Example of Case Study and Discussion Question

For Group Wiki

ARDS

**ADMITTING HISTORY**

A 32 year old man was involved in an auto accident on the way to work during an ice storm.His car hit a patch of ice, spun out of control and hit a cement bridge support. I t took a 911 team 90 minutes to extricate him from the car. He was stabilized at the scene and then transported to the hospital.

On admission, he was hypotensive, conscious and complaining of severe pain. When he was asked to identify specific pain sites, he stated that his whole body hurt. He had numerous facial lacerations and several broken teeth. His right maxilla was fractured. He had a compound fracture of the left humerus, a fractured left radius and several simple fractures of the phalanges of his left hand. A large bruise in the shape of a car steering wheel could easily be observed over his anterior chest. He had a splintered fracture of his right tibia and fibula. Although the chest x-ray film taken in the emergency room showed not rib fractures, bilateral patchy infiltrates could be seen throughout both lungs.

He was taken to surgery where a team of surgeons worked to treat his multiple injuries. The patient was in the operating room for 16 hours. His surgery was described as successful and the long-term prognosis was believed to be good. He was transferred to the ICU.

On his arrival to the ICU, the patient was breathing on his own and was on oxygen at 2 lpm per nasal cannula. His respiratory status was stable for the first 24 hours. He is now showing signs of respiratory distress.

**PHYSICAL EXAM**

The patient appears to be in moderate respiratory distress. He appeared uncomfortable and complained that he could not move very well and that he was becoming short of breath. His blood pressure was 125/78, heart rate was 93 bpm and respiratory rate was 21/min. His temperature was normal. His skin appeared pale and when he was asked to cough, he demonstrated an adequate, non-productive cough. Upon palpation, tenderness was noted over his anterior chest and dull percussion notes were heard over both lower lung regions. On auscultation, bilateral bronchial breath sounds were heard. His oxygen saturation measured by pulse oximetry was 95%. His ABGs on 3 lpm per nasal cannula were pH 7.51, PaCO2 29 mmHg, PaO2 68 mmHg and HCO3 22 mEq/L. His chest x-ray is below and shows “ground glass” infiltrates throughout both lung fields. This has increased since admission.



**SOAP**

**S:** Patient is complaining of shortness of breath

**O:** Vital Signs: BP 125/78, HR 93, RR 21, temp normal. Skin: pale. Adequate, NPC. Tenderness over anterior chest. Bilateral lung fields: dull percussion notes, bronchial breath sounds. SpO2 95% . ABGs on 3 L NC: Ph 7.51, PaCO2 29, PO2 68 HCO3 22. Chest x-ray shows worsening “ground glass” appearance.

**A: -** Increased work of breathing (ABGs, vital signs)

-Increase lung infiltrates: possible atelectasis or consolidation? Possible ARDS? (Chest x-ray, lung assessment findings)

- Acute alveolar hyperventilation with mild hypoxemia (ABGs-acute respiratory alkalosis with mild hypoxemia)

**P:** Hyperinflation therapy (IS) to treat possible atelectasis. Oxygen per protocol to keep sat above 90%. Re-evaluate in 30 to 60 minutes with repeat CXR and ABGs. Prepare for possible intubation and ventilation if necessary.

**QUESTIONS**

#1. What specific injuries/ complications put this patient at a higher risk for developing ARDS?

#2. Why was his CXR fairly normal when taken initially in the ER?

#3. Why is mechanical ventilation needed in most patients diagnosed with ARDS?

#4. What is the most likely physiologic cause of the shortness of breath that this patient is suffering. (Explain what is happening during the early course of this disease in the lungs).