PACU LITERATURE REVIEW

REFERENCE

O'Brien SK, Koehl JL, Demers LB, Hayes BD, Barra ME. Safety and Tolerability of 23.4% Hypertonic Saline Administered Over 2 to 5 Minutes for the Treatment of Cerebral Herniation and Intracranial Pressure Elevation. *Neurocrit Care*. Published online September 28, 2022.

PMID: 36171519

SUMMARY

IV push administration of 23.4% NaCl over 2-5 minutes may be considered a safe, alternative method of administration.

BACKGROUND

- In patients with acute brain injury, sustained intracranial hypertension is considered a medical emergency that requires immediate recognition and treatment to prevent progression of cerebral ischemia, brain herniation, and death. Recommended treatment is hyperosmolar therapy with mannitol or hypertonic saline. 23.4% saline is an effective treatment, but historically requires administration via IV infusion.

STUDY OBJECTIVE

- Prospectively evaluate the safety of administration of 23.4% NaCl as rapid IV push over 2-5 mins

STUDY DESIGN

- Single-center prospective, observational analysis

STUDY INTERVENTION & COMPARISON

- **Documented administration of 23.4% NaCl over 2-5 mins**

RESULTS

- **Primary Safety Outcome**
  - Composite incidence of hypotension, bradycardia, and infusion site reaction within 60 mins
  - Reported in 31% of unique patients following 15% of administrations
    - All instances of fall in SBP by at least 20mmHg associated with potential alternative or exacerbating factors
    - All instances of SBP <90mmHg were in patients already on vasopressor support
    - One instance of infusion site reaction (pain)
- **Secondary Safety Outcome**
  - Comparison of highest and lowest SBP values and lowest heart rate documented within 60 mins
    - No significant changes observed

ADDITIONAL READINGS

- Faiver L, Hensler D, Rush SC, Kashlan O, Williamson CA, Rajajee V. Safety and efficacy of 23.4% sodium chloride administered via peripheral venous access for the treatment of cerebral herniation and intracranial pressure elevation. *Neurocrit Care*. 2021;35(3):845–52
- Rockswold GL, Solid CA, Paredes-Andrade E, Rockswold SB, Jancik JT, Quickel RR. Hypertonic saline and its effect on intracranial pressure, cerebral perfusion pressure, and brain tissue oxygen. *Neurosurgery*. 2009;65(6):1035–41.
- Ware ML, Nemani VM, Meeker M, Lee C, Morabito DJ, Manley GT. Effects of 23.4% sodium chloride solution in reducing intracranial pressure in patients with traumatic brain injury: a preliminary study. *Neurosurgery*. 2005;57(4):727–36