Original article

Effect of combinations of intravenous small-volume hypertonic sodium chloride, acetate Ringer, sodium bicarbonate, and lactate Ringer solutions along with oral fluid on the treatment of calf diarrhea

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Abstract

The aim of this study was to compare effect of combinations of intravenous isotonic sodium bicarbonate (NaHCO₃), acetate Ringer, lactate Ringer and small-volume hypertonic sodium chloride (NaCl) solutions along with oral electrolyte solutions (OES) on the treatment of neonatal calf diarrhea with moderate dehydration and metabolic acidosis. Thirty-two calves with diarrhea were used in the study. Calves were randomly assigned to receive acetate Ringer solution (n=8), lactate Ringer solution (n=8), isotonic NaHCO₃ (n=8) and 7.2% saline solutions (n=8), and two liters of OES were administrated to all calves orally at the end of intravenous administration. Blood samples for blood gas and biochemical analyses were collected at 0 hours and at 0.5, 1, 2, 4, 6 and 24 hours intervals. All the calves had mild to moderate metabolic acidosis on admission. Increased plasma volume and sodium concentration, but decreased serum total protein were observed within 0.5 hours following administration of hypertonic 7.2% NaCl + OES, compared to other 3 groups. In conclusion, administration of intravenous hypertonic 7.2% NaCl solution in small volume along with OES provided fast and effective improvement of dehydration and acid-base abnormalities within short time in treatment of calf diarrhea with moderate dehydration and metabolic acidosis.

Key words: calves, diarrhea, metabolic acidosis, fluid therapy

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