

**Risk Factors for Urinary Tract Infection or Pneumonia After Admission for Traumatic Subdural Hematoma** Arvin Raj Wali BA; Joel Martin MD; Tammy Pham; Jeffrey A. Steinberg; Shanmukha Srinivas; Christian Lopez Ramos MPH; Todd Constantini MD; Alexander Arash Khalessi MD, MS

### Introduction

Patients with traumatic subdural hematoma (tSDH) may develop infections such as urinary tract infections (UTIs) or pneumonia after admission. Post-admission infections cause worse patient outcomes and increase total health care costs. This study aims to identify clinical parameters that increase or mitigate the risk of sustaining infections after surgery or admission for tSDH.

#### Methods

This single-institution, retrospective cohort study examines the rate of UTI and pneumonia among adult patients that were admitted with tSDH from 1990-2015. Multivariate logistic regression was used to assess the impact of clinical variables such as patient age, length of hospitalization, injury severity scores (ISS) on rates of postadmission infection.

# Results

A total of 3024 patients (67% male) were included in the study. Overall, 208 (6.9%) developed a UTI and 434 (14.3%) developed pneumonia. A total of 559 patients (18.4%) underwent craniotomy or craniectomy for evacuation of tSDH. Of those that underwent surgery, 62 (11.1%) developed a UTI and 222 (39.7%) developed pneumonia after surgery for tSDH. Using multivariate logistic regression, length of total admission greater than 7 days, ICU admission greater than 7 days, and ISS scores greater than 15 were associated with an increase in both UTI and pneumonia. Male gender, age < 60, and cranial surgery were associated with decreased risk for UTI, while age > 60 and Glasgow coma scale (GCS) of 15 was protective against pneumonia.

### Conclusions

Our study finds pneumonia to be the most common postadmission and post-operative infection after admission for tSDH. Patients with a prolonged total admission and prolonged ICU admission were at increased risk for both UTI and pneumonia. Male patients were protected against UTI and patients with intact neurologic GCS were protected against pneumonia. This data may help in the identification and treatment of at risk populations after tSDH admission.

## **Learning Objectives**

1) Increased length of stay is associated with increased rates of post-admission infections including UTI and pneumonia.

2) Increased injury severity scores are associated with increased rates of post-admission infections.

3) While advanced age is associated with increased risk for UTI, these same patients were found to be at a reduced risk for pneumonia.

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