

GI Pharmacology Case-Based MCQs

Question 1

A 45-year-old man presents with recurrent epigastric burning pain that becomes worse between meals and at night. Endoscopy reveals a duodenal ulcer. The physician explains that acid secretion in the stomach is mainly stimulated by three mediators. Which of the following combinations correctly represents these stimulants?

- A. Histamine, gastrin, and acetylcholine
- B. Somatostatin, secretin, and dopamine
- C. Pepsin, bicarbonate, and prostaglandins
- D. Serotonin, insulin, and glucagon
- E. Nitric oxide, VIP, and prostacyclin

Answer: A

Question 2

A patient with chronic dyspepsia is prescribed an antacid containing magnesium hydroxide. After several days, he develops loose stools. Which of the following best explains this adverse effect?

- A. Magnesium suppresses intestinal motility
- B. Magnesium causes osmotic water retention in the bowel
- C. Magnesium increases gastric ulcer perforation
- D. Magnesium blocks prostaglandin synthesis
- E. Magnesium decreases pancreatic secretion

Answer: B

Question 3

A 60-year-old ICU patient receives intravenous cimetidine for stress-related gastritis. Two days later, he becomes confused and begins experiencing hallucinations. Which statement regarding this adverse effect is MOST accurate?

- A. It commonly occurs with famotidine therapy
- B. It occurs mainly with oral ranitidine
- C. It is associated primarily with IV cimetidine in elderly ICU patients
- D. It is caused by increased prostaglandin production
- E. It results from calcium carbonate toxicity

Answer: C

Question 4

A patient with GERD is started on omeprazole. The physician instructs him to take the medication one hour before meals. What is the main reason for this recommendation?

- A. Food destroys the drug completely
- B. Meal stimulation activates proton pumps for irreversible inhibition
- C. It prevents diarrhea associated with PPIs
- D. It decreases protein binding of the drug
- E. It reduces renal elimination

Answer: B

Question 5

A 52-year-old woman has been taking NSAIDs daily for rheumatoid arthritis and develops a gastric ulcer. Which treatment is MOST effective in promoting healing despite continued NSAID use?

- A. Aluminum hydroxide alone
- B. Cimetidine
- C. Sucralfate only
- D. Proton pump inhibitors
- E. Sodium bicarbonate

Answer: D

Question 6

A patient with peptic ulcer disease develops black tarry stools and hematemesis. Which complication is MOST likely occurring?

- A. Intestinal obstruction
- B. Gastrointestinal bleeding
- C. Acute pancreatitis
- D. Appendicitis
- E. Hepatic failure

Answer: B

Question 7

A physician prescribes a combination antacid containing both magnesium hydroxide and aluminum hydroxide. Why are these two agents commonly combined together?

- A. To increase gastric acid secretion
- B. To improve intestinal absorption of antibiotics
- C. To eliminate both diarrhea and constipation effects
- D. To stimulate histamine release
- E. To shorten duration of action

Answer: C

Question 8

A patient with Zollinger–Ellison syndrome has severe recurrent peptic ulcers due to excessive gastrin secretion. Which drug class would provide the MOST potent suppression of acid secretion?

- A. Antacids
- B. H₂-receptor antagonists
- C. Muscarinic agonists
- D. Proton pump inhibitors
- E. Prokinetic drugs

Answer: D

Question 9

A patient taking omeprazole for several months develops decreased vitamin B₁₂ absorption. Which mechanism BEST explains this effect?

- A. Increased renal excretion of vitamin B₁₂
- B. Enhanced hepatic metabolism of vitamin B₁₂
- C. Reduced gastric acidity interfering with absorption
- D. Excessive intestinal bleeding
- E. Increased pancreatic destruction

Answer: C

Question 10

A 48-year-old man takes sodium bicarbonate excessively for heartburn. He complains of frequent belching. Which byproduct is primarily responsible for this symptom?

- A. Nitrogen gas
- B. Oxygen
- C. Sulfur dioxide
- D. Carbon monoxide
- E. Carbon dioxide

Answer: E

Question 11

A patient with H. pylori–associated peptic ulcer disease is started on triple therapy. Which of the following regimens is MOST appropriate?

- A. Omeprazole + Clarithromycin + Amoxicillin
- B. Famotidine + Aspirin + Metronidazole
- C. Aluminum hydroxide + Ranitidine + Ibuprofen
- D. Omeprazole + Acetaminophen + Sucralfate
- E. Pantoprazole + Diclofenac + Calcium carbonate

Answer: A

Question 12

A patient receiving cimetidine develops elevated serum prolactin levels and gynecomastia. Which statement is TRUE regarding this effect?

- A. It commonly occurs with pantoprazole
- B. It is unique mainly to cimetidine among H2 blockers
- C. It is caused by magnesium toxicity
- D. It occurs because of prostaglandin deficiency
- E. It is due to increased pepsin secretion

Answer: B

Question 13

A patient with severe GERD asks why proton pump inhibitors are considered superior to H2 blockers. Which statement BEST explains this?

- A. PPIs inhibit only histamine-mediated secretion
- B. PPIs work only during fasting conditions
- C. PPIs block the final common pathway of acid secretion
- D. PPIs stimulate bicarbonate secretion directly
- E. PPIs increase gastrin release to neutralize acid

Answer: C

Question 14

A patient with renal insufficiency asks for an over-the-counter antacid. Which medication should be avoided?

- A. Magnesium-aluminum combination antacids
- B. Omeprazole
- C. Clarithromycin
- D. Sucralfate
- E. Amoxicillin

Answer: A

Question 15

A patient taking omeprazole also uses diazepam chronically. The physician monitors him closely because omeprazole may:

- A. Increase metabolism of diazepam
- B. Inhibit metabolism of diazepam
- C. Cause severe renal toxicity immediately
- D. Prevent diazepam absorption completely
- E. Convert diazepam into an inactive metabolite

Answer: B