



## **Radiology**

### **Part 1**

1) C

This patient has large left sided pneumothorax with tension physiology. The best action is a needle decompression to relieve the tension, followed by chest tube insertion

2) C

The patients' initial CXR was clear and developed rapidly progressive bilateral infiltrates while receiving blood products transfusion most compatible with transfusion related acute lung injury (TRALI). TRALI is immune mediated ARDS most common to happen in the first 3-6 hours post blood products transfusion most commonly FFP, Platelets. It is most common in multiparous women. Treatment is conservative.

3) B

The CXR is showing irregular left sided pleural effusion which appears loculated. Given the diagnosis of pneumonia, this is most probably complicated empyema.

4) C

Though thoracentesis will probably provide the diagnosis of empyema, inserting a chest tube will both be diagnostic and therapeutic to drain the infected effusion. Antibiotics and chest tube thoracostomy are usually effective as treatment but in some cases, surgical decortication with VARS might be required.

5) D

The CXR appears to be within normal, given the recent history along the hypoxia, tachycardia and hypotension, Pulmonary embolism is the most likely diagnosis.

6) D

The patient is experiencing obstructive shock secondary to massive pulmonary embolism. CTA chest will provide the diagnosis but given the shock state and hemodynamic instability, it might be time consuming. Bedside echo in this case evaluating the right sided ventricle size, dilation and septum deviation will confirm the clinical diagnosis. Treatment in this case is difficult, as patient has contraindication for systemic thrombolytics. Full anticoagulation would not reverse the massive pulmonary embolism and obstructive shock. Catheter directed embolectomy or surgical embolectomy will be the best treatment option.

7) B

The CXR is diagnostic of emphysema with hyperinflation, diaphragmatic flattening. The patient is experiencing COPD exacerbation with acute respiratory alkalosis on top of chronic respiratory acidosis. NIPPV is the best option to support this patients' respiratory failure.

8) D

The CXR showed almost total collapse and volume loss of the right lung with mediastinal shift to the left. Fiberoptic bronchoscopy will be able to diagnose the etiology and might be therapeutic as well (foreign body aspiration, mucus plugging, airway mass)

9) D

Those all the options are possible to cause ARDS. The most likely diagnosis is extra-pulmonary ARDS secondary to sepsis. His PaO<sub>2</sub>:FiO<sub>2</sub> is 93 (severe ARDS), his CXR with bilateral infiltrates and has a likely etiology of his condition (Berlin definition of ARDS).

10) D

The CXR shows a right apical rounded mass with air fluid level diagnostic of lung abscess. The iv drug use along with a murmur suggestive of tricuspid valve endocarditis makes lung abscess the most likely diagnosis.