Regional Cost Differences Associated with Microscopic Resection of Supratentorial Intraparenchymal Malignant Neoplasms

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Introduction

• Microscopic surgical resection of supratentorial intraparenchymal malignant neoplasms is a costly but efficacious in improving survival rates
  • Currently the standard treatment for many intracranial malignant neoplasms.

• Cost variability in microscopic resection for supratentorial intraparenchymal malignant neoplasms remains poorly characterized

• The current study compares differences in mean inpatient costs between geographical regions in the United States
Methods

- Retrospective cohort analysis using the 2016 National Inpatient Sample (NIS)

- Patients with a primary diagnosis of a supratentorial intraparenchymal malignant neoplasm who underwent microscopic surgical resection ($n=1,600$) were identified (ICD-10-PCS)
  - Patients were separated into 4 geographical regions within the United States: Northeast, Midwest, South, and West

- Statistical analysis was performed using Rstudio with ANOVA paired with Tukey HSD to analyze mean costs adjusted for length of stay (LOS).
  - Mann-Whitney-U test was used to ensure no differences existed in age and sex within the groups
Results

- Statistical analysis compared differences in mean costs for microscopic resection of supratentorial intraparenchymal malignant neoplasms by region
  - Northeast (n = 407, mean = $141,836.60 ± $141,879.8)
  - Midwest (n = 425, mean = $105,627.80 ± $52,677.34)
  - South (n = 620, mean = $113,273.10 ± $94,543.92)
  - West (n = 429, mean = $175,544.10 ± $149,385.4)
Results

- Significant cost differences were found between:
  - Northeast vs. Midwest ($p<0.0001$)
  - Northeast vs. South ($p=0.00062$)
  - Northeast vs. West ($p=0.00014$)
  - Midwest vs. West ($p<0.0001$)
  - South vs. West ($p<0.0001$)
Discussion

- Significant cost discrepancies exist between multiple U.S. regions for microscopic resection of supratentorial intraparenchymal malignant neoplasms

- Further studies should investigate alternative factors associated with cost differences to find solutions for normalizing the costs of this indispensable procedure
Microscopic surgical resection of supratentorial intraparenchymal malignant neoplasms carries a large financial burden.

Significant cost differences exist between multiple regions:

- West was associated with highest cost (mean = $175,544.10 ± $149,385.4)
- Midwest was associated with lowest cost (mean = $105,627.80 ± $52,677.34)