USMLE-STEP-3 Q&As

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QUESTION 1

A 64-year-old Hispanic female with type II DM and hypertension for 15 years comes to your office after not seeing a physician for 5 years. The HgbA1C is 9. She reports that her vision has been deteriorating but new glasses from the optometrist have helped.

Which of the following findings during your examination would represent the highest risk for blindness in this patient?

A. microaneurysms

B. neovascularization at the optic nerve

C. arteriovenous nicking

D. cotton wool spots or focal infarcts

E. hard exudates or lipid deposits

Correct Answer: B Section: (none)

Explanation:

Persons with DM are 25 times more likely to become legally blind than persons without diabetes. Blindness is primarily the result of progressive diabetic retinopathy and clinically significant macular edema. The presence of retinal vascular microaneurysms, blot hemorrhages, and cotton wool spots mark the presence of nonproliferative diabetic retinopathy. Increased retinal vascular permeability, alterations in blood flow, and abnormal microvasculature lead to retinal ischemia. In response to the ischemia, new blood vessels may form at the optic nerve and/or macula (neovascularization). This marks the presence of proliferative diabetic retinopathy. These new vessels rupture easily and may lead to vitreous hemorrhage, fibrosis, and retinal detachment.

QUESTION 2

A 53-year-old female has made an appointment to see you concerning the recent onset of menopause. Her last menstrual period was 8 months ago and, over the last year, she had noticed that her periods were becoming lighter and less frequent. In addition, she has developed frequent hot flashes, and her mood has become very labile. She wishes to know what your advice is regarding hormone replacement therapy (HRT). She has heard recent reports in the news concerning an increased risk of developing cardiovascular complications, especially heart attacks and strokes. Although she is in great health, her father died at age 50 of a massive heart attack. Her mother is alive and well, and there is no history of breast cancer among the females in her family. Regarding postmenopausal HRT, which of the following statements would be correct?

A. Known benefits from HRT in postmenopausal women include a reduction in the incidence of osteoporosis and bone fractures (particularly hip fractures).

B. Known benefits from HRT in postmenopausal women include a cardioprotective effect, which reduces the incidence of coronary artery disease (CAD) and myocardial infarction (MI).

C. HRT increases the incidence of endometrial cancer in all patients.

D. Although HRT reduces vasomotor instability and hot flashes after menopause, this effect is short-lived and there is no effect in mood stability.

E. Despite recent press reports, any woman at risk for osteoporosis should take HRT, regardless of cardiovascular risk factors.

Correct Answer: A Section: (none)

Explanation:

Despite recent findings from the Women\\'s Health Initiative (WHI) study, which show that HRT may not be cardioprotective and may increase the risk for cardiovascular events (MI and stroke) in postmenopausal women with a known history of cardiovascular disease, HRT remains an effective way to treat and alleviate vasomotor instability and reduce the risk of osteoporosis and bone fractures (particularly hip fractures). In addition, there is evidence to support that this effect, along with improvement in affect and mood stability, is long lived and persists during the course of therapy. The incidence of endometrial cancer appears to be reduced in those taking HRT. The use of HRT in those with risk factors for cardiovascular disease must be made on an individual case base, with carefully considering the risks versus the potential benefits of the intervention.

The WHI study has demonstrated an added risk for developing cardiovascular events, such as MI and stroke, among those with known coronary disease or populations at high risk for CAD. A significant family history of CAD (father died at early age of an MI) would place this patient in the category of higher risk. Although patients taking HRT are at an increase risk for developing venous thromboembolism, this would not preclude its use unless the patient had a known history of the disease. The incidence of breast cancer in women on HRT remains controversial and, in our patient\\'s case, we are told that there is a negative family history, hence making it less of a concern. Bloating and breast tenderness may develop in patients taking HRT, but its occurrence would not be a reason not to start therapy on our patient.

QUESTION 3

A 25-year-old male presents to his psychiatrist for follow-up after a lengthy psychiatric hospitalization. He was diagnosed with schizophrenia and discharged on risperidone 6 mg daily. He has no known medical problems and is without physical complaints. He continues to have some paranoia and ideas of reference regarding CNN, but he is not overtly delusional. He denies hallucinations as well. Although he feels "depressed" regarding his illness, he denies suicidal or homicidal ideation.

Which of the following should be routinely monitored in this patient?

A. body mass index (BMI)

B. BP

C. complete blood count (CBC)

D. electrocardiogram (ECG)

E. liver function tests (LFTs)

Correct Answer: A Section: (none)

Explanation:

Routine vital signs, ECG, and blood work such as CBC or LFTs are not required for ongoing use of second-generation (atypical) antipsychotics in healthy patients. Due to the risk of weight gain, hyperlipidemia, and diabetes ("metabolic

syndrome"), regular monitoring for these is recommended. Due to variations in height, calculating a BMI is preferred when monitoring for weight gain in these patients. This patient has developed new-onset diabetes, presumably from the risperidone. Although all of the second-generation antipsychotics have Food and Drug Administration (FDA) warnings about causing metabolic syndrome, studies have demonstrated that they have varying rates of causing or exacerbating this: clozapine > olanzapine > quetiapine risperidone > aripiprazole ziprazidone. Therefore, assuming there is no contraindication to using one of the listed agents, aripiprazole would be the most appropriate choice based on its likely minimal risk of causing or exacerbating diabetes.

QUESTION 4

Which of these statements is true in regard to GI hormones?

A. Vagal activation, antral distension, and antral protein are all stimuli for gastrin release.

B. Secretin stimulates gastrin.

C. Secretin is released from the antrum of the stomach.

D. Cholecystokinin (CCK) release is stimulated by fat in the duodenum and results in release of insulin by the pancreas.

E. CCK is released by the pancreas and relaxes the sphincter of Oddi.

Correct Answer: A Section: (none)

Explanation:

Gastrin is the humoral mediator of the gastric phase of secretion, and the release of gastrin is stimulated by antral distention, antral protein/ amino acids, and by the vagus itself. Gastrin stimlulates gastric acid secretion, promotes gut motility, and is a trophic factor for gut mucosa. Secretin is released by duodenal mucosal S cells in response to acid and promotes water and bicarbonate secretion from the pancreas. CCK is released in the gut by intestinal mucosal I cells and stimulates emptying of the gallbladder, increases bile flow, and relaxes the sphincter of Oddi. CCK has a structure very similar to gastrin.

QUESTION 5

A55-year-old man with hepatic cirrhosis from alcohol abuse presents with a massive hematemesis. This is his third admission for upper GI hemorrhage in the past 2 months. He is currently receiving appropriate therapy for liver failure, including a beta-blocker and diuretics. He is lethargic and confused. His pulse is 100 and blood pressure is 85/40. His initial hematocrit is 20.

Endoscopic attempts to control the bleeding are initially successful, but the patient has a recurrent bleed 2 days later. The medicine team obtains a surgical consultation for placement of a shunt.Which of the following statements is true?

A. The best shunts are nonselective, meaning that they divert all blood from the portal system.

B. Synthetic graft materials should never be used because of the risk of infection.

C. A mesocaval shunt involves connecting the superior mesenteric vein (SMV) to the inferior vena cava (IVC).

D. Encephalopathy rarely worsens after the placement of the shunt. In fact, it often improves in these patients.

E. Postoperative mortality for emergency shunts is related more to the type of shunt placed rather than the degree of hepatic failure in the patient.

Correct Answer: C Section: (none)

Explanation:

In patients with liver failure, the source of an upper GI bleed is esophageal varices in 50%, gastritis in 30%, and duodenal ulcers in only about 10%. Esophageal variceal bleeding is a potentially fatal complication of portal hypertension. The initial management should include fluid resuscitation and replacement of blood and clotting factors as needed. The second step is to control the source of bleeding. Medical management may include vasopressin or octreotide. Once the patient is stabilized, endoscopic evaluation of the bleeding is crucial. It can be both diagnostic and therapeutic. Endoscopic techniques for controlling hemorrhage can include sclerotherapy, banding, or balloon tamponade. If these methods are ineffective, or the patient has numerous recurrences, portal shunts can be considered. TIPS have increased in popularity as a method for portal decompression. This can be performed in the acute setting. Surgical shunts are also an option, but are primarily reserved for stable patients with recurrent bleeding episodes and not performed in an acutely unstable patient. Mesocaval shunts connect the SMV to the IVC in a variety of manners. Splenorenal shunts are actually the most common type of shunt. Nonselective shunts that completely divert portal blood flow from the liver can actually increase hepatic encephalopathy. Most surgeons prefer selective shunts, which preserve a component of hepatic blood flow and thus function. Synthetic graft material can be safely used to create the shunts. Postoperative mortality is directly related to the patient\\'s preprocedure medical condition and degree of hepatic failure.