Respiratory Acidosis Assessment

Respiratory acidosis is a condition characterized by decreased ventilation, which causes increased levels of carbon dioxide in the blood (PaCO2 > 45) leading to a decrease in blood pH below 7.35. Patients become acidodic and begin to display reduced respirations, anxiety and change in level of conciousness. They can become tachycardic and cyanotic, as well. If no action is taken, these patients can have increased electrolytes, leading to ECG changes, muscle weakness and hyporeflexia.



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Assessment

Decreased pH < 7.35
Down-arrow pH Less-than 7.35
The retention of CO2 due to a change in respiratory function changes creates an acidic environment in the bloodstream. This manifests as decreased blood pH and increased CO2.

Increased PaCO2 > 45
Up-arrow Partial-pressure-gauge CO2 Greater than 45
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Reduced Respirations
Down-arrow Respirator
Assess the patient’s rate and depth of breathing as well as effort. Respiratory acidosis is usually manifested by a failure to “blow off” CO2.

Anxiety
Anxiety-bag
Patients can display a state of panic or uneasiness. You should avoid administering tranquilizers, sedation, or opioids as these may suppress respirations further.

Change in LOC
Delta Halo
Patients may appear confused or lethargic due to the buildup of carbonic acid in the bloodstream. This, along with a buildup of CO2, may lead patients to become unresponsive and go into a coma.

Tachycardia
Tac-heart-card
Patients may display stimulation of the sympathetic nervous system, resulting in an increase in heart rate.

Cyanosis
Cyan-crayon
Cyanosis is defined as ineffective gas exchange due to decreased respirations, which causes a decrease in oxygen delivery to the tissues, leading the patient to appear "cyanotic".

Increased Electrolytes
Up-arrow Electric-lights
Respiratory acidosis may cause an increase in electrolytes Ca, K, Cl, Na.

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ECG Changes

Delta ECG

Worsening acute acidosis may lead to hyperkalemia and manifest as problems with electrical conduction, such as tall peaked T waves, prolonged PR interval, bradycardia or even heart block. Chronic respiratory acidosis typically has normal to low potassium levels due to compensatory renal mechanisms.

Muscle Weakness

Weak-drooping-muscle

In a depressed respiratory state, oxygen is not properly delivered to the tissues. Additionally high levels of potassium building up in the body can cause poor muscle tone.

Hyporeflexia

Hippo-reflex-hammer

Condition of reduced or absent reflexes in response to a stimulus. May be a result of increasing levels of potassium building up in the acidotic patient.

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