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Subject: Pathophysiology

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Preferred English: US English

Spacing Option: Double

Title: Acid-base imbalance

Instructions: competency describe strategies for safe, effective multidimensional nursing care for clients with acid-base imbalances. scenario tony is a 56-year-old, hispanic male that presented to the emergency room with complaints of shortness of breath, which he has been experiencing for the past two days. he states "i haven't felt good for about a week, but couldn't afford to miss work." he complains of a cough, fever, and feeling exhausted. past medical history includes asthma, chronic obstructive pulmonary disease and diabetes. upon physical examination, you notice that tony is struggling to breathe, his respiratory rate is 36 breaths per minute and labored, heart rate 115 beats per minute, blood pressure 90/40 mm hg, and his pulse oximetry is 84% on room air. you notify the md. he orders oxygen at 2 l via nc and an arterial blood gas. tony's abg results: ph 7.28 paco₂ – 55 mm hg pao₂ – 70 mm hg hco₃ – 30 meq/l instructions in a 1-2 page word document: determine tony's acid-base imbalance describe possible causes of the imbalance identify the signs and symptoms that tony is exhibiting as a result of the acid-base imbalance list the multidimensional care strategies that are appropriate for the care of tony

Module 05 Assignment

Acid-base imbalance

Rasmussen University

Multidimensional Care II

Melissa Mullins

Date

Determine Tony's acid-base imbalance

Acid base imbalance in the body can lead to repetitive digestive issues like vomiting. In our case, Tony's ABGs result indicate respiratory causes of acidosis. Evidently, Tony's pH which is 7.28 indicate that Tony has respiratory acidosis comparing to normal body pH which ranges from pH range of 7.35 to 7.45 (Tinawi, 2021). Additionally, normally, the CO₂ pressure in the blood is normally 35-45mmHg, comparing Tony's PaCO₂ is 55mmHg which

shows increased blood acidity. His PaO₂ is 70mm Hg is way low because of increased CO₂ production because of less oxygen supply. Tony indicates reduced amount of CO₂ elimination strongly indicate that Tony has respiratory acidosis. Normally, respiratory acidosis occurs when one's respiratory is altered hence the exchange of oxygen and CO₂ is reduced (Tinawi, 2021). When the respiratory systems are altered, the brainstem which is core for neurol transmission trigger breathing movements.

Possible Causes of the Imbalance

Normally, respiratory acidosis is a condition characterized with low pH which is caused by high production of CO₂. This high production of CO₂ further, increases blood acidity which is the main indicator for respiratory acidosis. High production of CO₂ can also be resulted from limited oxygen intake because of poor ventilation to the blood stream as indicated from the ABG results. As a result, PaCO₂ increases causing acidity within the blood. HCO₃ analysis always tests for the level of bicarbonates in the blood (Tinawi, 2021; Adrogué & Madias, 2020). In our case, the level of HCO₃ is above the normal levels which is 30mEq/L. This is because the body is reacting to compensate to neutralize the level of blood acidity. Therefore, as the HCO₃ levels increases, the blood alkalinity within the pH increases.

Signs and symptoms of Acidosis exhibited by Tony

Increased pulse and respiratory rate, increased blood pressure are common core symptoms of respiratory acidosis. Other symptoms include general weakness, dullness, headache and mental cloudiness. Tony exhibited Increased respiratory rate 36 breaths per minute, Increased pulse rate of 155 breaths per min, increased blood pressure which is

indicated as 90/40 mmHG, high levels of CO₂, shortness of breath, cough, fever and feeling exhaustion.

Multidimensional care strategies for respiratory acidosis

Treatment and management of acidosis must be planned because of its complex nature. To begin with the multidimensional care strategies, a diagnosis is important because it helps to identify the severity of the conditions well as other comorbidities which might be helpful within treatment and management of acidosis. The treatment must therefore be done after a comprehensive diagnosis which is aimed to improving respiratory and ventilation channels. According to Adrogué & Madias (2020), other therapies that may be used include; chest therapy which usually helps in clearing of secretions which helps in the general improvement of ventilation allowing excess CO₂ elimination.

References

- Adrogué, H. J., & Madias, N. E. (2020). Alkali therapy for respiratory acidosis: a medical controversy. *American Journal of Kidney Diseases*, 75(2), 265-271.
- Tinawi, M. (2021). Respiratory acid-base disorders: respiratory acidosis and respiratory alkalosis. *Archives of Clinical and Biomedical Research*, 5(2), 158-168.

