

THE INCIDENCE OF CARDIAC ARRHYTHMIAS DURING INTUBATION IN DOGS

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Summary

The research was carried out on 104 dogs submitted in surgery clinic for programmed surgical interventions. These patients were prepared for intubation using in premedication acepromazine or xylazine and for induction of general anesthesia thiopental or propofol. For observe cardiac dysrhythmias the ECG electrodes were places in Lead II. During intubation in 11.53% of dogs were recorded isolated premature ventricular contraction (75% of cases) and 5-10 seconds periods of transient ventricular tachycardia (25% of cases). 18.75% of dogs that received xylazine-propofol combination show up alteration of T wave associated with ST segment infra-disleveled. There is a low incidence of cardiac arrhythmias during orotracheal intubation maneuever. These changes were transient and have no clinical significance.

Key words: intubation, premature ventricular contraction, ventricular tachycardia, dog.

The perioperative evaluation and monitoring of cardiac activity is very important for all patients. It is known that anesthetic drugs may cause alterations in cardiac function by decreasing cardiac output and mean blood pressure, reducing venous return, inducing different types of arrhythmias and sensitivity of myocardium for circulating catecholamines (5). For a safe anesthesia cardiac control through electrocardioscopy is necessary. There are some data regarding hemodynamic response to the laryngoscopy and endotracheal intubation (4, 6, 8, 10) but there is a lake of information and electrocardiographic records regarding to orotracheal intubation and correlation with cardiac arrhythmias in dogs (9). However it is difficult to choose of what changes to look for and when these changes may be significant (3) Further, the animal position on the operation table not corresponds with the standard ECG recording position, and in this case it is important to note what the tracing is like at the beginning of the anesthetic procedure and watch for changes.

Materials and methods

The research was carried out on 104 dogs, submitted in surgery clinic for different types of programmed surgical interventions (table 1). The subjects were male and female, clinical evaluated for exclude a cardiac disease. All animals were starved for 12 hours before the induction of anesthesia. The selected dogs randomly received an acepromazine 2% premedication (dose ranges between 0,1

mg/kg for small dogs to 0,03 mg/kg for large dogs) or xylazine 2% (1 mg/kg) both administrated by IV route. The ECG electrodes were placed in Lead II, and cardiac activity was monitorised by electrocardioscopy. After a 15-20 minutes a the induction of general anesthesia was performed by a bolus dose of thiopental 2,5% (3-10 mg/kg) or propofol 1% (3-6 mg/kg) administrated IV, followed by supplementation if it needs to allow a degree of general anesthesia which permitted orotracheal intubation. All dogs were placed in sternal recumbency and intubation was performed, without use of a laryngoscope. Any modification of ECG tracing during intubation (which allow 1 minute \pm 40 seconds) and compared with anterior aspect of trace was noted.

Table 1.

Distribution of operations and anesthetic medication

	Acepromazine premedication		Xylazine premedication	
	Thiopental induction	Propofol induction	Thiopental induction	Propofol induction
Ovariectomy	6	5	8	2
Mamectomy	7	4	12	1
Ophthalmic procedures	10	-	5	7
Umbilical hernias	13	4	5	4
Salivary gland exeresis	5	-	1	-
Other	3	-	-	2
TOTAL	44	13	31	16

Results and discussions

85,57 percent of intubations (in 89 cases) were done on the first attempt, 10,57% (in 11 dogs) required two attempts and 3,86% (4 cases) required at least three attempts. All cardiac dysrhythmias were present when unexpected intubation difficulties appeared.

The cardiac arrhythmias recorded were isolated premature ventricular contraction (PVC) (75% of cases) and 5-10 seconds periods of transient ventricular tachycardia (heart rate greater than 150 beats/minute) (25% of cases). Only in 11,53% of dogs were recorded these cardiac arrhythmias during intubation, 4,8% in dogs anesthetized with acepromazine-thiopental combination (four dogs with PVC, one with tachycardia), 4,8% with acepromazine-propofol (three dogs with PVC, one with tachycardia) and 1,92% with xylazine-propofol combination (only PVC in two dogs) (table 2). These differences were attributed to a different degree of sedation obtained by drugs used in premedication and the degree of central inhibition of SNC obtained by general anesthetics with direct consequences on easily intubation. In our study the protective effect against arrhythmias of acepromazine it isn't noted. It is known that acepromazine decrease sensitivity of the myocardium to the circulating catecholamines through a quinidine-like action,

providing some protection against dysrhythmias (2, 3). By the other hands, thiobarbiturates, like thiopental, and propofol too (5), increases the sensitivity of the myocardium to catecholamines released by intubation maneuver. The bradycardic effect of xylazine was recorded in all dogs without exception and propofol or thiopental administration has no influence on that in monitorisated time interval. This effect is one usual, attributed to reflex vagal activity (1). Another important ECG modification, recorded during intubation only in patients premedicated with xylazine and induced by propofol was alteration of T wave associated with ST segment infra-disleveled: it appears in 18,75% of dogs (3 cases) that received these combination and disappears after connection to anesthetic machine and administration of inhalant anesthetic and oxygen combination. This are the significance of myocardial hypoxia (8) and in our opinion is a result of cumulated intubation maneuvers with mild respiratory depression induced by xylazine associated with apnea recorded after IV bolus injection of propofol. It is important to note that in any case it isn't used lidocaine for surface laryngeal anesthesia, and in some patients when the intubation tube passes into larynx a reflex spasm was recorded and IV supplementation of general anesthetic was necessary.

Table 2
Summary of cardiac arrhythmias incidence during intubation period

	Acepromazine premedication		Xylazine premedication		Total
	Thiopenthal induction	Propofol induction	Thiopenthal induction	Propofol induction	
Premature ventricular contraction	4	3	-	2	9
Ventricular tachycardia	1	2	-	-	3

Conclusions

1. In this study the incidence of cardiac arrhythmias during intubation was low.
2. The frequency of arrhythmias was superior in acepromazine premedicated group with no apparently difference inside of group accordingly to anesthetic used for induction.
3. An alteration of T wave associated with ST segment infra-disleveled was recorded during intubation in xylazine-propofol group.

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