Treatment of metabolic alkalosis with intravenous infusion of concentrated hydrochloric acid.

Kwun KB, Boucherit T, Wong J, Richards Y, Bryan-Brown CW.


Abstract

A concentrated hydrochloric acid (1 N) infusion was utilized for treatment on 35 occasions of metabolic alkalosis in 24 patients. The amount of hydrochloric acid to be infused was calculated from total base excess. To avoid over-correction, two thirds of the calculated dosage of hydrochloric acid only was infused. 1 N hydrochloric acid solution was infused at a speed of 1 mEq/min through a roentgenographically confirmed central venous line. Metabolic alkalosis was successfully treated in all instances without any complication. However, increased respiratory stimulation was not demonstrated in these observations. Concentrated hydrochloric acid infusion is a safe, reliable, and effective method of rapid correction of metabolic alkalosis. Because only small volumes are needed, this method is especially useful when fluid intake must be restricted.

PMID:6614322

Hydrochloric acid in the correction of metabolic alkalosis.

Harken AH, Gabel RA, Fencl V, Moore FD.


Abstract

Intravenous infusion of hydrochloric acid was used as a safe, effective, and quantitative method for correction of metabolic alkalosis in two patients. The first shows the risks of intravenously administered ammonium chloride, the currently available alternative to hydrochloric acid therapy. The second shows the efficacy of intravenously administered hydrochloric acid. While breathing spontaneously throughout the
period of severe alkalosis, this patient showed compensatory hypoventilation with conspicuous increase in arterial carbon dioxide pressure. Normal spontaneous ventilation returned with correction of the metabolic alkalosis.

PMID:237496

Treatment of metabolic alkalosis with intravenous hydrochloric acid.


Abstract

Severe alkalosis requires aggressive treatment. Twenty patients at the Talmadge Memorial Hospital have been treated for metabolic alkalosis by infusion of dilute hydrochloric acid through a central venous line. The treatment was effective and there were no major complications. Intravenous hydrochloric acid is preferred to other modes of therapy for refractory alkalosis, especially in the presence of hepatic or renal failure.

PMID:482977

Hydrochloric acid for treating metabolic alkalosis.


Source

Sixth Department of Surgery, Numune Hospital, Ankara, Turkey.

Abstract
Six patients with severe metabolic alkalosis were treated with intravenous hydrochloric acid (HCl) infusion. HCl was given through a central venous catheter, at a concentration of 0.1 mEq per ml. At least two of the following criteria were considered for initiation of the therapy: An arterial pH of greater than 7.45, a base excess (BE) of greater than +7 mmol/L, a PaCO2 of greater than 50 mmHg. The HCl amount was calculated using the BE formula, however, two thirds was infused for avoiding excessive acid loading. Patients were monitored by the blood gases, serum electrolytes, hemoglobin, hematocrit, bilirubin determinations and blood smear findings. While a significant decrease was noticed in pH and BE values, moderate changes were detected in PaCO2 due to different ventilatory status of the cases. All laboratory test results remained within normal limits and no complication was encountered. The advantage of the therapy is that less volume is needed for the correction of alkalosis, particularly in the cases requiring fluid restriction. HCl therapy, moreover, is a safe and time-saving method because of having rapid response to the treatment in the critically ill surgical patients.

PMID:2593388

Treating severe metabolic alkalosis.

Martin WJ, Matzke GR.

Abstract

The pathophysiology, symptomatology, and treatment of metabolic alkalosis are reviewed, with emphasis on treatment with intravenous hydrochloric acid. Three buffering systems are used by the body to correct an arterial pH above 7.45—tissue, respiratory, and renal systems. The kidneys have the primary responsibility for correcting a severe metabolic alkalosis, but several conditions (e.g., severe volume contraction) can interfere with the renal mechanisms. No unique symptoms are associated with metabolic alkalosis. Conventional conservative treatment of metabolic alkalosis involves meeting the patient's fluid and electrolyte needs and allowing the body to correct the alkalosis through its own mechanisms. However, when more rapid resolution of the alkalosis is needed or the patient cannot tolerate fluid and electrolyte therapy, mineral acids may be administered. Ammonium chloride and arginine
monohydrochloride infusions may both be used; since both require hepatic conversion for full activity, patients with hepatic dysfunction may require alternative therapy. Dilute hydrochloric acid (0.1-0.2 N) may be given intravenously to these patients through a central-venous catheter. Dosage guidelines and formulation procedures are described in the paper, as are other possible therapeutic alternatives (dialysis, acetazolamide, cimetidine). Most cases of metabolic alkalosis can be managed with fluid and electrolyte therapy. When metabolic alkalosis needs to be resolved quickly or when conventional therapy cannot be tolerated, mineral acid administration should be instituted. The primary drug of choice for these patients is intravenous ammonium chloride; patients with hepatic or severe renal dysfunction should receive dilute hydrochloric acid via a central-venous catheter.