

Gallstones and Gallstone-Related Diseases: Review Questions

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QUESTIONS

Choose the single best answer for each question.

1. A 65-year-old woman with recurrent postprandial pain is found to have multiple gallbladder stones during an abdominal ultrasound examination. The patient takes postmenopausal estrogen therapy and sertraline for depression. The patient has lost 30 lb over the past year through diet and exercise. Which of these characteristics has NOT been shown to increase the risk of gallstone formation?
- (A) Age greater than 60 years
 - (B) Estrogen therapy
 - (C) Female sex
 - (D) History of recent weight loss
 - (E) Use of sertraline

Questions 2 and 3 refer to the following case study.

A 53-year-old man undergoes a laparoscopic cholecystectomy for symptomatic gallstone disease. The surgery is uneventful, but 2 days after the procedure the patient develops intense abdominal pain without fever. He has a bilirubin level of 4.2 mg/dL, a lipase level of 40 U/L, and an aspartate transaminase (AST) level of 225 U/L.

2. What is the most likely cause of this patient's symptoms and laboratory abnormalities?
- (A) Bile leak
 - (B) Pancreatitis
 - (C) Postoperative ileus
 - (D) Postoperative infection
 - (E) Retained stone
3. What would be the next best step in the patient's management?
- (A) Intraoperative bile duct exploration to remove the gallstone

- (B) Endoscopic retrograde cholangiopancreatography
- (C) Endoscopic ultrasound of the bile ducts
- (D) Magnetic resonance cholangiography of the bile ducts
- (E) Percutaneous transhepatic cholangiography

4. A 38-year-old woman presents with intermittent right upper quadrant abdominal pain after meals. Laboratory test results have been normal. The patient underwent cholecystectomy for similar pain 2 years ago and was found to have a normal gallbladder without stones at the time of surgery. A right upper quadrant ultrasound was performed at that time but was of limited value due to obesity. You would like the patient to undergo evaluation for a retained stone. What is the best test to evaluate this patient's biliary tree?
- (A) Computed tomography (CT) scan
 - (B) Endoscopic retrograde cholangiopancreatography
 - (C) Endoscopic ultrasound
 - (D) Magnetic resonance cholangiography
 - (E) Percutaneous transhepatic cholangiography

5. A 60-year-old man undergoes a CT scan to evaluate his abdominal aorta. The images show a normal aorta, but his gallbladder contains several stones, and intramural calcification of the gallbladder wall also is noted. No other abnormal findings are seen. The patient has not had any symptoms and has normal liver chemistries. What is the most appropriate therapy for this patient?
- (A) Cholecystectomy
 - (B) Cholecystojejunostomy
 - (C) Endoscopic retrograde cholangiopancreatography to evaluate the biliary tree
 - (D) Endoscopic ultrasound of the gallbladder and biliary tree
 - (E) Observation

(turn page for answers)

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EXPLANATION OF ANSWERS

- (E) Use of sertraline.** Advancing age, weight loss, and female sex are associated with increased cholesterol secretion into bile. In addition, advancing age and weight loss are associated with decreased bile acid synthesis. Weight loss also is correlated with gallbladder hypomotility. All three factors predispose to gallstone formation. Estrogen usage has been associated with the formation of gallstones. Sertraline use has not been associated with the formation of gallstones.^{1,2}
- (E) Retained stone.** This patient most likely has a retained stone in the common bile duct (CBD) that escaped the gallbladder prior to surgery but had not passed into the duodenum. The rise in bilirubin and transaminases are consistent with CBD obstruction. Postoperative infection would not cause jaundice and would be associated with fever. A bile leak would not cause such a high elevation of AST. The patient has a normal lipase level, effectively ruling out pancreatitis. A postoperative ileus is not associated with jaundice or a significant elevation of AST.
- (B) Endoscopic retrograde cholangiopancreatography.** The patient has an obstructed biliary tree and needs to undergo decompression. Endoscopic retrograde cholangiopancreatography allows non-surgical access to the biliary tree, bile drainage, and stone removal. Endoscopic ultrasound and magnetic resonance cholangiography are purely diagnostic in this setting. Either one would likely only confirm the presence of a retained CBD stone and would not change the patient's overall management. A percutaneous transhepatic cholangiography approach to decompress the biliary tree can be attempted if endoscopic retrograde cholangiopancreatography is unsuccessful, but this option is not first-line treatment for patients in this situation. Intraoperative bile duct exploration would not be attempted in this setting because it is too invasive compared with endoscopic retrograde cholangiopancreatography.
- (C) Endoscopic ultrasound.** The likelihood that this patient has CBD stones is low because she does not have gallstones in her resected gallbladder and her laboratory test results are normal during episodes of pain. Invasive methods to evaluate the biliary tree, such as percutaneous transhepatic cholangiography or endoscopic retrograde cholangiopancreatography, thus would not be warranted. CT scan is often insensitive when looking at the biliary tree for stones or sludge. Magnetic resonance cholangiography can offer good images of the biliary system and can identify bile duct stones, but endoscopic ultrasound is regarded as superior when looking for focal bile duct stones as well as microlithiasis (ie, biliary sludge), which also could be causing this patient's symptoms.
- (A) Cholecystectomy.** The patient has a porcelain gallbladder, which can lead to gallbladder cancer in approximately 20% of patients. This patient should undergo a prophylactic cholecystectomy with the goal of preventing development of malignancy. Observation would put the patient at risk for the development of gallbladder cancer. Endoscopic retrograde cholangiopancreatography and endoscopic ultrasound would not change the need for the cholecystectomy. A cholecystojejunostomy would not be indicated and would leave the gallbladder in place, where cancer could still develop.³

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