

RETROSPECTIVE ASSESSMENT OF A RELATIONSHIP BETWEEN INTRA-OPERATIVE NOCICEPTION AND POST-OPERATIVE ANALGESIA REQUIREMENTS IN DOGS UNDERGOING THORACIC SURGERY : 100 CASES (2015-2019)

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INTRODUCTION

The analgesia management of thoracic surgery can be challenging, requiring a multimodal approach.

The aim of this study was to assess the presence of a relationship between intraoperative nociception and postoperative pain in dogs undergoing thoracic surgery.

METHODOLOGY

Records from dogs undergoing median sternotomy or lateral thoracotomy (2015-2019) were reviewed and cases were allocated to one of two groups:

- NOCI-FREE: dogs with no evidence of intraoperative nociception.
- NOCI: dogs that required intraoperative rescue analgesia.

Intra-operative nociception was identified by an increase in heart rate or blood pressure of $\geq 15\%$ that subsided after the administration of rescue analgesia.

Population data, type of surgery, pre-anesthetic medications, locoregional analgesia, intraoperative infusions and rescue analgesia used, were registered and compared between groups.

Post-operative pain scores (Glasgow Composite Scale) and analgesia regimes were compared between groups.

RESULTS

Statistical analysis was performed on 100 records: 53 were assigned to NOCI-FREE and 47 to NOCI. 51 dogs in NOCI-FREE group received loco-regional anaesthesia: extradural (n = 5), peripheral nerve block (n = 46) while 46 had locoregional anaesthesia in NOCI, comprising: 3 different peripheral nerve block techniques (n = 38), extradural (n = 5), combination of peripheral nerve block and extradural (n = 4). The proportion of animals with locoregional analgesia was not different between groups (p = 0.09). Being on an intra-operative infusion of lidocaine, fentanyl or dexmedetomidine was identified as a protective factor for nociception [OR = 11; (4.15- 29.7); p = 0.04]. Our study failed to identify a difference in the post-operative pain scores (p = 0.22) and post-operative methadone requirements (p = 0.07). Additionally, the use of post-operative preventive infusions (p = 0.21) and the use of rescue analgesia (p = 0.98) was similar between NOCI and NOCI-FREE.

CONCLUSION

In the population studied, it appears that dogs showing signs of nociception intraoperatively during thoracic surgery do not necessarily show higher pain scores, nor do they need additional pain relief in the post-operative period.

Information recorded	NOCI FREE (n=53)	NOCI (n=47)	P value
Average Pain Score	2.50 (1.10 – 4.50)	2.25 (0.60 – 5.50)	0.22
Maximum Pain Score	4.00 (2.00 - 9.00)	3.5 (2.00 - 8.50)	0.56
Methadone dose per administration (mg kg ⁻¹)	0.20 (0.00 - 0.30)	0.20 (0.00 – 0.30)	0.43
Cumulative methadone dose (mg kg ⁻¹)	0.80 (0.00 – 1.60)	1.00 (0.00 - 2.40)	0.06
Number of methadone doses	5 (0 – 8)	5 (0 – 8)	
Levobupivacaine chest drain & dose (mg kg ⁻¹)	21 No 32 Yes [0.92 (0.20 – 1.40)]	20 No 27 Yes [1.00 (0.30 – 2.00)]	0.76 (0.19)
Epidural & levobupivacaine dose (mg kg ⁻¹)	50 No 3 Yes [0.33 (0.26 – 0.33)]	43 No 4 Yes [0.26 (0.18 – 0.38)]	0.57 (0.36)
Anti-inflammatory drug & dose (mg kg ⁻¹)	41 Non-steroid anti-inflammatory 1 Steroid anti-inflammatory 11 None	40 Non-steroid anti-inflammatory 3 Steroid anti-inflammatory 4 None	0.13
Other pre-emptive analgesic drugs & dose	4 Dexmedetomidine [0.80 (0.50 – 1.00)] 1 Ketamine (0.30) 1 Lidocaine (20.00) 1 Morphine (0.06) 6 Paracetamol (10.0)	3 Dexmedetomidine [1.00 (1.00 – 1.00)] 1 Ketamine (0.30) 1 Lidocaine (33.33) 1 Paracetamol (10.00)	0.21
Rescue drug & dose	3 Ketamine (0.30) 2 Levobupivacaine chest drain (0.70-0.80) 2 Methadone [0.3 (0.2 – 0.4)] 2 Methadone [0.15 (0.10 - 0.20)] + 1 Ketamine (0.30) 1 Methadone (0.1) + Ketamine (0.30) + Fentanyl (3) 43 None	2 Ketamine [0.45 (0.30-0.60)] 3 Levobupivacaine chest drain [1 (0.30 – 1.00)] 1 Methadone (0.6) 1 Methadone (0.2) + levobupivacaine (0.80) 1 Methadone (0.6) + levobupivacaine (1) + Lidocaine (33.33) 39 None	0.98

Methadone (mg kg⁻¹); Dexmedetomidine (µg kg⁻¹ h⁻¹); Ketamine (mg kg⁻¹ h⁻¹); Levobupivacaine (mg kg⁻¹); Fentanyl (µg kg⁻¹ h⁻¹); Lidocaine (µg kg⁻¹ min⁻¹) Morphine (mg kg⁻¹ h⁻¹); Paracetamol (mg kg⁻¹);

Table 1: Post operative analgesia plan

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