (d) Continue antiretroviral drugs and closely monitor aminotransferase levels.
- (e) Discontinue antiretroviral drugs and treat the HCV infection (eg, PEG-IFN, ribavirin).

**9. SVR refers to which of the following?**

- (a) undetectable HCV RNA at the end of treatment
- (b) a greater than 2 log decrease in HCV RNA at the end of treatment
- (c) undetectable HCV RNA 24 weeks after completion of treatment
- (d) a greater than 2 log decrease in HCV RNA after 12 weeks of treatment
- (e) undetectable HCV RNA 48 weeks after the completion of treatment

**10. Which of the following factors is associated with a lower SVR in coinfecting patients treated with PEG-IFN and ribavirin?**

- (a) HCV genotype 1
- (b) HCV genotype 2
- (c) lower baseline HCV RNA
- (d) HCV genotype 3
- (e) lower baseline HIV RNA

**Questions 11–14 refer to the following case:**

A 46-year-old woman with a history of injection drug use (cessation 7 y ago) was found to be coinfecting with HIV and HCV. She has no other medical conditions and

does not take any medications. Relevant laboratory data are as follows (reference ranges in parentheses):

AST 110 IU/L (8–42)  
 ALT 130 IU/L (3–30)  
 hemoglobin 12 g/dL (12–16)  
 white blood cell count  $5.3 \times 10^3/\mu\text{L}$  (4.5–11)  
 HCV RNA  $1 \times 10^6$  IU/mL  
 HCV genotype 3  
 CD4+ cell count 180 cells/mm<sup>3</sup>  
 Viral load (HIV RNA) 250 000 copies/mL

**11. The patient would not be a good candidate for treatment with PEG-IFN and ribavirin due to which of the following?**

- (a) low CD4+ cell count
- (b) history of injection drug use
- (c) HCV genotype
- (d) Both a and b are correct.
- (e) Both a and c are correct.

**12. The physician would like to start the patient on antiretroviral therapy and wonders whether there are any interactions between antiretroviral drugs and anti-HCV therapy. Which of the following would you advise him to avoid due to an interaction with anti-HCV therapy?**

- (a) nelfinavir
- (b) delavirdine
- (c) didanosine
- (d) Both a and b are correct.
- (e) Both a and c are correct.

The patient is initiated on antiretroviral therapy with tenofovir, lamivudine, and efavirenz. One year later, her CD4+ cell count is 340 cells/mm<sup>3</sup> and her HIV viral load is less than 50 copies/mL. The physician decides to start treatment with PEG-IFN 180 µg/wk and ribavirin 800 mg/day.

**13. After 6 weeks of treatment, the patient's hemoglobin falls to 9 g/dL. Which of the following would you recommend?**

- (a) Reduce the dose of PEG-IFN.
- (b) Discontinue PEG-IFN.
- (c) Start epoietin alfa.
- (d) Start granulocyte colony-stimulating factor.
- (e) Discontinue the antiretroviral drugs.

**14. After 12 weeks of PEG-IFN and ribavirin therapy, the patient's repeat HCV RNA is 5000 IU/mL. What would be the most appropriate course of action?**

- (a) Discontinue PEG-IFN and ribavirin due to poor response.
- (b) Increase the dose of ribavirin and repeat HCV RNA in 12 weeks.
- (c) Discontinue antiretroviral drugs, which may be affecting HCV RNA results.
- (d) Continue PEG-IFN and ribavirin for at least 6 months.
- (e) Continue PEG-IFN and ribavirin for at least 18 months.

**15. A 52-year-old HCV-HIV coinfecting man (HCV genotype 1) is started on treatment with PEG-IFN-α2a and ribavirin. Which of the following is the FDA-approved daily dose of ribavirin for this patient?**

- (a) 600 mg
- (b) 800 mg
- (c) 1000 mg
- (d) 1200 mg
- (e) 1400 mg