

Retrograde Colonic Irrigations in a Newborn Resulted in Extreme Hyperchloremia and Metabolic Acidosis

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Abstract

Hyperchloremic acidosis is a metabolic acid-base disorder characterized by a decrease in serum bicarbonate levels and an increase in chloride concentration. It can result from various underlying conditions, including renal dysfunction, gastrointestinal losses, respiratory alkalosis, and certain medications. This acid-base disturbance disrupts the body's

The pathophysiology of hyperchloremic acidosis involves an imbalance between the production and excretion of acids, leading to an accumulation of chloride ions and a decrease in bicarbonate levels. This disrupts the normal acid-cellular function, and altered organ system performance.

treatment for affected patients.

We describe a 24-day-old patient with Hirschsprung disease and Trisomy 21, who presented with respiratory and circulatory insufficiency after receiving RCI twice daily in an NS rectal bolus on day 10. The gastro-intestinal fluid resorption of large quantities of NS was cited as the cause of the extreme hyperchloremic acidosis that was observed in the laboratory results [4]. After taking sodium bicarbonate, the patient improved clinically and made a full and uneventful recovery.

When RCI is used with large volumes of NS for multiple days, this case report emphasizes the need for careful monitoring of children for electrolyte disturbances, fluid balance, body weight, and returned irrigation volumes.

Methods and Materials

The methods and materials for studying hyperchloremic acidosis can vary depending on the specific research or clinical setting. Here are some common approaches and techniques used to investigate hyperchloremic acidosis:

1. Patient Selection

Identify and recruit individuals with suspected or diagnosed hyperchloremic acidosis. This can include patients with renal dysfunction, gastrointestinal disorders, or those receiving medications known to cause hyperchloremic acidosis. Medical History and Physical Examination: Conduct a comprehensive medical history and physical examination of the participants to gather relevant clinical information, including underlying conditions, medications, and symptoms associated with hyperchloremic acidosis.

2. Laboratory Tests

Perform various laboratory tests to assess acid-base status and electrolyte balance. These may include:

Arterial Blood Gas (ABG) Analysis: Measure arterial blood pH [5], partial pressure of carbon dioxide (pCO₂), bicarbonate levels, and electrolyte concentrations to evaluate acid-base balance and determine the presence of hyperchloremic acidosis.

Electrolyte Panel: Quantify chloride, bicarbonate, sodium, and potassium levels to assess electrolyte imbalances associated with hyperchloremic acidosis.

Renal Function Tests: Evaluate renal function through measurements of blood urea nitrogen (BUN), creatinine, and urine electrolyte levels to assess the underlying cause of hyperchloremic acidosis, such as renal tubular acidosis.

3. Imaging Studies

Use imaging techniques such as ultrasound, computed tomography (CT), or magnetic resonance imaging (MRI) to assess renal structure and detect any abnormalities that may contribute to hyperchloremic acidosis.

4. Urine Analysis

Collect urine samples for analysis, including measurements of

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