Albumin Levels Stratify Risk of 30-Day Complications Following Posterior Cervical Fusion

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INTRODUCTION:
Hypoalbuminemia may increase risk for complications following spine surgery, but there are no studies that utilize data-driven methods to derive precise thresholds to risk stratify patients. Therefore, the purpose of this study was to establish preoperative albumin thresholds to stratify the risk of 30-day complications following PCF.
METHODS:
A retrospective cohort analysis was performed using a national database. Patients with a preoperative measurement of albumin prior to PCF were included, whereas patients undergoing multilevel PCF were excluded. Stratum specific likelihood ratio (SSLR) analysis was conducted to determine data-driven albumin strata that minimized the likelihood of complications within 30-days of PCF. Multivariate regression was utilized to stratify the risk of 30-day major and minor complications following PCF.
RESULTS:
SSLR analysis identified three albumin strata: 1-3.2g/dL, 3.2-3.6g/dL, and 3.6+g/dL prior to surgery. Compared to the 3.6+ g/dL stratum, the 1-3.2g/dL (OR: 3.02) and 3.2-3.6g/dL (OR: 1.65) cohorts had significant and sequentially increasing odds of 30-day all-cause complications following PCF ($P < 0.05$ for all).
DISCUSSION AND CONCLUSION:
This study established data-driven preoperative albumin thresholds that correlate with an increased risk of 30-day all-cause complications following PCF. To the best of our knowledge, this is the first study to demonstrate the variable and stratifiable risk of complications on the basis of preoperative albumin levels. These findings assist spine surgeons in stratifying patient risk based on preoperative albumin levels, enabling more informed decision-making and potentially improving patient outcomes.