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Opioid use in musculoskeletal oncology

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Cover Letter: Young Investigator Award

I am currently a fourth-year orthopaedic surgery resident and will be undergoing a fellowship in musculoskeletal oncology at the University of Toronto in 2023-24. With respect to the current abstract, I was the lead author who conceived the idea, analyzed the data and wrote the abstract/manuscript.

Abstract

Background

Opioid prescribing in the context of orthopaedic surgery has been recognized as a critical area in the ongoing opioid epidemic. Given the negative consequences of chronic opioid use, significant efforts have been made to reduce both preoperative and postoperative opioid prescribing and consumption in orthopaedic patients. However, musculoskeletal oncology patients represent a unique subset of patients and there is a paucity of data evaluating perioperative opioid consumption and the risk for chronic use.

Purpose: The objectives of the current study were to describe opioid consumption patterns and evaluate predictors of chronic opioid use in musculoskeletal oncology patients undergoing limb-salvage surgery and endoprosthetic reconstruction.

Methods

This study was a secondary analysis of the recently completed PARITY (Prophylactic Antibiotic Regimens in Tumor Surgery) trial. Patient, surgical and tumor characteristics were acquired from the prospectively collected trial database. Patient opioid consumption collected preoperatively and at 3, 6 and 12 months postoperatively was

presented descriptively. A multivariate logistic regression model was created to explore predictors of chronic opioid consumption at 12 months postoperatively.

Results

There were 604 patients available for analysis (Table 1). Preoperatively, 34% (193/575) of patients were consuming opioids compared to 16.7% (82/492) at 3 months postoperatively, 8% (37/460) at 6 months postoperatively and 6.6% (28/425) at 12 months postoperatively. Of patients consuming preoperative opioids, 10% (12/118) continued to consume opioids at 12 months follow-up. The adjusted regression model found that only the presence of metastases at initial presentation (Odds Ratio 3.05 [95% Confidence Interval 1.27, 7.51], $p=0.014$) was predictive of chronic opioid use (Table 2). Preoperative opioid consumption, older age, sex, longer surgical times, reoperation rates, and country of origin were not predictive of chronic use.

Conclusions

Despite a high prevalence of preoperative opioid use, invasive surgery and high rates of reoperations, few patients continued to consume opioids at 1-year postoperatively. The presence of metastases was associated with chronic opioid use. These results are a substantial departure from the existing orthopaedic literature evaluating other patient populations and suggest that specific prescribing guidelines are warranted for musculoskeletal oncology patients.

Table 1. Patient Characteristics

Variable	Entire Cohort (n=604)
Age (SD)	41.2 (21.9)
Gender (M/F)	361/243
Diagnosis	
<i>Primary Bone Tumor</i>	438
<i>Soft Tissue Sarcoma</i>	62
<i>Metastatic Bone Disease</i>	56
<i>Giant Cell Tumor</i>	48
Location	
<i>Femur</i>	498
<i>Tibia</i>	106
Region	
<i>North America</i>	421

<i>International</i>	183
Systemic Metastases at Presentation	
Yes	105
No	499
Opioid Consumption	
Preoperative	193/575 (34%)
3 months postoperative	82/492 (16.7%)
6 months postoperative	37/460 (8.0%)
1 year postoperative	28/425 (6.6%)

Table 2. Multivariate binomial regression analysis evaluating independent predictors of chronic postoperative opioid use.

Variable	OR	95% CI for OR		P Value
		Lower	Upper	
Age (per year)	1.02	0.99	1.04	0.093
Sex				
<i>Female (ref)</i>				
Male	0.66	0.30	1.5	0.308
Location				
<i>Femur (ref)</i>				
Tibia	2.34	0.87	6.33	0.089
Metastatic Disease at Presentation				
<i>No (ref)</i>				
Yes	3.05	1.27	7.51	0.014
Preoperative Opioid Consumption				
<i>No (ref)</i>				
Yes	1.34	0.59	3.10	0.482
Region				
<i>North American (ref)</i>				
International	0.56	0.19	1.65	0.294
Operative Time (hours)	0.98	0.81	1.20	0.922
Reoperation				
<i>No (ref)</i>				
Yes	1.86	0.78	4.40	0.162
OR: odds ratio; CI: confidence interval; ref: reference; bolded : statistically significant (p<0.05)				