

Chronic obstructive pulmonary disease essay sample



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R. S. has smoked for many years and has developed chronic bronchitis, a chronic obstructive pulmonary disease (COPD). He also has a history of coronary artery disease and peripheral arterial vascular disease. His arterial blood gas (ABG) values are pH = 7.32, PaCO₂ = 60 mm Hg, PaO₂ = 50 mm Hg, HCO₃⁻ = 30 mEq/L. His hematocrit is 52% with normal red cell indices. He is using an inhaled β₂ agonist and Theophylline to manage his respiratory disease. At this clinic visit, it is noted on a chest x-ray that R. S. has an area of consolidation in his right lower lobe that is thought to be consistent with pneumonia.

Discussion Questions

1. What clinical findings are likely in R. S. as a consequence of his COPD?

Chronic obstructive pulmonary disease (COPD) is composed of two related diseases, chronic bronchitis and emphysema. He is likely to have a chronic or recurrent productive cough that is over three months to two successive years. He will experience shortness of breath on exertion, sputum production and frequently develop hypoxemia, which could lead to cyanosis.

2. How would the consequences of the COPD of R. S. (identified in question 1) differ from those of emphysematous COPD? Those of emphysematous COPD have α₁-Antitrypsin deficiency. There is a result in decrease in size of smaller bronchioles. R. S. would have progressive dyspnea, an increased shortness of breath for past 3-4 years, pursed-lip breathing, leaning forward to breath, barrel chest, digital clubbing, and cough.

3. Interpret R. S.'s laboratory results. How would his acid-base disorder be classified? What is the most likely cause of his polycythemia? R. S. is in a

partially compensated respiratory acidosis with moderate hypoxemia and mild polycythemia. The pH is acidic which means if there is any compensation present then it is not complete. Polycythemia is a consequence of chronic hypoxemia. It is the body's attempt to adjust to decreased amounts of blood oxygen by increasing the production of oxygen-carrying red blood cells.

4. What is the rationale for treating R. S. with Theophylline and a β_2 agonist?

Theophylline is able to effect several actions that are helpful in a number of respiratory conditions. These effects are dilation and relaxation of constricted airways. Theophylline allows asthmatic airways to relax and enlarge which makes it easier to breathe. Dilation of airways can suppress coughing in conditions where fluid or other materials have accumulated in airways.

5. What effects would his respiratory disease have on his cardiovascular function? The use of theophylline interacts with various drugs and that it has a narrow therapeutic index, so its use must be monitored to avoid toxicity. There are negative side effects of theophylline such as racing heart with abnormal heart rhythm arrhythmias, and central nervous system excitation such as headaches, insomnia, dizziness, and irritability.