

Risk Factors for Renal Failure in Patients with Traumatic Subdural Hematoma

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Introduction

While renal dialysis is a known risk factor for subdural hematoma and is associated with worse outcomes, the incidence of renal failure (RF) complicating an admission for traumatic subdural hematoma (tSDH) remains unknown. Therefore, the purpose of this study is to determine the incidence and risk factors for RF following tSDH.

Methods

Data were prospectively collected for consecutive tSDH admissions at our institution from 1990-2015. Predictors of RF were determined using multivariate logistic regression adjusted for demographic and clinical variables. R version 3.3.1 was used for statistical analysis and significance was defined as $p < 0.05$.

Results

Of 3024 tSDH patients (2211 male, 813 female), 59 (2.0%) experienced RF. On multivariate analysis, several positive risk factors for RF were identified: age 70-79 (OR=2.4, 95% CI 1.2-4.9, $p=0.01$), injury severity score (ISS) ≥ 20 (OR=3.0, 95% CI 1.5-5.9, $p<0.01$), trauma injury severity score (TRISS) 0-75 (OR=1.8, 95% CI 1.1-3.1, $p=0.03$), length of stay (LOS) ≥ 7 days (OR=8.3, 95% CI 4.3-16.1, $p<0.01$), ICU LOS ≥ 7 days (OR=11.1, 95% CI 6.0-20.5, $p<0.01$), repeat craniotomy (OR=3.2, 95% CI 1.0-10.1, $p=0.04$), pneumonia (OR=3.1, 95% CI 1.4-6.8, $p<0.01$), and cardiac arrest (OR=3.4, 95% CI 1.2-9.7, $p=0.02$). In contrast, negative risk factors for RF included Glasgow Coma Scale (GCS) score 3-8 (OR=0.3, 95% CI 0.1-0.9, $p=0.03$), intubation required upon admission (OR=0.3, 95% CI 0.1-1.0, $p=0.05$), and sedation given upon admission (OR=0.2, 95% CI 0.1-0.9, $p=0.03$).

Conclusions

Older patients with moderate-severe injuries and complicated admissions for tSDH, but not those obtunded with GCS 3-8 and requiring intubation, were at greatest risk for renal failure. This information may improve risk stratification and prevention of adverse in-hospital sequelae of tSDH.

Learning Objectives

1. Identify risk factors for renal failure for patients admitted with traumatic subdural hematoma.

References

1. Lukasiewicz AM, Grant RA, Basques BA, Webb ML, Samuel AM, Grauer JN (2016) Patient factors associated with 30-day morbidity, mortality, and length of stay after surgery for subdural hematoma: a study of the American College of Surgeons National Surgical Quality Improvement Program. *J Neurosurg* 124: 760-766 doi:10.3171/2015.2.JNS142721

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