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Serum Albumin May Predict Hospital-Related Complications in Total Shoulder Arthroplasty

Introduction:
Serum albumin measurement is a low-cost test assessing nutritional status and organ function. This study examined the relationship between preoperative serum albumin levels and hospital-related complications (HRC) in total shoulder arthroplasty (TSA) patients.
Methods:
A retrospective cohort study was performed using NSQIP data from 2012-2021. Inclusion: age ≥18 years. Patients were grouped by preoperative albumin: severe hypoalbuminemia (<3 mg/dL), mild hypoalbuminemia (3-3.49 mg/dL), normal (3.5-4.49 mg/dL), and hyperalbuminemia (≥4.5 mg/dL). The primary outcome was HRC, including acute kidney failure and urinary tract infection. Confounders included demographics (age, sex, race, ethnicity), baseline health (functional status, ASA class, BMI, smoking, diabetes, immunosuppressive therapy), and procedure characteristics (admission origin, surgical setting, anesthesia, transfusion, emergency designation). Univariate analyses assessed differences between cohorts, and multivariable regression examined the relationship between albumin and HRC.
Results:
Among 18,044 TSA patients, 13,744 had normal albumin, 1,055 mild hypoalbuminemia, 248 severe hypoalbuminemia, and 2,997 hyperalbuminemia. Most hypoalbuminemia and normal albumin patients were 70-79 years old, female, White, non-Hispanic, functionally independent, ASA class 3, obese, and had no smoking, diabetes, or immunosuppressive therapy. The hyperalbuminemia cohort had more patients aged 60-69, male, and ASA class <3.
Adjusted multivariable regression showed severe hypoalbuminemia patients had 2.93 times higher odds (95% CI 1.43-5.51; p=0.002) of HRC than those with normal albumin. This association was not significant for mild hypoalbuminemia or hyperalbuminemia.
Conclusion:
TSA patients with severe hypoalbuminemia have a higher HRC risk. Further studies on preoperative albumin management and perioperative support strategies may improve outcomes.