Optimizing Perioperative Nutrition and Anemia Management in Patients with Metastatic Disease Undergoing Surgical Treatment: Unraveling Factors Impacting Complications

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INTRODUCTION:
Overall health status and nutritional optimization has been found to be essential in optimizing outcomes after surgical treatment. Patients with metastatic disease are at increased risks for complications given the deleterious impact of their systemic disease. Psoas cross-sectional areas have also been shown to be an accurate surrogate for sarcopenia, serving as a useful tool in assessing patients' postoperative and functional outcomes.
The objective of this study was to report on the influence of previously studied laboratory, imaging, and clinical characteristics on complications. We asked the following questions: Will surrogate markers for 1) nutritional and health status (i.e., BMI, hemoglobin, and albumin levels) and 2) psoas cross-sectional areas predict the rate of postoperative, non-oncologic complications?
METHODS:
Patients surgically treated for metastatic disease of the femur or tibia from 2001-2022 were retrospectively reviewed, with data collected (when available) for demographic characteristics, diagnosis, treatment, complication, as well as perioperative BMI, hemoglobin, and albumin. Additionally, psoas cross sectional area was measured at the L4-L5 level for all patients with available CT imaging. Perioperative albumin levels were categorized into hypoalbuminemia (<3.5 g/dL) and normal albumin groups while abnormal BMI parameters were defined as ≤19 kg/m^2 or ≥30 kg/m^2. Descriptive statistics, risk assessment, and statistical analysis were performed. Patients' postoperative non-oncologic complications were compared utilizing student's t-test and with statistical significance set at $p<0.05$.
RESULTS:
Following review, 119 patients (61F, 58M) treated at 128 sites met inclusion criteria. Patients included had a mean age 61.9±15.6 and mean follow-up time of 23.7±9.3 months. The rate of wound dehiscence or infection was 10/128 (7.8%). Hemoglobin <12 [11% vs. 0%, NNT 8.9; p=0.034] and abnormal BMI [18.2% vs. 3.5%, NNT 6.8, p=0.020] increased the risk of wound or infectious complications. Meanwhile, hypoalbuminemia (<3.5g/dL) did not [10.0% vs. 6.6%, NNT 29.2; p=0.487]. Psoas cross-sectional area was smaller in patients with non-oncologic complications (12.7 cm^2 vs. 16.2 cm^2; p=.0169). This relationship increased when males (14.4 cm^2 vs. 19.1 cm^2; p=.031) and females (10.68 cm^2 vs. 13.97 cm^2; p=.044) were analyzed separately.
DISCUSSION AND CONCLUSION:
Complication risk for patients with metastatic disease is multifactorial, with anemia, abnormal BMI, and sarcopenia as measured by psoas cross-sectional area increasing the risk for non-oncologic complications in this cohort. Hypoalbuminemia did not influence complications in this study group. The results of this study suggest the importance of preoperative labs in this patient population to ensure optimization of patients' nutritional and overall health status to minimize postoperative, non-oncologic complications.