

Cost and Disparities in Outpatient Brain Biopsies in Four US States: The State Ambulatory Database (SASD)

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Introduction

There is a trend towards more ambulatory procedures in cranial neurosurgery. Brain biopsies were some of the first neurosurgical interventions to occur in the ambulatory setting. They are frequently performed operations, have an excellent safety profile, and the timing and frequency of their postoperative complications have been well characterized.

Several groups have demonstrated the safety of ambulatory brain biopsies, with no patients experiencing complications related to early discharge. Although they appear to be safe, the reasons factoring into the selection of patients have not been investigated.

This study examines ambulatory brain biopsies at a health care population level. We investigated the effect of several socioeconomic risk factors on the rate of outpatient brain biopsies and the difference in cost of these procedures in comparison to inpatient brain biopsies.

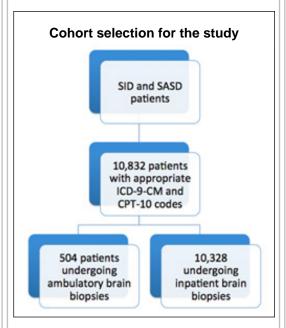
Methods

We performed a cross-sectional study involving 504 patients who underwent outpatient and 10,328 patients who underwent inpatient brain biopsies and were registered in the State Ambulatory Surgery Databases (SASD) and State Inpatient Databases (SID) respectively for 4 US States (New York, California, Florida, North Carolina).

SASD data were used from the states of New York (2005-2008), California (2005-2008), Florida (2000, 2001, 2004-2008), and North Carolina (2003-2008). SID data were used from the states of New York (2005-2009), California (2005-2009), Florida (2005-2009), and North Carolina (2005-2009).

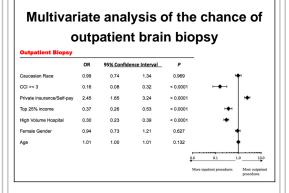
The primary outcome variable was defined as being positive or negative for having undergone an outpatient brain biopsy. The effect on the primary outcome of the pertinent exposure variables was examined in a multivariate analysis.

The secondary outcomes were 30-day postoperative readmissions to any hospital for any reason, and the charges of the inpatient or outpatient brain biopsy.



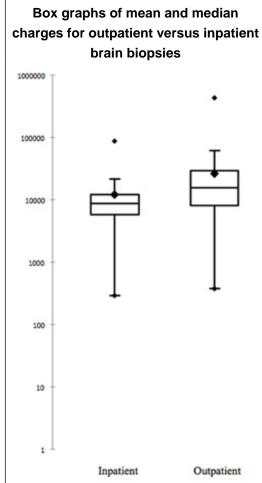
Results

In a multivariate analysis private insurance was significantly associated with outpatient procedures. Higher Charlson Comorbidity Index, high patient income, and high volume hospitals were associated with a decreased chance of outpatient procedures. No sex, or racial disparities were observed.



Institutional charges were significantly less for outpatient brain biopsies. The median charge for inpatient surgery was \$51,316 as compared to \$12,266 for the outpatient setting (P<0.0001).

There was no difference in the rate of 30-day postoperative readmissions among inpatient and outpatient procedures. The rate of neurologic complications resulting in readmissions was extremely low (2.8% for outpatient vs. 2.0% for inpatient procedures). Increasing age was the only factor associated with increased readmissions. The setting of the biopsy did not have a significant effect on readmission rate.



Conclusions

Access to ambulatory brain biopsies appears to be more common for patients with private insurance and fewer comorbidities, in the setting of lower volume hospitals. We did not encounter any gender or racial disparities regarding access to outpatient brain biopsies. Further investigation is needed in the direction of mapping these disparities in resource utilization.