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Pain Management

(Abstracts and Case Report/Series)

Contents

Analgesic Consumption in Chronic Cannabis Users Following Orthopedic Trauma Surgery

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Introduction:

Already the most widely used illicit substance in the USA, reported marijuana consumption has increased in Canada since being legalized in 2018. Beyond its recreational use, nearly 14% of Canadians use cannabis as part of their medical treatment (1). As its analgesic characteristics are investigated, proponents of cannabis use believe it can modulate pain response in various settings (2). Recent evidence suggests that those with fibromyalgia, diabetic neuropathy, complex regional pain syndrome and multiple sclerosis, amongst others, may specifically benefit (3). Minimal evidence currently exists to address the relationship between cannabis use pre-operatively and opioid use postoperatively (4). Therefore, the aim of our study is to evaluate opioid consumption and pain experience for chronic marijuana users in the post-operative period following orthopedic trauma surgery.

Methods:

Following institutional ethics approval and written informed consent, patients undergoing orthopedic trauma surgeries were assigned to the study group (chronic marijuana user) and control group (non-user) if they met inclusion criteria. A “chronic marijuana user” is an individual who uses marijuana, in any form, at least once a week for three months prior to their procedure. A “non-user” is one that has not used marijuana within 12 months of their procedure. Participants were excluded when they refused or lacked capacity to consent, regional anesthesia technique administered, presence of multiple injuries or chronic pain. The primary outcome was total opioid consumption at 24 hours (hrs) post-operatively. Secondary outcomes were opioid consumption in PACU, at 48, and 72 hr post-operatively, the numerical rating scale (NRS) at rest and movement in PACU, at 24, 48, and 72 hr post-operatively, incidence of nausea and vomiting, and any adverse events. All parametric data was analyzed using mean and standard deviation. A Student’s t-Test was performed to compare differences between groups and a p-value of <0.05 was used to indicate a statistically significant difference.

Results:

A total of 23 patients were recruited ranging from ages 19-74, with 3 being excluded due to unanticipated regional technique administration. Of the remaining participants, 10 (6F, 4M) were in the study group and 10 (7F, 3M) in the control group. Surgery types in both groups were similar which included open reduction and internal fixation of the ankle, radius and hip. Despite greater total morphine consumption in the cannabis group, the difference did not reach statistical significance at 24 hrs postoperatively or at any other time points. Pain scores at rest were statistically different between groups at 24 hrs postoperatively and the pain score on movement, although not reaching significant difference, were trending higher amongst cannabis users. Within 72 hrs, 3/10 non-users and 2/10 users reported nausea. There were no major adverse events. (Table 1)

Discussion:

Opioid consumption did not significantly differ preoperatively or postoperatively between cannabis users and non-users. At 24 hrs postoperatively, however, users experienced significantly more pain. This finding is interesting as cannabis may possess some pain modulating effects; therefore, postoperatively, one expects higher opioid demand, increased pain scores or both. Lack of statistical difference in pain score on movement at 24 hrs postoperatively could be due to the study being under-powered. Nonetheless, it is important to risk stratify cannabis users undergoing orthopedic procedures who may experience more pain, especially 24 hrs postoperatively, and offer better analgesic options, possibly incorporating regional anesthesia technique.

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Table 1:

Time Period		*Cannabis-users (mean±SD)*	*Non-user (mean±SD)*	*P-value*
Pre-operative	*NRS[1] at rest*	3.8±2.1	3.9±3.6	*0.94*
	NRS on movement	6.3±1.6	6.2±3.6	*0.94*
	Opioid use[2] (mg)	63.8±69.2	17.4±20.2	*0.08*
Intraoperative	*Opioid use (mg)*	69.8±20.8	70.4±36.4	*0.96*
PACU[3]	*NRS at rest*	5.7±2.3	4.00±3.3	0.23
	NRS on movement	7.1±2.4	5.4±3.9	0.30
	Opioid Use	17.6±18.6	14.1±17.6	0.69
0-24 hours post-operative	*NRS at rest*	**5.8±1.8**	**3.1±2.8**	**0.02**
	NRS on movement	7.5±1.8	5.0±3.5	0.06
	Opioid use (mg)	47.8±45.4	33.5±48.6	*0.53*
24-48 hours post-operative	*NRS at rest*	4.4±1.7	3.5±2.7	0.42
	NRS on movement	6.0±2.5	5.7±3.5	0.83
	Opioid use (mg)	22.7±6.98	29.7±33.6	0.56
48-72 hours post-operative	*NRS at rest*	4.1±2.0	3.0±3.0	*0.36*
	NRS on movement	5.9±3.0	4.7±3.6	*0.46*
	Opioid use (mg)	16.4±11.3	26.5±19.4	0.19
Incidences of nausea/vomiting		2	3	-

Table 2. **Table showing pain scores and opioid consumption at various perioperative time points in 10 cannabis users and 10 non-users undergoing orthopedic trauma surgery. Data is bolded when there is a statistically significant difference. 1: Numerical rating scale, 2 = oral morphine equivalent, 3 = post-anesthesia care unit**

Comparison of the Three Therapeutic Methods of the Valsalva Maneuver, Lidocaine, and a Combination of Valsalva Maneuver and Lidocaine in Decreasing the pain on Injection of Propofol Auto Induction Method

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Introduction:

The most noticeable complaint of patients receiving propofol, is pain on injection. Although the role of lidocaine in decreasing pain on injection is well-known, the role of the Valsalva maneuver in decreasing such pain has rarely been studied. Therefore, the aim of this study was to compare the effect of the Valsalva maneuver, lidocaine and a combination of Valsalva maneuver and lidocaine on decreasing the pain on injection of propofol in the auto induction method.

Methods:

This study was a double-blind clinical trial, conducted on 111 patients who were candidates for general anesthesia using propofol. The patients were allocated into three groups receiving lidocaine 2%, performing the Valsalva maneuver and a combination of lidocaine and Valsalva maneuver. The pain on injection of propofol was measured using the Visual Analog Scale (VAS). The descriptive evaluation criteria and analytical Mann-Whitney and Croxall-Wallace tests were used to analyze the data with the SPSS v23 software.

Results:

The mean (standard deviation) of the VAS pain score in the group combining the Valsalva maneuver with lidocaine was less than the other two groups equal to 0.50 (32/0). In addition, the mean (standard deviation) of the VAS score in the lidocaine group and Valsalva maneuver group were 64.0 (41.1) and 81.7 (91.1) respectively. In addition, only one of the patients in the group combining lidocaine with the Valsalva maneuver reported any pain. The mean VAS pain score in the various age groups and gender groups did not show any significant difference.

Discussion:

The Valsalva maneuver does not have any side effects which makes it an auxiliary therapy in conjunction with other proven methods, in order to decrease the pain on injection of propofol.

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