Comparison of Computer-Guided Versus Standard Insulin Infusion Regimens in Patients with Diabetic Ketoacidosis

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BACKGROUND

Continuous insulin infusion (CII) is widely accepted as the standard of care for the treatment of patients with diabetic ketoacidosis (DKA). A variety of standard (paper form-based) and computer-based algorithms have been shown to be effective in the management of hyperglycemia in critically ill patients. It is not known, however, if computer-based algorithms are superior to standard protocols in the management of patients with DKA.

METHODS

Accordingly, this retrospective multicenter study was conducted, comprised of 2,665 patients with DKA treated with either a computer-guided program (Glucommander, n= 1750) or standard protocols (n=915) in 34 medical institutions in the US. Assessments were made for differences in time to resolve hyperglycemia (<200 mg/dL), acidosis (HCO₃ > 18 mmol/l), and number of hypoglycemic events (BG <70 mg/dL and <40 mg/dL).

RESULTS

The results of the outcome parameters between the two groups are outlined in the table and graphs.

CONCLUSION

In conclusion, the use of Glucommander as a component of DKA management is associated with significantly less hypoglycemia, faster time to normalization of blood glucose (<200 mg/dL) and bicarbonate (<18 mmol/l) than standard orders for treatment of DKA. There was also a significant difference in LOS for patients treated with Glucommander than standard orders (4.5 vs. 3.2 days). Prospective randomized clinical trials comparing the efficacy and cost of computer-based algorithms versus standard CII regimens are warranted.