USMLE-STEP-1 Q&As

United States Medical Licensing Step 1

Pass USMLE USMLE-STEP-1 Exam with 100% Guarantee

Free Download Real Questions & Answers **PDF** and **VCE** file from:

https://www.geekcert.com/usmle-step-1.html

100% Passing Guarantee
100% Money Back Assurance

Following Questions and Answers are all new published by USMLE Official Exam Center

- **Instant Download** After Purchase
- **100% Money Back** Guarantee
- **365 Days** Free Update
- **800,000+** Satisfied Customers

QUESTION 1

Endothelial cells respond to certain stimuli by inducing the conversion of arginine to citrulline leading to the activation of a signaling cascade that involves which of the following?

A. adenylate cyclase

B. guanylate cyclase

C. phosphatidylinositol-3-phosphate kinase (PI3K)

D. PLC-gamma

E. protein kinase C (PKC)

Correct Answer: B

Section: Biochemistry Certain endothelial cell-stimulating signals, such as vasodilators, induce the production of NO during the conversion of arginine to citrulline via a reaction catalyzed by nitric oxide synthase (NOS). When NO is produced, it passes out of the endothelial cells and enters the underlying smooth muscle cells. Within smooth muscle cells, NO reacts with the heme moiety of a soluble guanylyl cyclase, resulting in activation of the latter and a consequent elevation of intracellular levels of cGMP. The net effect is the activation of cGMP-responsive enzymes, which lead to smooth muscle cell relaxation. None of the signaling enzymes or molecules (choices A, CE) are involved in the NO-mediated signaling cascade.

QUESTION 2

A 75-year-old male presented with a 6-month history of early satiety and with upper abdominal discomfort for many years. Physical examination revealed mild epigastric tenderness. Esophago-gastroduodenoscopy showed a large, ulcerated mass in the upper stomach, which was found to be cancerous. Surgery resulting in the removal of the gastric fundus was performed. After successful surgery, the patient was advised to eat small portions and to drink small volumes because of which of the following?

A. almost complete absence of gastric motility

B. distorted emptying of liquids

C. inadequate mixing of large food boluses

D. lack of receptive relaxation in the stomach

E. weaker and slower propulsion of food toward the pylorus

Correct Answer: D

Section: Physiology The receptive relaxation reflex is a feature of the orad stomach, composed of the fundus and upper stomach body. Without food, the orad stomach shows low frequency, sustained contractions that are responsible for generating a basal pressure within the stomach. When food enters the stomach, a reflex is initiated, which allows gastric accommodation of large increases in volume with only small increases in intragastric pressure. The tonic contractions of the orad stomach also contribute to some extent to gastric emptying (choice B), since they generate a pressure gradient from the stomach to the intestine. However, neural and hormonal components play a more important role in regulating gastric emptying, which makes this not the best choice. Since the lower stomach is not affected by the surgery, characteristic motility patterns of the distal stomach remain (choice A). Features of the distal stomach include strong

peristaltic waves of contractions, which cause the mixing of the chyme with digestive secretions (choice C), the grinding of the particles to a small size, and the propulsion through the gastroduodenal junction (choice E). All these motility patterns would still be a feature of the remaining stomach.

QUESTION 3

A 26-year-old woman complains of the acute onset of anuria, purpura, and mental confusion. Her peripheral blood film displays marked thrombocytopenia and abundant schistocytes. Laboratory studies reveal elevations of bilirubin, creatinine, and lactose dehydrogenase. A skin biopsy shows numerous intravascular thrombi within the dermal microvasculature. What is the most likely diagnosis?

A. acute idiopathic thrombocytopenia purpura

B. BernardSoulier syndrome

C. Glanzmann thrombasthenia

D. MayHegglin anomaly

E. thrombotic thrombocytopenic purpura

Correct Answer: E

Section: Pathology and Path physiology Thrombotic thrombocytopenic purpura is an acute microangiopathic hemolytic anemia. The clinical picture usually includes mental alterations, anuria, mucosal bleeding, and purpura. An abnormal platelet-aggregating substance is the likely initiating event. Acute idiopathic thrombocytopenia (choice A) does not have a hemolytic component, lacks renal failure, and does not display thrombi in the skin biopsy. Bernard-Soulier syndrome (choice B) and Glanzmann thrombasthenia (choice C) are hereditary disorders of platelet aggregation. Clinical symptoms of a coagulopathy usually occur in infancy. MayHegglin anomaly (choice D) is an inherited condition with thrombocytopenia and morphologically abnormal WBCs. Hemolysis, acute onset, and mental aberrations do not typify this disorder.

QUESTION 4

A 22-year-old man complains to his family physician of fatigue, night sweats, and a dry unproductive cough. Until the past few months, he had apparently been in good health. Acomplete blood count (CBC) and differential blood count reveal that he is lymphopenic. X-ray examination reveals an interstitial pneumonia. Skin test reactions to a battery of materials are normal. Which of the following should be the next step in evaluating this patient\\'s illness?

A. CH50 complement assay

B. chemotaxis assay

C. identification of the organism that is causing the pneumonia

D. intracellular killing assay

E. nitroblue tetrazolium reduction assay

Correct Answer: C

Section: Microbiology/Immunology The patient described in the question probably has AIDS. Such individuals will be lymphopenic and have greatly reduced immunity. AIDS victims commonly develop P. carinii pneumonia. The most

important evaluative procedure for the patient described is determining the cause of the pneumonia so the problem can be corrected. Identifying the infecting organism may assist in the overall diagnosis. Choices A, B, D, and E involve innate immunity; either complement activity or phagocytic cell functions, and thus, would not be of much diagnostic assistance.

QUESTION 5

Carbidopa is often used in patients with Parkinson\\'s disease. Which of the following best describes the mechanism of action of carbidopa?

A. activates D2 receptors in the basal ganglia

B. inhibits the metabolism of dopamine in the blood and peripheral tissues

C. inhibits the metabolism of dopamine in the brain

D. inhibits the metabolism of levodopa in peripheral tissues

E. inhibits the metabolism of levodopa in the brain

Correct Answer: D

Section: Pharmacology Carbidopa is a peripheral inhibitor of dopa decarboxylase. Dopa decarboxylase is an enzyme present in large amounts in the GI tract and peripheral tissues, and in smaller amounts in the nerve terminals of dopaminergic neurons in the basal ganglia. It is required for the conversion of DOPA to dopamine in the biosynthesis of dopamine and norepinephrine. However, when the prodrug levodopa is used for parkinsonism, over 90% is metabolized in the periphery by the enzyme to dopamine and inactive products and only about 3% of the administered dose enters the brain. Because dopamine does not cross the blood- brain barrier, dopamine formed outside the brain is of no value in treating parkinsonism. When carbidopa is given with levodopa, less levodopa is metabolized in the gut and other peripheral tissues, so more (about 10%) is available to enter the CNS. Carbidopa does not cross the bloodbrain barrier, so it does not prevent conversion of levodopa to active dopamine in the basal ganglia. Combination therapy thus reduces the peripheral effects of levodopadopamine and allows patients to receive more benefit and less toxicity from a given dose of levodopa. Choices AC and E are incorrect.