Patterns of care, operative morbidity, and survival of cranial chordomas: 10-year analysis of the NCDB, SEER, and NSQIP database

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Abstracts will be considered for both poster and platform presentations

Neuro-oncology

INTRODUCTION: Cranial chordomas are a rare and slow-growing bony tumor. There is no established standard of care, with most consensus favoring radical surgical removal followed by high-dose radiotherapy. The lack of prospective data allows for significant variability in treatment decisions among physicians.

METHODS: We provide a description on the patterns of care, operative characteristics, complications and survival comparison of chordomas using the National Cancer Database (NCDB), the Surveillance, Epidemiology, and End Results (SEER) database, and the National Surgical Quality Improvement Program (NSQIP) dataset. We used ICD-O3 codes 9370/3, 9371/3, 9372/3 to identify cases in NCDB and SEER. NSQIP was used to describe operative characteristics. Cases were identified using the CPT codes 61580-61598 for skull base procedures and the ICD-9 code of 170.0 or an ICD-10 code of 41.0 to identify chordomas.

RESULTS: 410 patients were identified from NCDB, 405 patients from SEER, and 64 cases out of 2,362 were identified from NSQIP. The majority of patients were men (59.0% and 54.8%), white (85.6% and 83.2%), and non-Hispanic (77.6% and 77.8%) in NCDB and SEER. Pediatrics patients (<20 years) accounted for 7.6-8.4% of all chordomas with a median age of 50 years. Demographics were similar in NSQIP with only 1 pediatric patient (median age of 56 years). Surgery was the preferred treatment modality (83.4% in NCDB and 86.2% in SEER). Watchful waiting was the first course of treatment in 8.0% of patients in NCDB and 13.58% of patients in SEER. Surgery was performed alone (48.3% in NCDB and 40.74% in SEER), or in combination with radiation (32.9% in NCDB and 45.43% in SEER). An increasing trend of using radiation and surgery throughout time was evidenced, with a decreasing use of surgery alone. Median operative time, and median hospital length was significantly higher in patients with chordomas (497 minutes compared to 320 minutes in patients with any other indications, $p< 0.0001$, and 7 days versus 4 days, $p = 0.0001$). Overall postoperative morbidity was higher in chordomas (43.8% vs 22.5%, $p = 0.0001$), at the expense of deep surgical site infection, wound disruption, and blood transfusion. Median survival was over 12 years in NCDB and SEER, with a 5-year survival rate over 76%. Long-term survival is not reported in NSQIP. Survival was lower in patients that did not receive any form of treatment, and a trend for higher survival in patients that received radiation plus surgery was evidenced in both NCDB and SEER. Lower socioeconomic factor, and higher number of comorbidities demonstrated a trend towards higher risk of mortality that was not statistically significant. No independent predictor factor was found.

CONCLUSIONS: Our results suggest a trend favoring the use of radiation and surgery as first approach. Patients reported in SEER were more likely to receive radiation, which may suggest differences bound to facility location, and socioeconomic status. Prospective studies are warranted to assess systemic treatment approaches as surgical treatment for chordomas is complicated associated with long operative time, hospital stay and a higher number of operative complications.