Risk Factors for Re-admission following Surgical Decompression for Spinal Epidural Abscesses: An Analysis of 4,595 Patients

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INTRODUCTION: Spinal epidural abscess (SEA), while rare and occurring ~2.5-5.1 per 10,000 admissions, may lead to permanent neurologic deficits and mortality. Definitive treatment of SEA often involves surgical intervention via decompression with/without instrumented fusion. Readmission rates following these procedures can vary based on patient risk profiles but have not been well-characterized. To this end, the aims of this study were to: 1) compare baseline demographics of patients undergoing surgery for SEA who were/were not re-admitted within 90 days; 2) identify risk factors for 90-day readmissions; and 3) quantify 90-day episode-of-care healthcare costs.

METHODS: A search of the PearlDiver database from 2010 to 2021 for all patients undergoing decompression with/without instrumentation for SEA identified 4,595 patients. Cohorts were identified in the dataset through International Classification of Disease, Ninth Revision (ICD-9), ICD-10 and Current Procedural Terminology codes. Baseline demographics of patients who were/were not readmitted within 90-days following decompression were aggregated/compared, identifying patient-related risk factors associated with re-admission. Using Bonferroni correction, a p-value less than 0.001 was considered statistically significant.

RESULTS SECTION: Readmission within 90 days of surgical decompression occurred in 36.1% (1659/4595) patients. Univariate analysis demonstrated age and gender were not associated with readmission rate, but an association was seen with pre-existing co-morbidities of alcohol use disorder, arrhythmias, chronic kidney disease, ischemic heart disease, drug use, obesity, and tobacco use. Additional risk factors for 90-day readmission included fluid and electrolyte abnormalities, obesity, paralysis, tobacco use and pathologic weight-loss (p<0.0001 for all). Mean same day total costs ($17,920 vs. $8,204, p<0.001) and mean 90-day costs ($46,050 vs. $15,200, p<0.001) were significantly higher in the readmission group relative to the control cohort.

DISCUSSION: A substantial proportion of patients (36.1%) are readmitted within 90 days following surgical decompression for SEA. The top 5 risk factors in descending order are: fluid/electrolyte abnormalities, pathologic weight loss, tobacco use, pre-existing paralysis, and obesity; but there was no association with respect to age and gender. Readmission was associated with significantly greater same-day total and 90-day costs. This study highlights potential areas for perioperative medical optimization that may help reduce healthcare utilization for patients with SEA undergoing surgical intervention.

SIGNIFICANCE/CLINICAL RELEVANCE: While rare in incidence, patients undergoing surgical decompression for SEA have high rates of readmission. The current study offers a novel contribution to understanding risk factors and differences in costs associated with readmissions following surgical decompression for SEA.