Intraoperative Opioid Administration Among Cancer Patients

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Background

Cancer prevalence continues to rise. In vitro and in vivo studies have demonstrated that opioid receptor agonists may be associated with poor outcomes for cancer patients. Laboratory studies have shown that opioids cause immunosuppression; tumor cell progression, recurrence and metastasis. The surgical environment further decreases immune function, causes an inflammatory response and promotes cancer cell mobilization. Anesthesia providers are in a unique position to influence postoperative outcomes. Opioid free anesthetic delivery is a growing trend amongst anesthesia providers and is supported by the literature.

The purpose of this project is to compare intraoperative opioid administration rates for patients with a cancer diagnosis to those without a cancer diagnosis.

Methods

- Design: Observational, retrospective, descriptive study
- Regulatory: CIRC approval and IRB exemption
- Dates: October 1, 2017 to September 30, 2018
- Protection of human subjects: Deidentified patient data stored in HIPPA compliant Redcap Database
- Setting: Providence Sacred Heart Medical Center
- Participants: Adult, non-emergent surgical patients receiving IV and inhalational anesthesia
- Event rates reported as risk and relative risk (RR) calculated
- Analysis: Group differences in categorical variables tested by Chi-Square

PROVIDENCE Sacred Heart Medical Center & Children's Hospital

Providence Sacred Heart Medical Center
Gonzaga University
Nurse Anesthesia Program

GONZAGA UNIVERSITY School of Nursing & Human Physiology

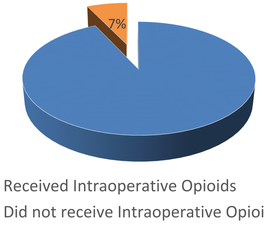
Findings

Table 1. Baseline Demographic & Characteristics N=8168

Characteristic	n	%
Gender		
Female	4158	51%
Male	4010	49%
Cancer Diagnosis		
Yes	961	12%
No	7207	88%
Anesthesia Type		
Intravenous Anesthesia	590	7%
Inhalational Agent	7578	93%
Most Common Service Lines		
Orthopedics	1944	24%
Neurosurgery	1247	15%
Cardiothoracic	987	12%
General	931	11%
Vascular	598	7%
Cardiology	457	6%
Opioid History Prior to Surgery		
Yes	647	8%
No	7521	92%
	Mean	**SD**
Age (years	60.6	15.8
Body Mass Index (kg/m²)	29.9	7.2
	Median	**IQR**
Case Duration (minutes)*	147	102-238

* Anesthesia Start to Finish

Figure 1. Project Participants by Cancer Diagnosis



- A vast majority of patients undergoing surgery with a cancer diagnosis receive intraoperative opioids

Findings (cont.)

Table 2. Use of Intraoperative Opioids by Cancer Diagnosis

	Intraoperative Opioid Use					
Cancer Diagnosis	**Yes**	**No**	**Risk**	**RR**	**95% CI**	**P**
Yes	899	62	93.5%	1.00	0.98-1.02	0.97
No	6744	463	93.6%			

- Rates of intraoperative opioid administration were similar for patients with and without a cancer diagnosis

Table 3. Use of Intraoperative Opioids by Other Risk Factors (Cancer Diagnosis Only)

	Intraoperative Opioid Use					
History of Opioid Use	Yes	No	Risk	RR	95% CI	P
Yes	78	3	96.3%	1.03	0.99-1.08	0.18
No	821	59				
Surgery Duration	Yes	No	Risk	RR	95% CI	P
Above Median	486	11	98%	1.10	1.06-1.14	<0.001
Below Median	413	51	89%			
Anesthesia Type	Yes	No	Risk	RR	95% CI	P
Intravenous Anesthesia	0	0	0%			
Inhalational	899	62	94%			

- TIVA was not performed for any patients with a cancer diagnosis
- Cancer patients with case durations lasting longer than the median were 10% more likely to receive intraoperative opioids
- Outpatient opioid use did not affect intraoperative administration occurrence

Discussion

This project determined that rates of intraoperative opioid administration were similar for patients with or without a cancer diagnosis. Literature suggests the use of opioid free anesthesia should be considered for patients with a cancer diagnosis. Opioid administration is common practice. Reducing its use may provide improved short and long term outcomes.

This project did not consider costs of various anesthesia techniques nor did it examine dosages of opioid administration. Future research should examine reductions in the use of opioid administration and the costs associated with the use of opioid free anesthesia.

References

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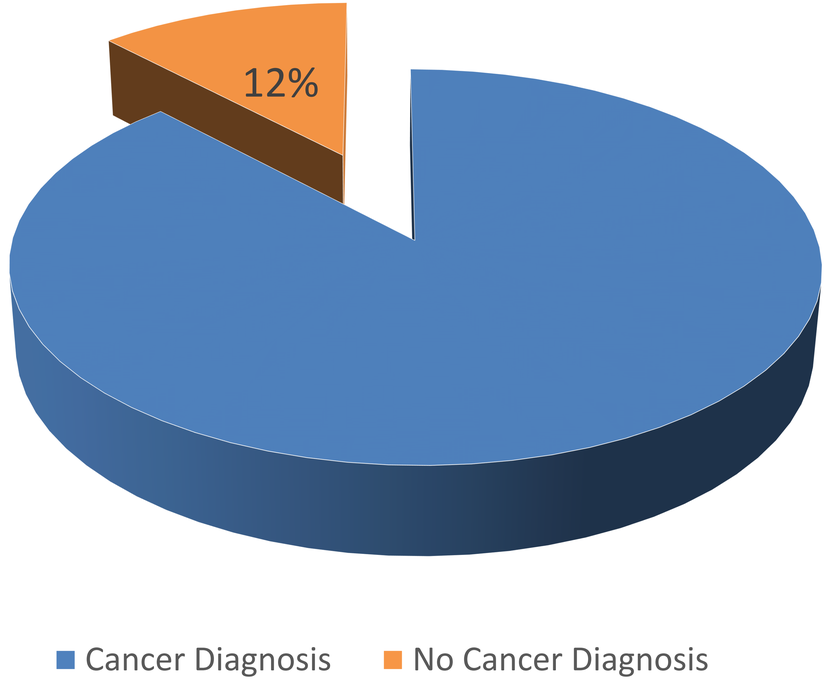

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Service Line	Received Intraoperative Opioids	Did Not Receive Intraoperative Opioids	Risk
Orthopedics	1792	152	92%
Neurosurgery	1235	12	99%
Cardiothoracic	982	5	99%
General	884	47	95%
Vascular	582	16	97%
Cardiology	435	22	95%