Perioperative Management of Acute Pancreatitis with Hypertonic Saline

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Background/Objectives

- Acute pancreatitis has an incidence of up to 135 in 100,000 people[1] and in the case of necrotizing pancreatitis, mortality rates reach 17% in the United States.[2]
- Despite advances in critical care medicine, the incidence and mortality of acute pancreatitis have been mostly unchanged over the past 20 years.

Purpose

- To evaluate the potential of hypertonic saline as a low cost and low risk alternative treatment in the resuscitation and perioperative management of acute pancreatitis.

Methods

- A literature review was performed using PubMed, Medline, and Cochrane
- Search terms used were "Acute Pancreatitis Hypertonic Saline" OR "Pancreatitis Hypertonic Saline"
- 36 results were screened. 25 results were excluded.
- 11 articles were reviewed and the results of 5 were found to be the most relevant to our hypothesis

Results

- **(Rios 2011)** Decreased ROS and liver damage in Wistar rats treated with hypertonic saline.[3]
- **(Machado 2006)** An infusion of hypertonic saline resulted in a preservation of MAP when compared to the isotonic treatment group.[4]
- **(Rios 2012)** Treatment group had decreased concentrations of caspase-7 and cytokines.[5]
- **(Rios 2010)** Decreased MMP and ECM remodeling in Wistar rats treated with hypertonic saline.[6]
- **(Shields 2000)** Treatment with 2mL/Kg of 7.5% NaCl showed less histological pancreatic and lung damage, decreased neutrophil sequestration in the lungs, and less endothelial permeability in the lungs.[7]

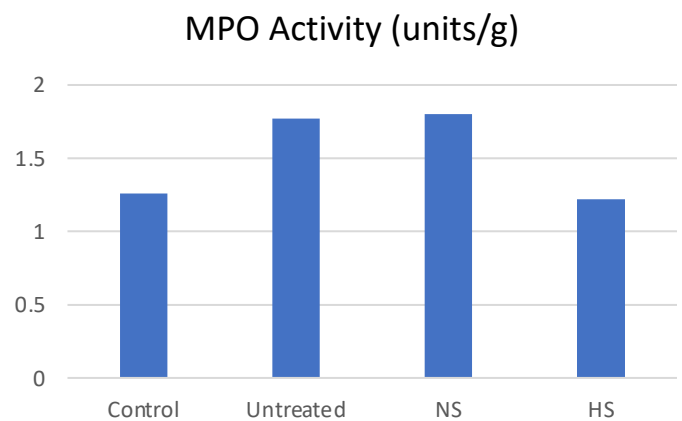


Fig. 1: Pulmonary neutrophil sequestration as measured by MPO activity[7]

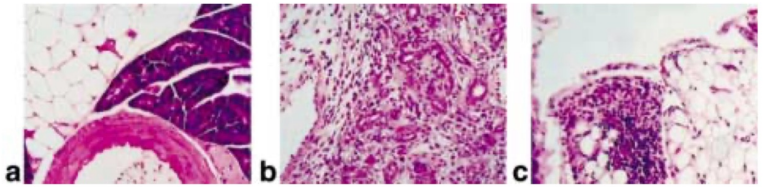


Fig. 2 Photomicrographs of rat pancreatic tissue at 72 h. **a** Control pancreas displaying normal appearance. **b** Widespread destruction of normal architecture with focal acinar necrosis, stromal expansion with fibrosis and an acute inflammatory infiltrate in normal saline group. **c** Mixed inflammatory infiltration of adipose tissue adjacent to moderately inflamed pancreas in hypertonic saline group.[7]

Conclusion

- Hypertonic saline should be considered in the resuscitation and perioperative management of acute pancreatitis as it is shown to reduce organ damage and markers of inflammation.

References

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