Introduction

- The incidence of acute ischemic stroke (AIS) in patients with primary brain tumors is about 1.3%.
- Thrombolytic treatment is underutilized for AIS overall, partly as a result of extensive exclusion criteria used in earlier stroke trials.
- Patients with primary brain tumors are generally perceived to have a higher risk of intracerebral hemorrhage (ICH) and worse outcomes, and therefore excluded from intravenous thrombolysis.
- Our aim was to compare the outcomes of thrombolysis in patients with brain tumor associated stroke (BTS) and non-brain tumor associated strokes (NBTS) in this population-based cross-sectional cohort study using a large national health database.

Methods

- We identified patients with AIS and thrombolysis in the Nationwide Inpatient Sample Database from 2002 to 2011 using ICD-9 codes.
- Patient demographics, hospital characteristics and outcomes between the BTS and NBTS groups. Exclusion criteria: Patients <18 yrs, ESRD, acute MI, metastatic brain tumors, spine tumors.
- The primary outcomes were in-hospital mortality and home discharge. Safety outcome of interest was ICH (symptomatic and asymptomatic).
- Elixhauser index, a validated weighted score of 21 different comorbidities with a high correlation to both short-term and long-term resource utilization, was used for comorbidity adjustment.
- Pearson’s Chi-square test and Wilcoxon-Mann Whitney tests were used for categorical and continuous variables respectively.
- Stepwise logistic regression models were used to assess thrombolysis outcomes, multivariate generalized linear models were used to assess resource utilization.

Results

- The overall thrombolysis utilization rate for NBTS was 2.6% and 0.8% for BTS.
- Thrombolytic treatment is underutilized for AIS overall, partly as a result of extensive exclusion criteria used in earlier stroke trials.
- Thrombolytic outcomes for AIS patients with primary brain tumors in the United States were grouped into the following quartiles: <5, 5-7, 8-14, and > 15.
- Intracerebral hemorrhage (ICH) and worse outcomes, and therefore excluded from intravenous thrombolysis.

Conclusions

- Thrombolytic therapy for acute stroke appears to be safe in patients with primary brain tumors, with similar rates of ICH.
- Malignant BTS have worse outcomes, while benign BTS have outcomes comparable to NBTS.
- Careful consideration of tumor pathology may aid in selection of patients with poor thrombolysis outcomes.