Lesson 25: Liquid Accumulation in Preexisting Pulmonary Spaces: Diagnostic Pitfalls and Opportunities
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Question 25-1. This question regards several important statements about bronchogenic cysts. Bronchogenic cysts represent the most common pediatric cystic mediastinal lesion (B), but about one third of them occur primarily in the lung parenchyma (C). So (B) and (C) are true. They represent a bronchopulmonary foregut malformation (D). Thus (D) is true. On the contrary, the cyst wall of a bronchogenic cyst usually is thicker than the imperceptible wall of a bulla on chest radiographs (A). So (A) is false, and (A) is the correct answer.

Question 25-2. This question represents a clinical vignette in which a 15-year-old boy presents with cough and fever. Chest radiographs demonstrate a left lower lobe cystic mass containing a gas-liquid level, and a chest MR examination reveals systemic artery supply to the cystic mass from a branch of the thoracic aorta. Both the clinical presentation and the imaging findings suggest the diagnosis of an infected intrapulmonary sequestration (B). A lung abscess (A), an infected bulla (C), a pneumatocele (D), and an infected bulla in a patient with Ehlers-Danlos syndrome (E) do not have a systemic artery supply. So (B) is the most likely diagnosis, and (B) is the correct answer.

Question 25-3. This question concerns several important statements about congenital cystic adenomatoid malformations. Congenital cystic adenomatoid malformations also are called congenital pulmonary airways malformations (A). So (A) is true. These cystic lesions are formed due to abnormal embryogenesis (B). Thus (B) is true. Adenomatous overgrowth of terminal bronchioles (C) with a consequent reduction in alveolar growth (D) leads to these malformations. So (C) and (D) are true. Most cases of congenital cystic adenomatous malformation are discovered in the pre- or perinatal period, and only a few, not most lesions, are discovered as an incidental finding in adulthood (E). Thus (E) is false, and (E) is the correct answer.

Question 25-4. This question draws attention to the best initial treatment of a large right upper lobe, thin-walled, cystic lesion containing a low gas-liquid level noted on chest radiographs of a febrile 50-year-old woman. The clinical feature of fever suggests that the cystic lung lesion is an infected bulla. Initial treatment of an infected bulla does not require intervention such as surgical removal (A), radiofrequency ablation (C), percutaneous aspiration of the liquid (D), or installation of sclerosing agent percutaneously (E). So (A), (C), (D), and (E) are false. The best initial treatment of an infected bulla is appropriate antibiotics (B) to cure the adjacent pneumonia, which causes the gas-liquid level in the bulla. Thus (B) is true, and (B) is the correct answer.
Question 25-5. This question emphasizes that emphysema (D) is the most common precursor of localized bullous lung disease. Paraseptal emphysema, a subtype of emphysema, is the most common precursor of localized bullae. However, bullae may be present in several rare nonemphysema conditions such as Marfan disease (A), Ehlers-Danlos syndrome (B), and familial bullous lung disease (C). So (A), (B), and (C) are true, but (D) is false and the exception; and (D) is the correct answer.

Question 25-6. This question draws attention to an anticipated radiographic feature in a resolved infected bulla. Certainly, development of empyema (D) would be a serious complication of and not evidence of a resolved infected bulla. So (D) is false. With resolution of an infected bulla, the liquid within the cystic lesion gradually disappears, and, therefore, the height of the gas-liquid level does not increase (B). Thus (B) is false. Irregular, increased cyst wall thickness (A) does not occur with resolution of an infected bulla. So (A) is false. Partial or complete collapse of the bulla (C) is anticipated; and, therefore, decrease in size, not enlargement of the bulla (E), is expected. Thus (E) is false, but (C) is true; and (C) is the correct answer.

Question 25-7. This question calls attention to the importance of a pertinent clinical history when interpreting imaging examinations. In this case, the chest radiographs of an afebrile 62-year-old man demonstrate a well-defined solid right lower lobe mass. Three months earlier, the patient was hospitalized and treated for a liver laceration sustained in a near-fatal automobile accident. Most congenital pulmonary airway malformations (E) are identified pre- or perinatally although rarely remain undiagnosed into adulthood. So (E) is unlikely. Patients with a lung abscess (B) or an infected bulla (C) probably would be febrile. Thus (B) and (C) are unlikely. Of course, a bronchogenic carcinoma (A) must be considered in an older man with a solitary lung mass; but with the history of serious injury to the patient, the possibility of an unresolved pulmonary hematoma (D) after laceration of the lung from blunt trauma is a realistic consideration. A review of the chest radiographs during the patient's recent hospitalization 3 months earlier revealed the same lung mass, further supporting the diagnosis of an unresolved pulmonary hematoma. So (D) is the most likely diagnosis, and (D) is the correct answer.

Question 25-8. This question speaks to the most common congenital pulmonary cystic lesion, which is a bronchogenic cyst (A). So (A) is the correct answer.

Question 25-9. This question highlights causes of pneumatoceles, which include pneumonia, particularly staphylococcal pneumonia (A); hydrocarbon ingestion (B); trauma with pulmonary laceration (C); and positive pressure ventilation with barotrauma (D); but not Marfan disease (E), which is a rare precursor of bullae, but not pneumatoceles. So (A), (B), (C), and (D) are true, but (E) is false and the exception; and (E) is the correct answer.

Question 25-10. This question refers to the most common precursor of bullae. All of the subtypes of emphysema provided as options [i.e., centrilobular emphysema (A), panlobular emphysema (B), paraseptal emphysema (C), and paracutaneous emphysema (D)] are precursors of bullae. However, of all precursors of bullae, the most common is paraseptal emphysema (C). So (C) is the correct answer.

Answer key for Volume 35 # 25:
1. A
2. B
3. E
4. B
5. D
6. C
7. D
8. A
9. E
10. C