Database Theory and Applications for Biomedical Research and Practice (BMIN 502/EPID 635)
Spring 2019
Assignment 12 Graph querying

For this assignment, you will be importing data from the Hypertonic saline Resuscitation of Patients with Head Injury study. (Shackford SR, et al.: Hypertonic saline resuscitation of patients with head injury: a prospective, randomized clinical trial. J Trauma 1998 44(1):50-8.)

Abstract

BACKGROUND: Experimental and clinical work has suggested that hypertonic saline (HTS) would be better than lactated Ringer's solution (LRS) for the resuscitation of patients with head injuries. No clinical study has examined the effect of HTS infusion on intracranial pressure (ICP) and outcome in patients with head injuries. We hypothesized that HTS infusion would result in a lower ICP and fewer medical interventions to lower ICP compared with LRS.

METHODS/DESIGN: Prospective, randomized clinical trial at two teaching hospitals.

RESULTS: Thirty-four patients were enrolled and were similar in age and Injury Severity Score. HTS patients had a lower admission Glasgow Coma Scale score (HTS: 4.7+/-0.7; LRS: 6.7+/-0.7; $p = 0.057$), a higher initial ICP (HTS: 16+/-2; LRS: 11+/-2; $p = 0.06$), and a higher initial mean maximum ICP (HTS: 31+/-3; LRS: 18+/-2; $p < 0.01$). Treatment effectively lowered ICP in both groups, and there was no significant difference between the groups in ICP at any time after entry. HTS patients required significantly more interventions (HTS: 31+/-4; LRS: 11+/-3; $p < 0.01$). During the study, the change in maximum ICP was positive in the LRS group but negative in the HTS group (LRS: +2+/-3; HTS: -9+/-4; $p < 0.05$).

CONCLUSION: As a group, HTS patients had more severe head injuries. HTS and LRS used with other therapies effectively controlled the ICP. The widely held conviction that sodium administration will lead to a sustained increase in ICP is not supported by this work.

1. Download from Canvas
    a. The manuscript (Hypertonic Saline Resuscitation of Patients with Head Injury)
    b. Data dictionary
    c. The data (all .csv files)
        i. Exposure
        ii. Hourly values
        iii. Intervention
        iv. Main table

2. Write the queries to import the data into a graph

3. Write *three* queries of interest on the data
    a. Examples:
        1. What is the minimum GCS in the trial population?
        2. What is the average mean arterial pressure for females between the ages of 18 and 45 who were treated with hypertonic saline?
        3. There are others- be creative!

Submit the entire script you created to accomplish Steps 2 and 3 as a single pdf as **yourlastname_BMIN502_2019_12.pdf** to Assignment 12 on Canvas by 9am, Tuesday, 30 April.