Abstract

Background: The potency of intravenous bumetanide to furosemide using a ratio of 1:40 has been suggested; however, there are little data supporting this ratio. Recent drug shortages required the use of bumetanide in a large patient population, enabling further characterization of the efficacy of IV bumetanide. Objective: The primary objective of this study was to estimate a dose-response effect of IV bumetanide on urine output (UOP) in all patients that received 48 hours of therapy as well as in a subgroup of patients with heart failure (HF). This subgroup was used to compare the potency of bumetanide with furosemide. A secondary safety objective described electrolyte replacement required during therapy. Methods: This was a single-center retrospective study examining the dose-response effect of IV bumetanide in patients receiving at least 48 hours of intermittent (iIV) or continuous (cIV) dosing, measured by UOP per mg of drug received (mL/mg). The potency of IV bumetanide was compared with furosemide in a subset of patients with HF using pre-existing data. The safety of IV bumetanide was analyzed by quantifying electrolyte replacement received during the study period. Results: The primary outcome was higher in the iIV group (n=93) at 1273 ± 844 mL/mg compared with the cIV group (n=16) at 749 ± 370 mL/mg (P=0.002). Among patients with HF who received furosemide (iIV n=30, cIV n=26) or bumetanide (iIV n=30, cIV n=3), a potency ratio of 41:1 was found for the iIV group and 34:1 for all patients with HF. There was no significant difference in electrolyte replacement between groups. Conclusion: A greater response was seen with intermittent bumetanide compared with continuous infusion bumetanide. This study supports the 40:1 dose equivalence ratio (furosemide:bumetanide) in patients with HF receiving at least 48 hours of intravenous intermittent bumetanide.

Keywords

Bumetanide, Furosemide, Heart Failure, Treatment Outcome, Therapeutic Equivalency.