

Use of low doses of xylazine as an essential tool for sedation, anxiolysis and analgesia in small animal shelter population

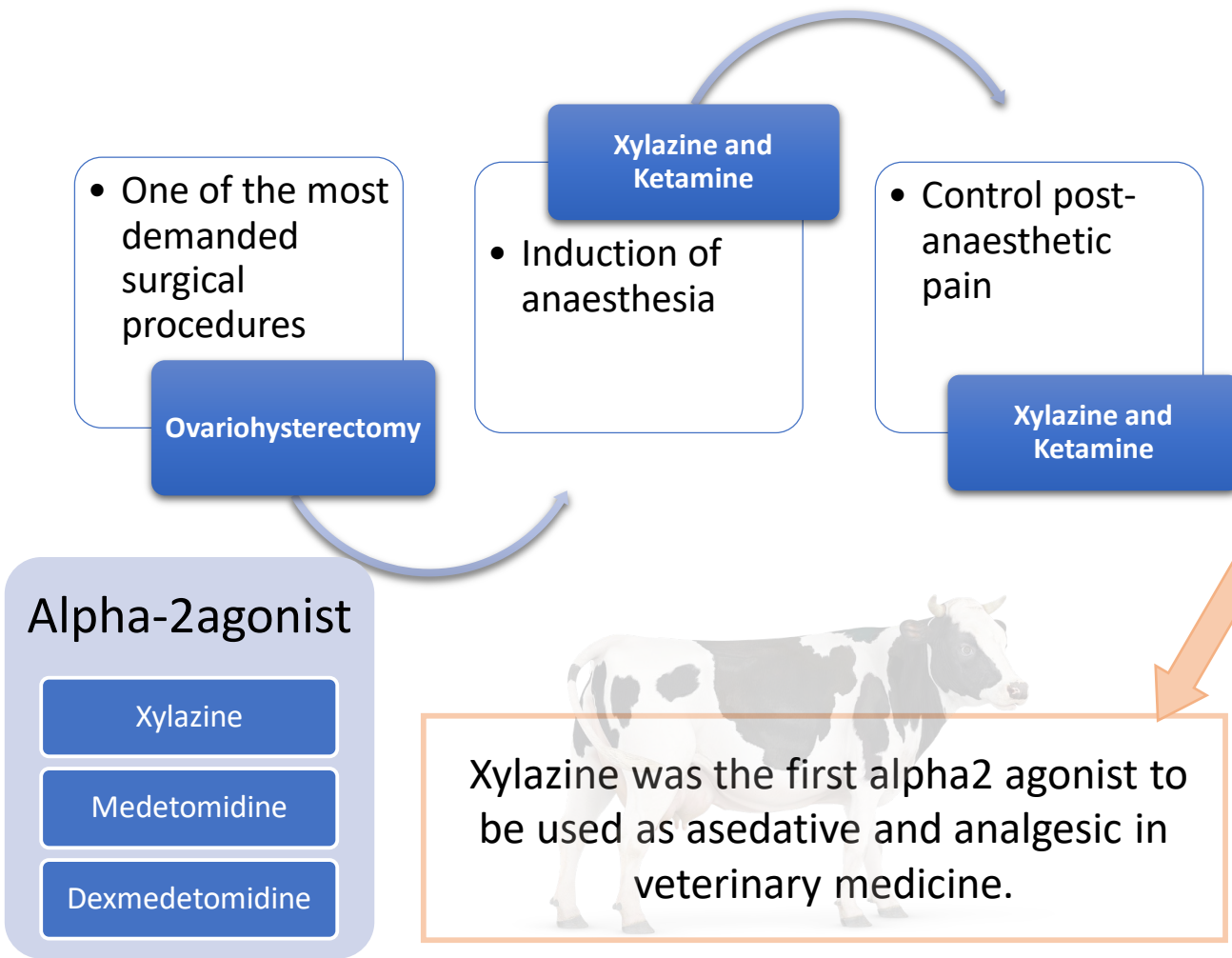
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Cotutora: Syra Roiz Martín

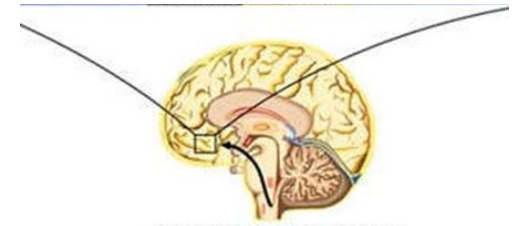
Curso académico: 2019/20

Mónica V. López Melián

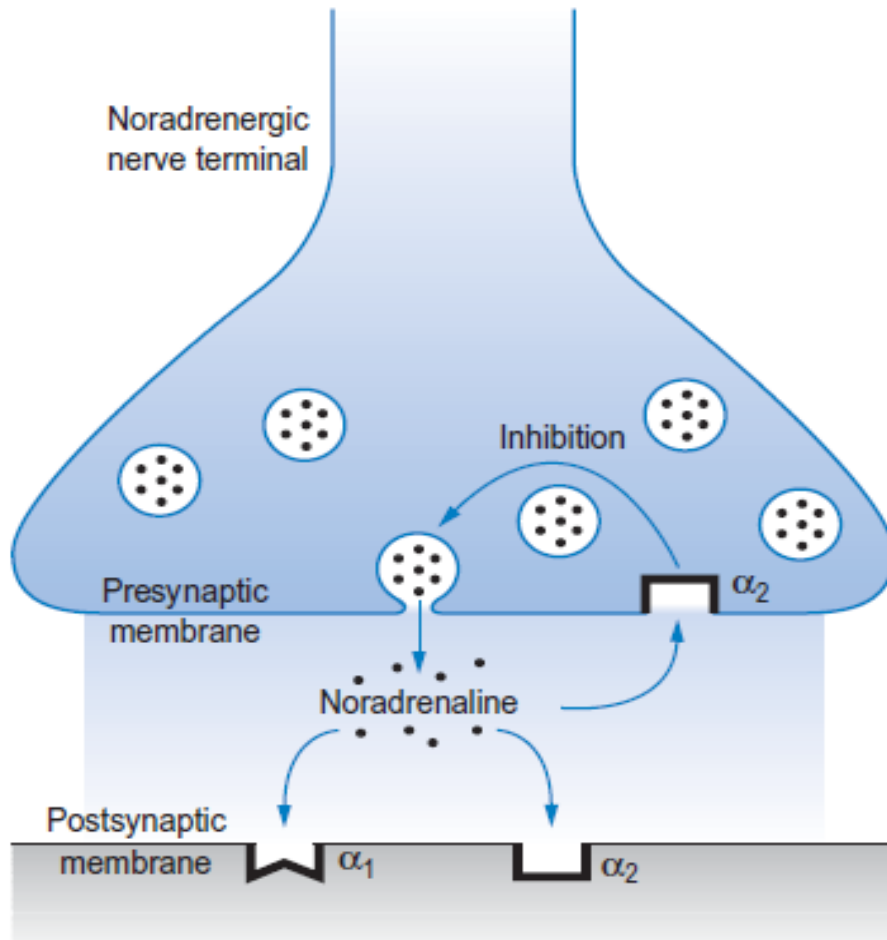
INTRODUCTION



INTRODUCTION



SINAPSIS NORADRENERGICA



Xylazine

disconnecting the limbic and thalamocortical systems

dissociating the central nervous system from external stimuli

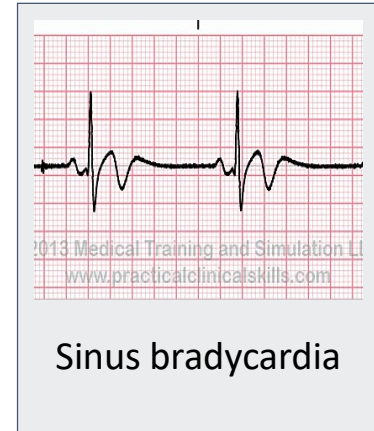
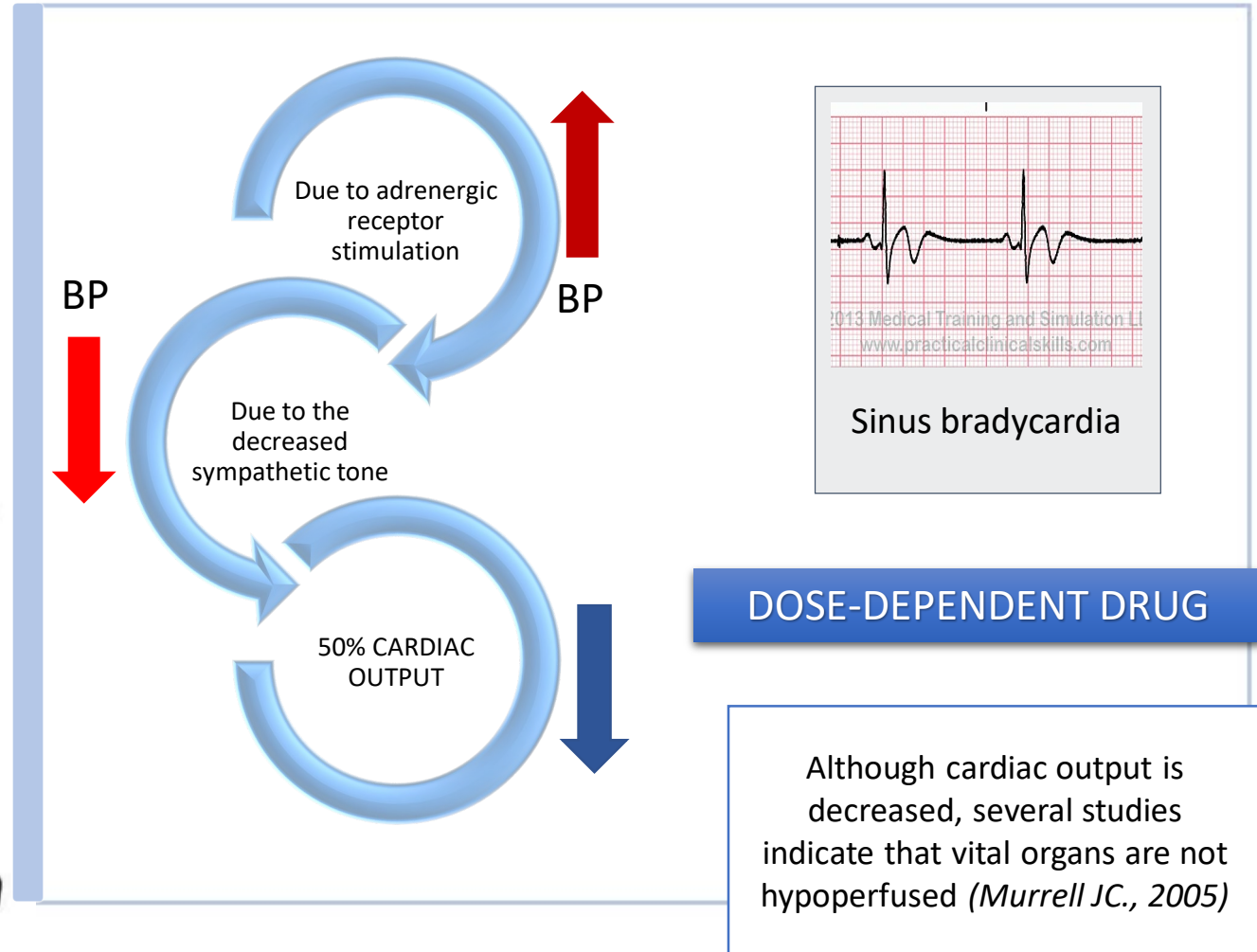
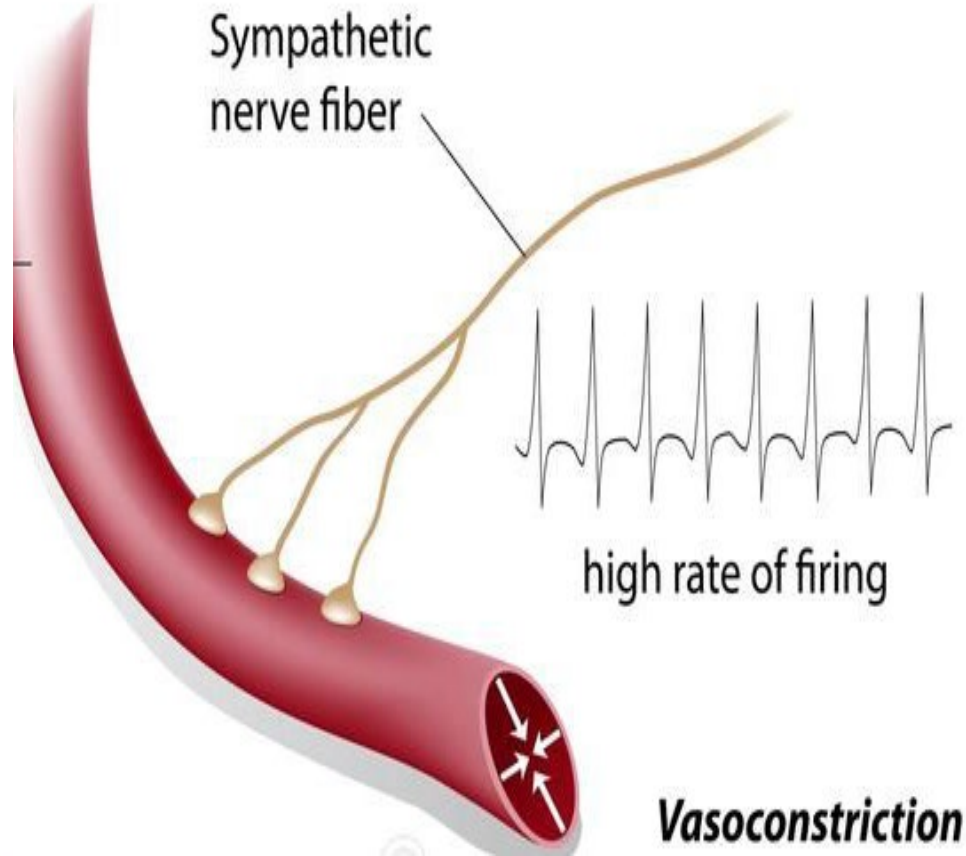
allowing medical procedures to be performed without causing pain

0.25 to 0.5
mg/kg IV

0.5 to 1.0
mg/kg IM

INTRODUCTION

Cardiovascular effects



INTRODUCTION

ADVANTAGES OF ALPHA2-AGONISTS



potent antinociceptive action



they also have the potential to treat opioid-resistant pain



reduce the amount of anesthetic drug required to induce



Elimination half life

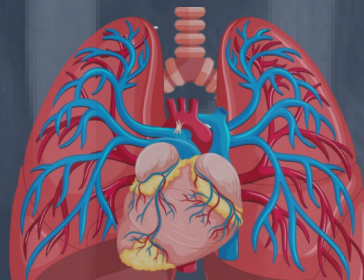
24
min
IM

30
min
IV

DBP > SBP

The aim of this work

is to study the cardiopulmonary effects of the administration of low doses of xylazine in combination with the ketamine to show that low doses of xylazine provide **EFFECTIVE SEDATION** and **ANALGESIA** in elective ovariohysterectomy in small animal population.

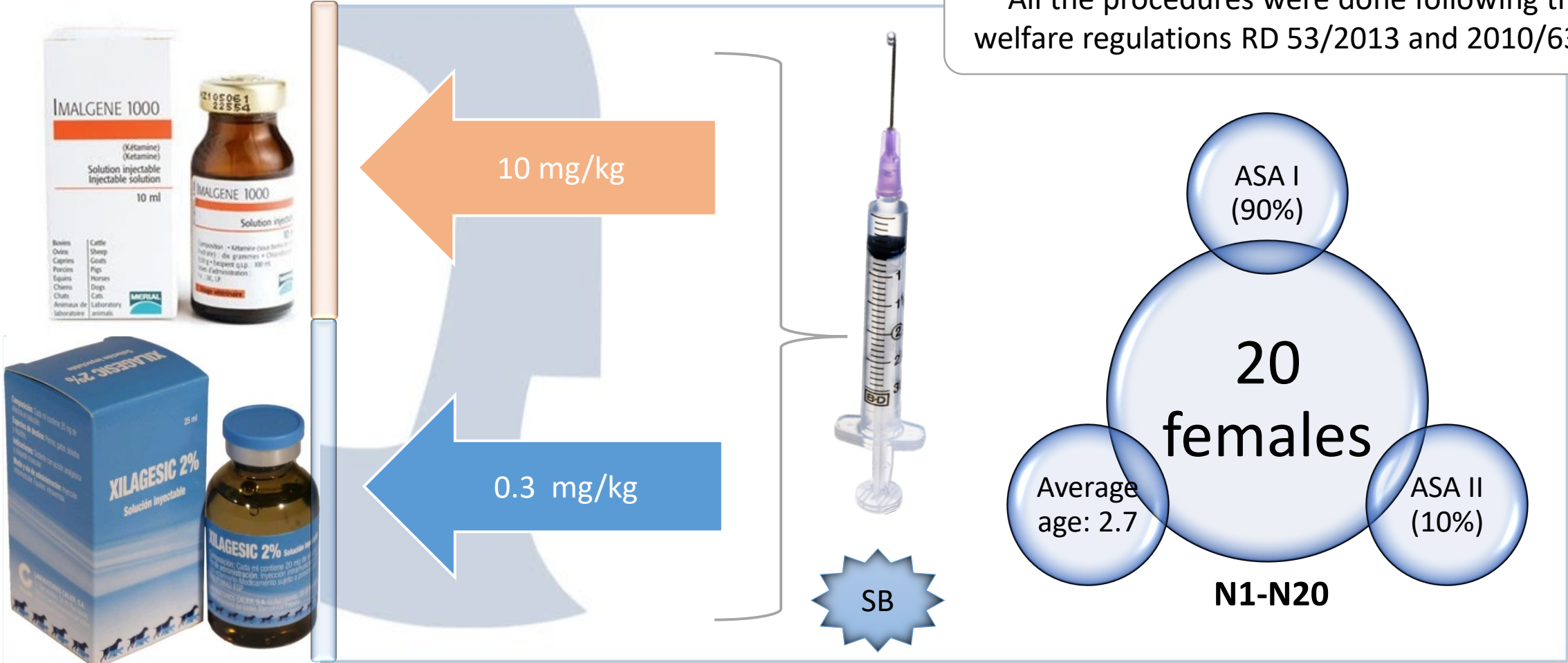




MATERIALS AND METHODS

MATERIALS AND METHODS

All the procedures were done following the welfare regulations RD 53/2013 and 2010/63 UE





Induction of anesthesia

🐾 Tiobarbital

Inhalation anaesthesia

🐾 Isoflurane



Monitoring

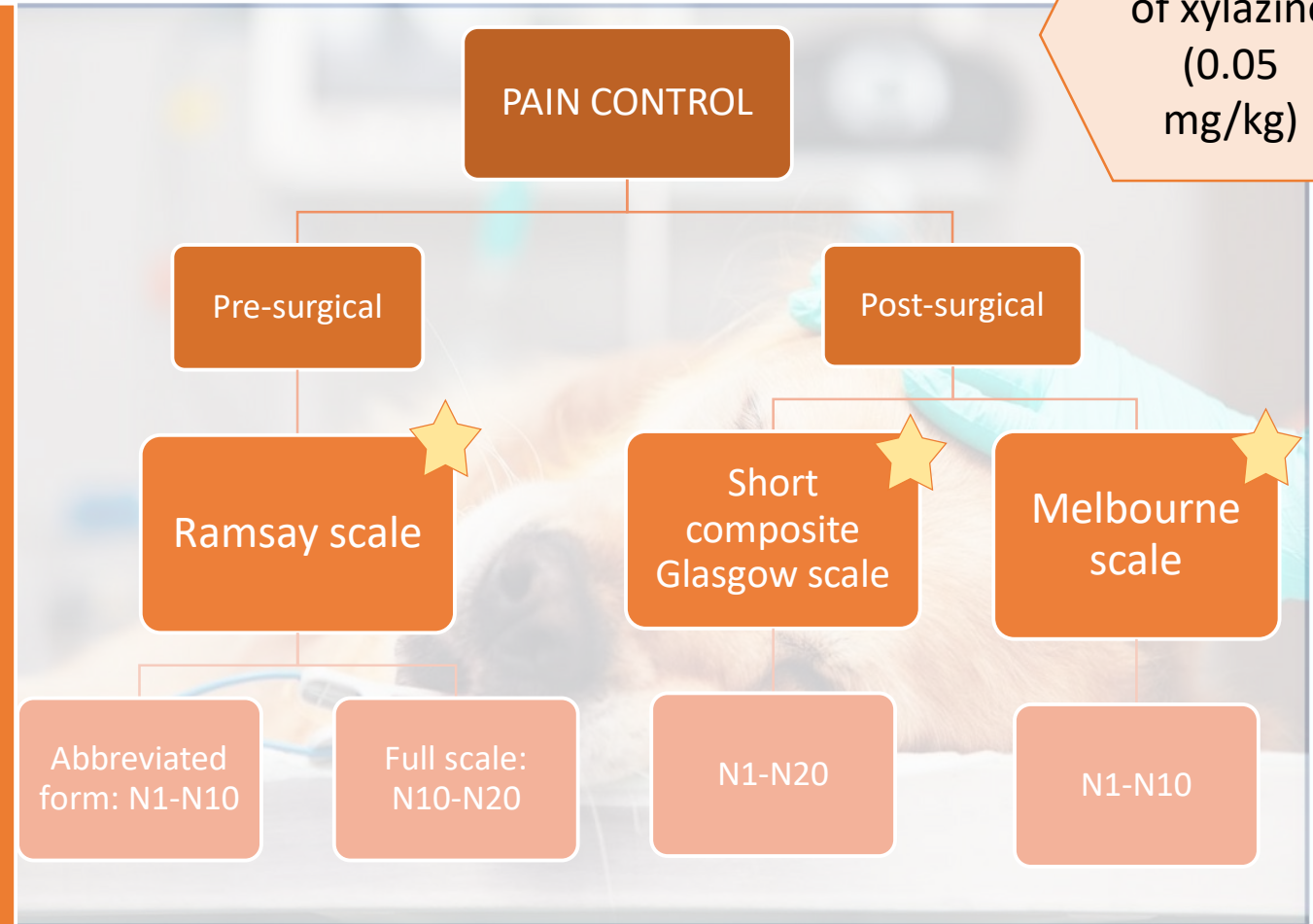
- ♥ Heart rate (HR)
- ♥ Systolic blood pressure (SBP)
- ♥ Diastolic blood pressure (DBP)
- 🫁 Oxygen saturation (SpO₂)
- 🌡 Temperature (T^o)
- 🫁 Respiratory rate (RR)
- 🫁 CO₂ pressure (P CO₂)

MATERIALS AND METHODS

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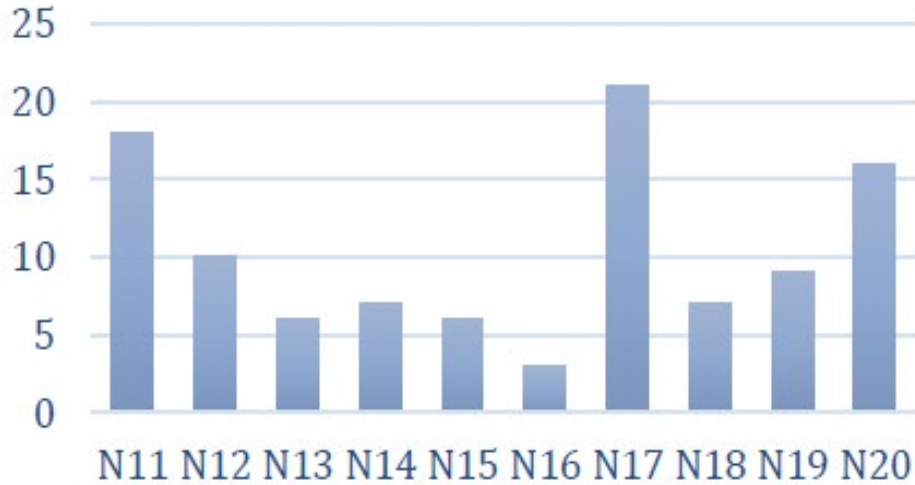
Microdoses
of xylazine
(0.05
mg/kg)

Category	Description	Scale
Biological variables		
↑	Dilated pupil	2
	Normal pupil	0
	Percentage of increase in Cardiac frequency	
	<20%	0
	>20%	1
	>50%	2
	>100%	3
Salivation	2	
No salivation	0	
Behavior variables		
Response to palpation		
	No changes	0
	Reaction to touch	2
	Reaction before being touched	3
Motor activity		
	Resting, sleeping	0
	Semiconscious	0
	Awake	1
	Restless, moving around	3
	Eating	0 re 2
Mental state		
	Submissive	0
	Sociable	1
	Cautious	2
	Agressive	3
Posture		
	Protects the affected area (fetal position)	2
	Lateral position	0
	Prone position	1
	Sitting or standing	1
	Moving	1
	Abnormal posture	2
Vocalization		
	Does not vocalize	0
	Vocalizes when touched	2
	Intermitent vocalization	2
	Continuous vocalization	3
© University of Glasgow		Total Score (i+ii+iii+iv+v+vi) = _____

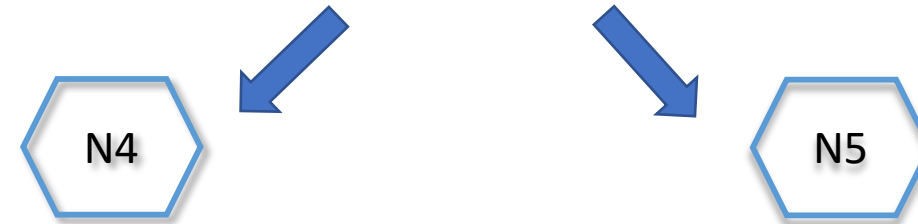


RESULTS

Sedation score from N11 to N20
(Ramsay full scale)



Pre-surgical physical examination: no alterations except a slight increase in the size of the submandibular nodes



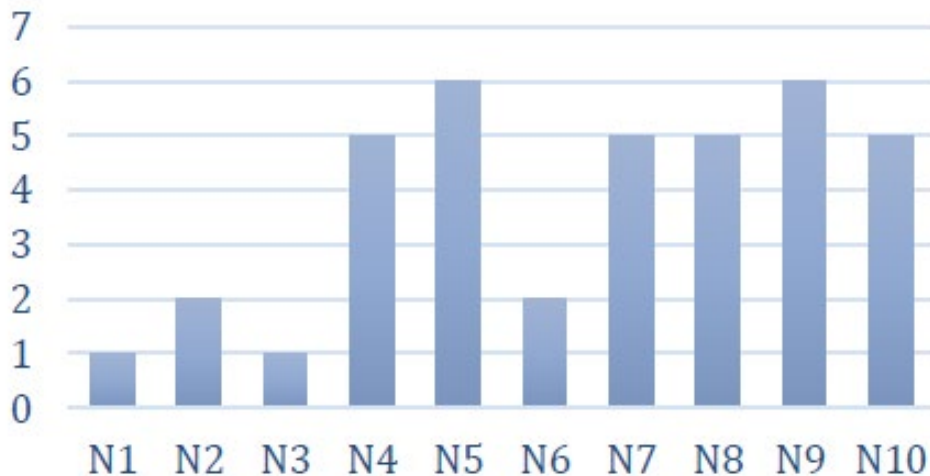
45%

high sedation

light-moderate
sedation

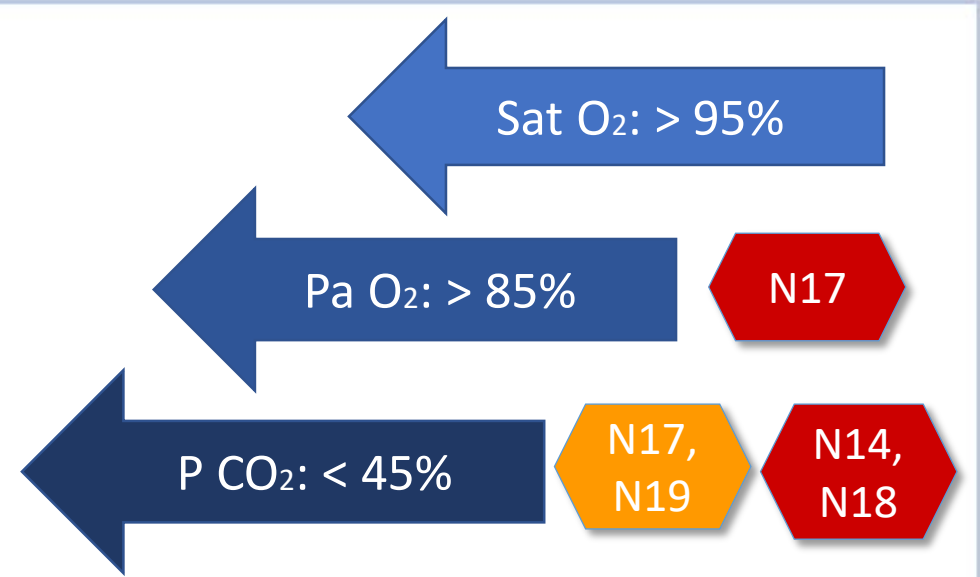
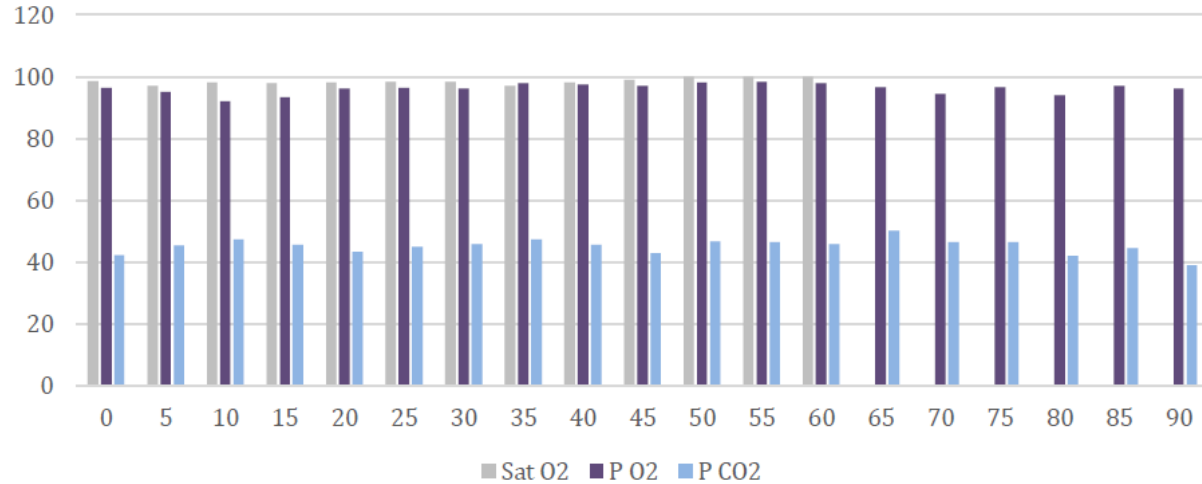
30%

Sedation score from N1 to N10
(Ramsay abbreviated scale)



RESULTS

Oxygen saturation (Sat O₂), oxygen blood pressure (Pa O₂) and CO₂ pressure (P CO₂) during ovariohysterectomy



PARAMETER	0	10	20	30	40	50	60
HR	100.2 ± 15.43	104.15 ± 20.89	106.85 ± 21.19	102.6 ± 15.16	95 ± 16.46	91.33 ± 15.56	89.33 ± 16.72
	12.2 ± 6.47	13.55 ± 5.86	17.35 ± 17.54	14.42 ± 7.00	14.71 ± 8.99	15.4 ± 8.96	17.6 ± 13.18
SBP	98.26 ± 22.71	111.33 ± 23.35	108.33 ± 27.43	110.84 ± 28.18	116.46 ± 16.10	115.2 ± 17.78	115.6 ± 21.60
	55.15 ± 19.49	55.44 ± 21.30	57.44 ± 20.30	58.14 ± 21.67	59.28 ± 11.45	60.4 ± 11.10	59.2 ± 16.45

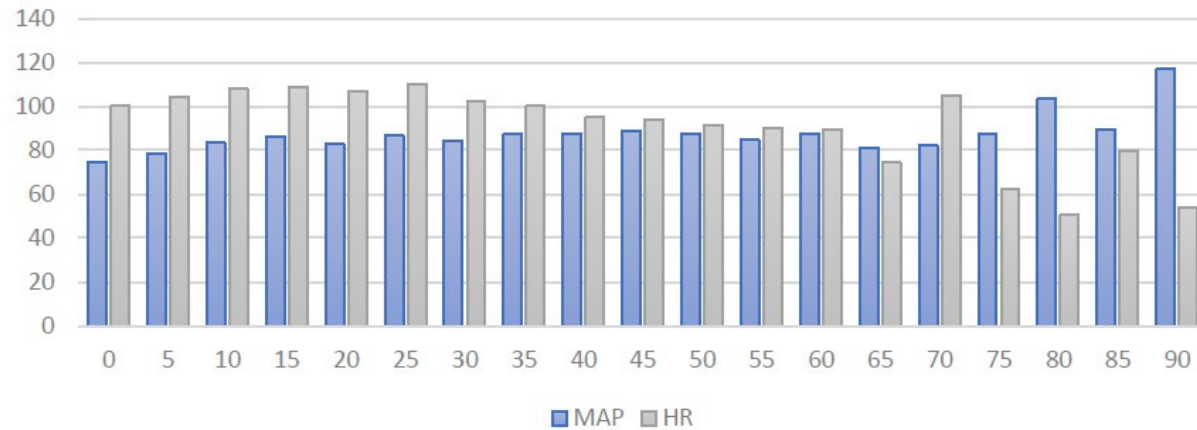
* NO **BRADYCARDIA** OR PERIODS OF APNEA WERE OBSERVED

* SLIGHTLY HYPOTENSION (SBP <80 MMHG): N2 AND N7



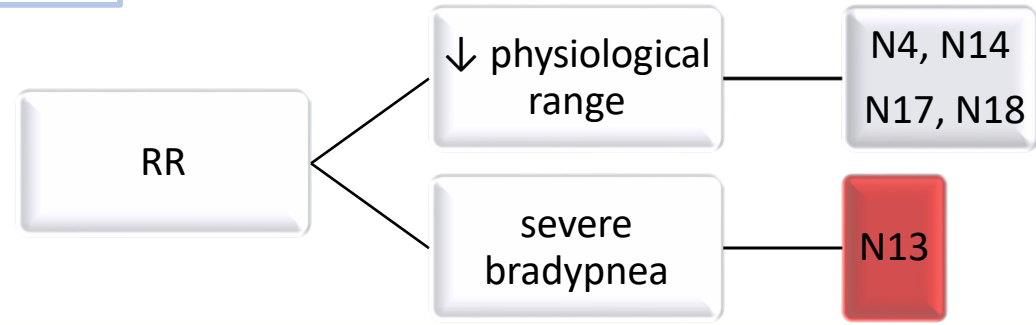
RESULTS

Heart rate (HR) and Mean blood pressure (MAP) during ovariohysterectomy

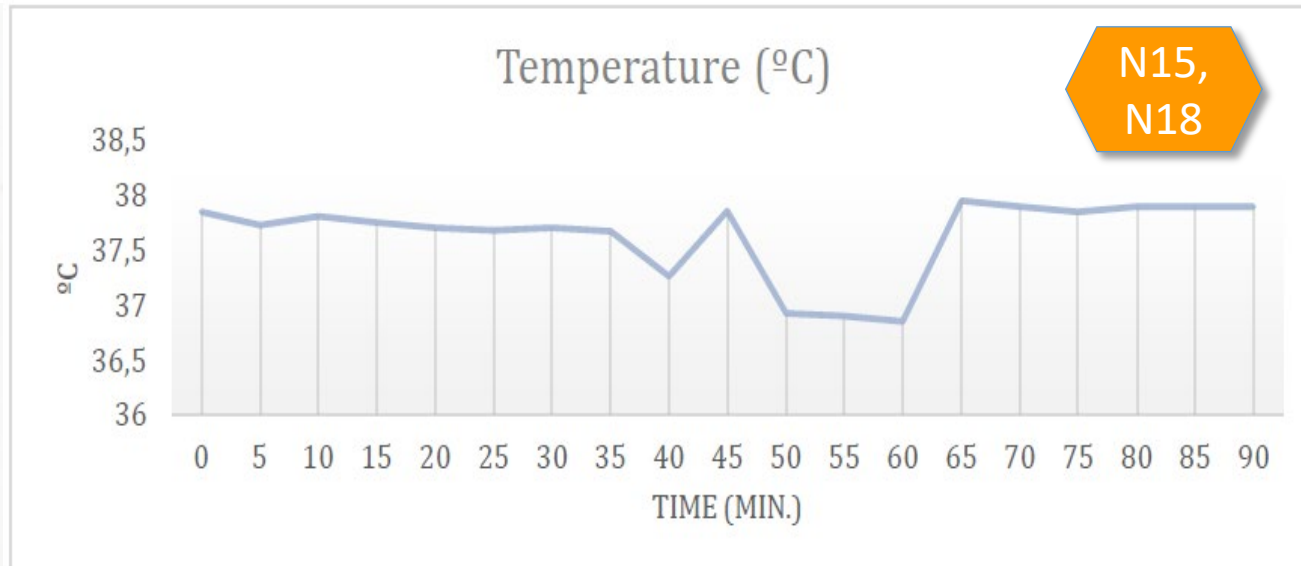


PAM < 50 mmHg
(slightly hypotension)

PARAMETER	TIME (min.)						
	0	10	20	30	40	50	60
HR	100.2 ± 15.43	104.15 ± 20.89	106.85 ± 21.19	102.6 ± 15.16	95 ± 16.46	91.33 ± 15.56	89.33 ± 16.72
RR	12.2 ± 6.47	13.55 ± 5.86	17.35 ± 17.54	14.42 ± 7.00	14.71 ± 8.99	15.4 ± 8.96	17.6 ± 13.18
SBP	98.26 ± 22.71	111.33 ± 23.35	108.33 ± 27.43	110.84 ± 28.18	116.46 ± 16.10	115.2 ± 17.78	115.6 ± 21.60
DBP	55.15 ± 19.49	55.44 ± 21.30	57.44 ± 20.30	58.14 ± 21.67	59.28 ± 11.45	60.4 ± 11.10	59.2 ± 16.45



RESULTS



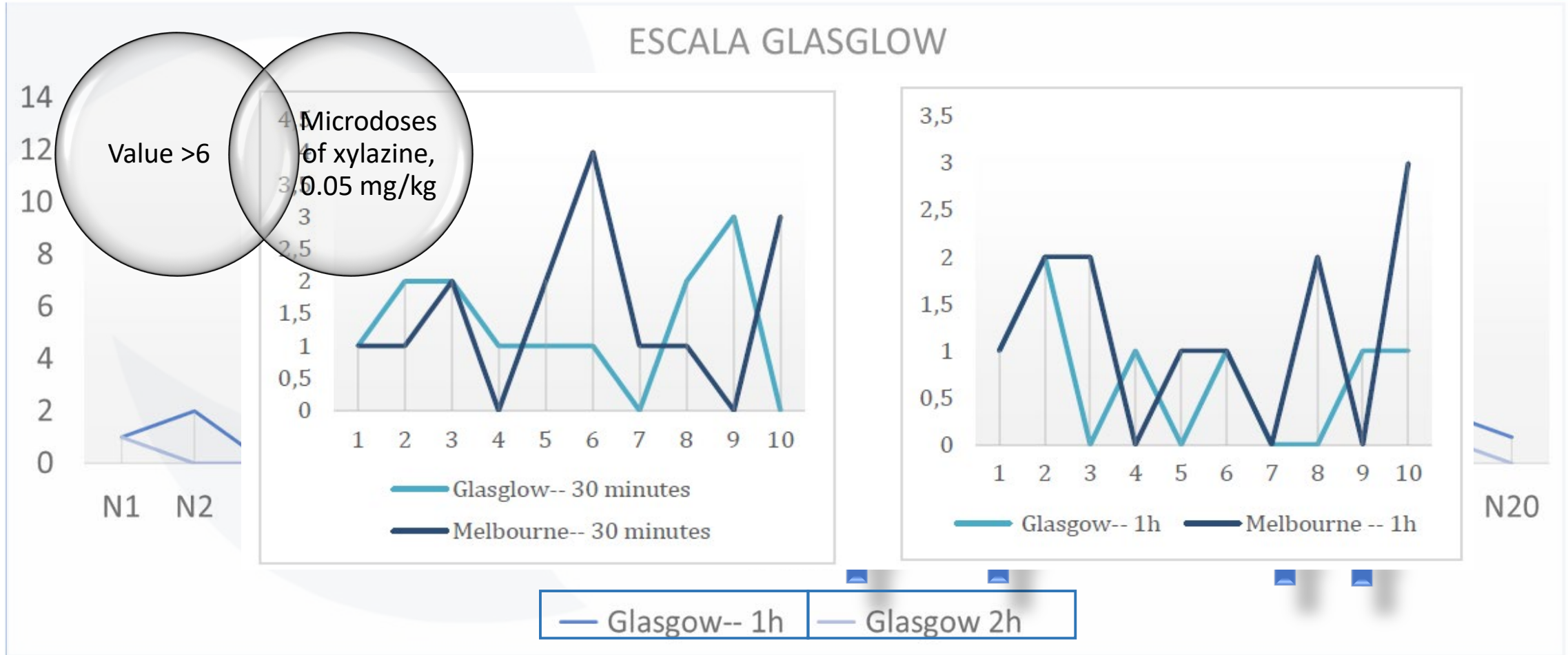
Hypothermia was not reported
in any of the cases

N11	N12	N13	N14	N15	N16	N17	N18	N19	N20
1	5	5	5	5	5	3	2	5	5

GOOD AWAKENING (85%)



RESULTS





DISCUSSION

DISCUSSION



(Abdel el Motal and Sharp 1985; Hildebrandt JJ et al. 2008)

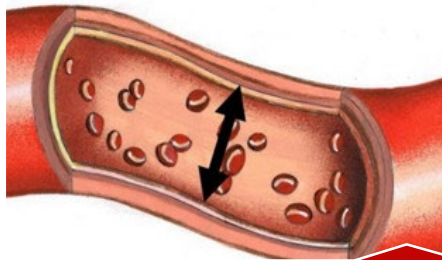
DISCUSSION

Cardiovascular effects are associated with the use of alpha-2-agonists

(Ashegh H., 2010)

Combination of Ketamine-Xylazine → **No** cardiovascular effects

sympathomimetic effect of **ketamine** induces tachycardia

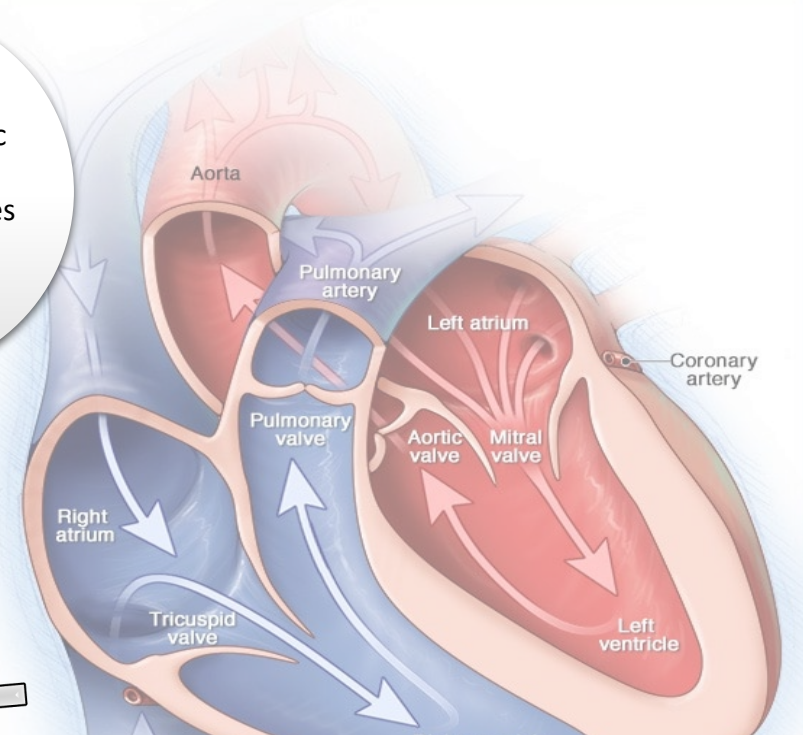


Heart rate and BP within the physiological parameters

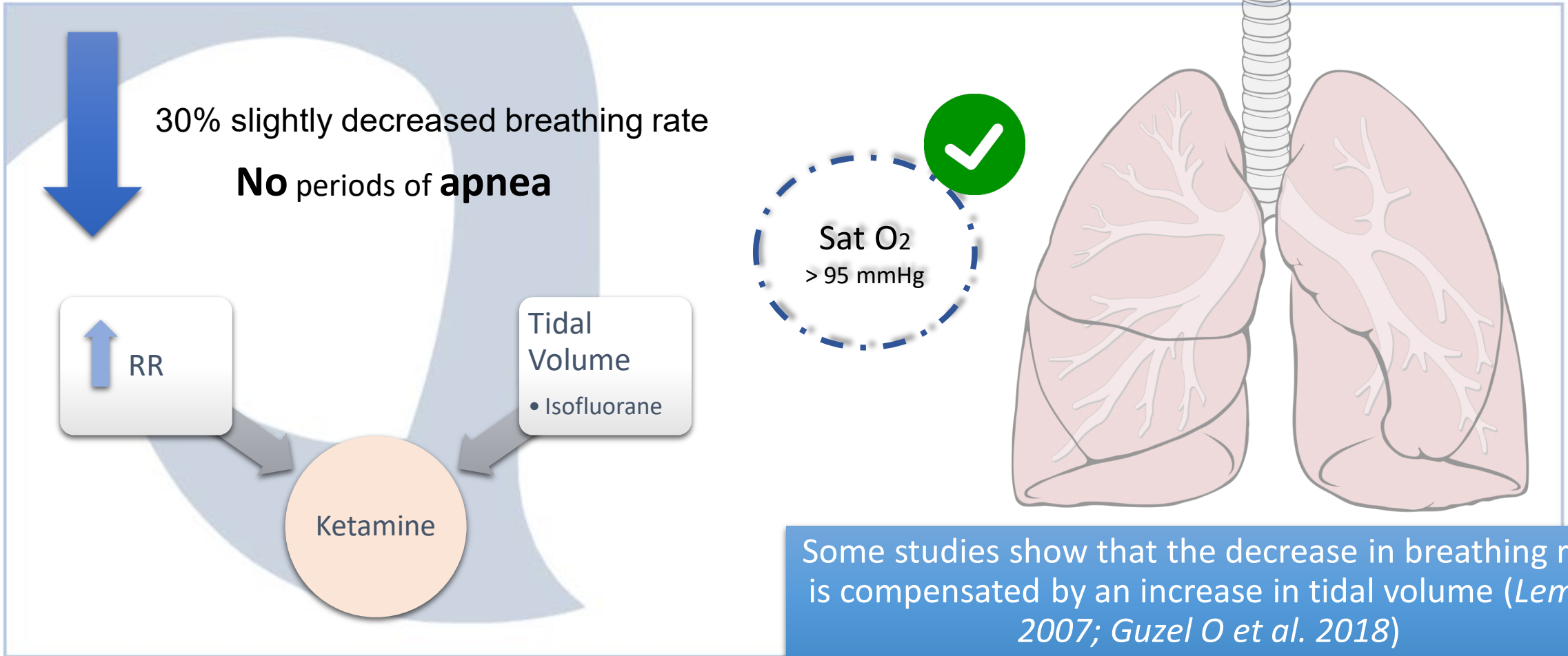


Inhalation anaesthesia

vasoconstrictive effect of ketamine

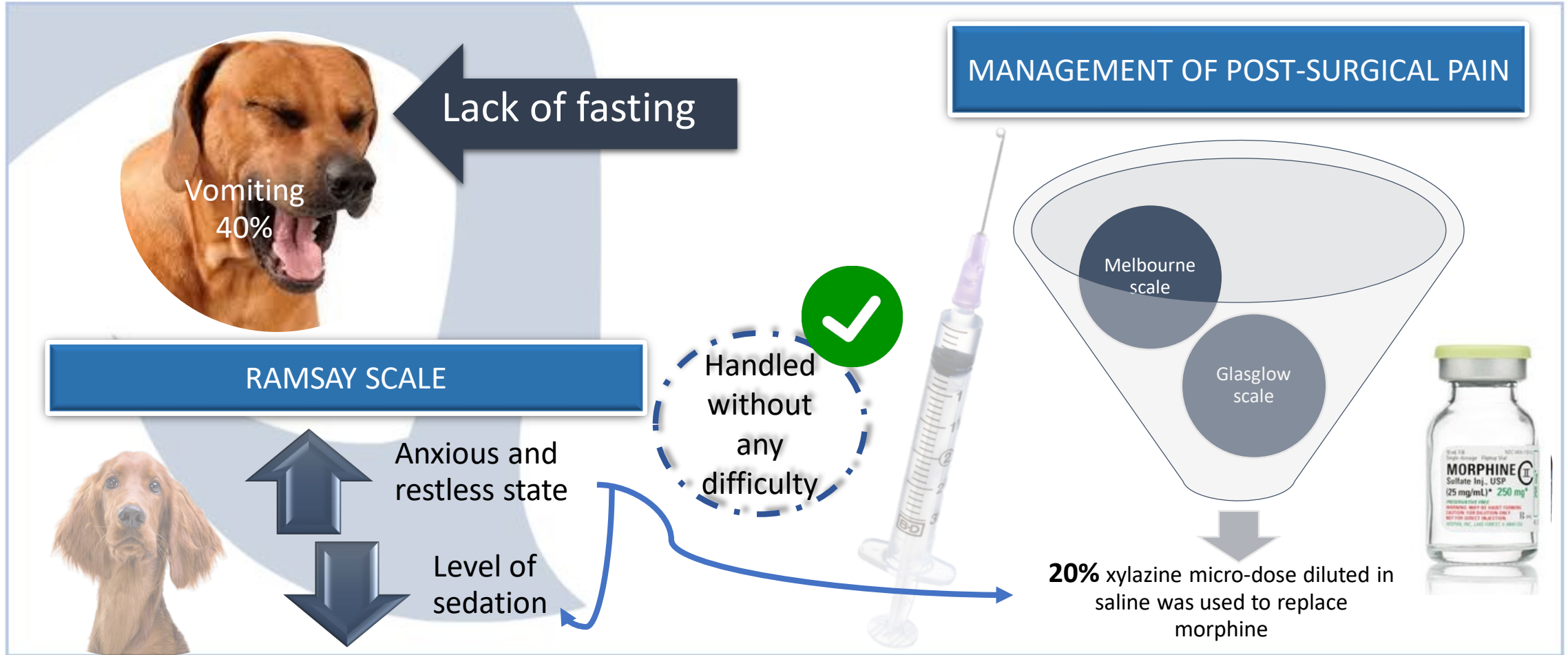


This combination ~~develops~~ cardiac arrhythmias
(S. Dalir Naghdeh et al.; 2006).



DISCUSSION

DISCUSSION





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Facultad de Veterinaria



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CONCLUSIONS



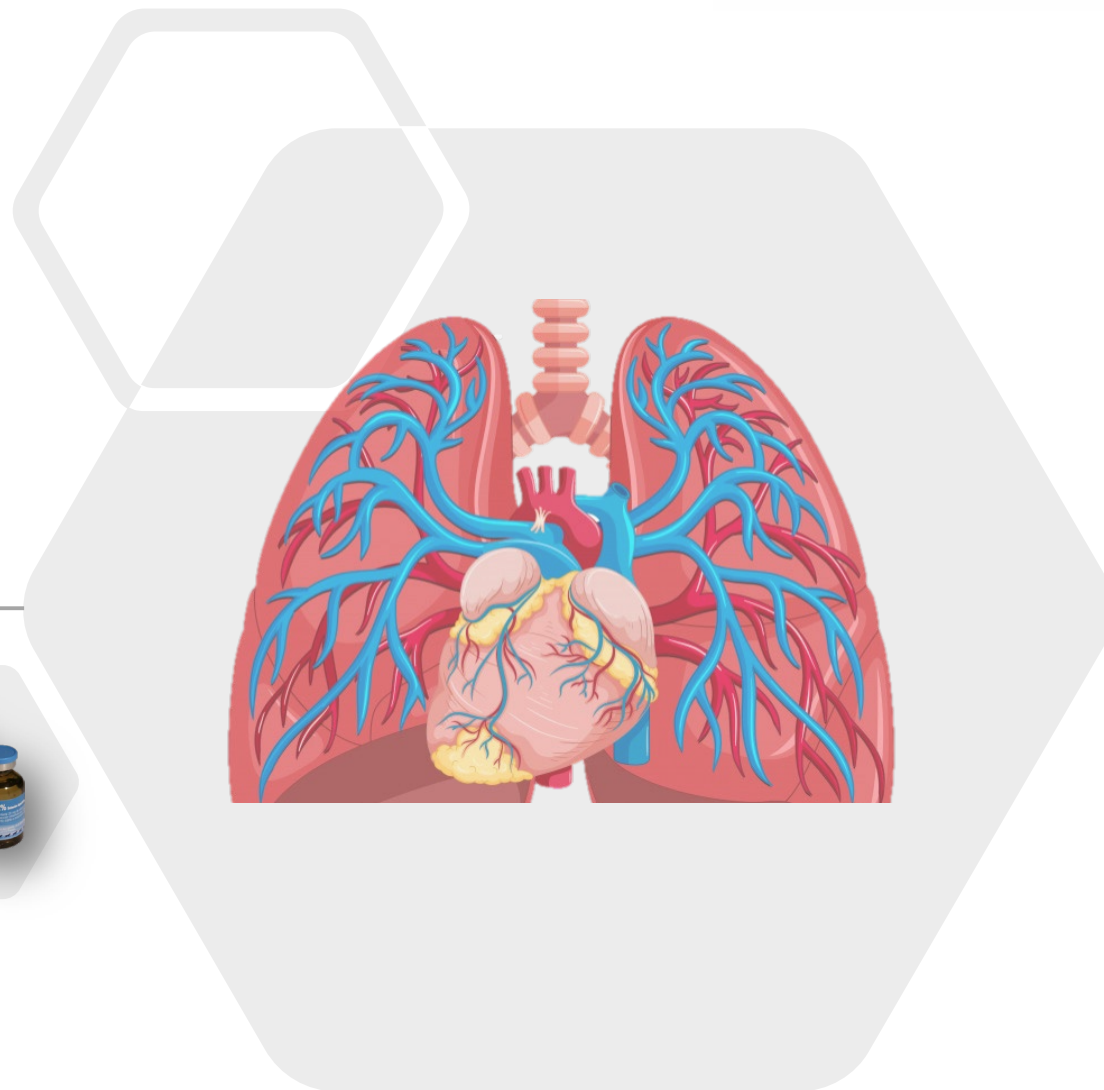
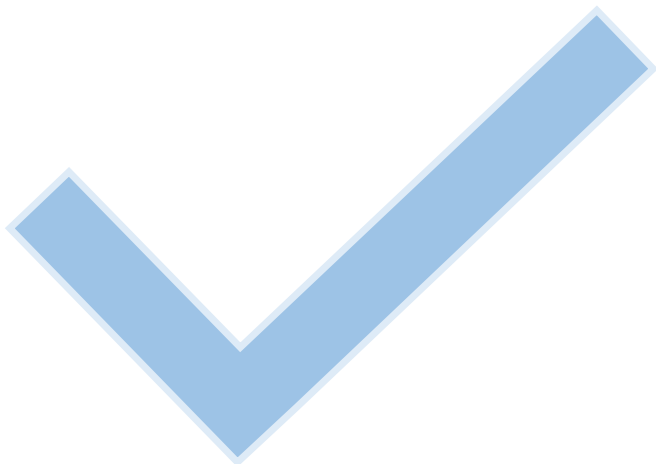
Conclusions

- 1. The use of xylazine provides an effective sedation and analgesia in combination with ketamine in elective ovariohysterectomy in small animal shelter population.*



Conclusions

2. *No important side effects such as bradycardia or cardiopulmonary depression were observed in this study*



0.05
mg/kg



Conclusions

3. This study recommend the use of microdoses of xylazine IV to improve the recovery quality, avoid anxiety and to get rescue analgesia.

Conclusions

4. *The record of sedation level is a good tool to monitor the action of the premedication and we recommend to use it in any anesthesia procedure.*

Sedation Level	Score
Patient is anxious and agitated or restless, or both	1
Patient is co-operative, oriented, and tranquil	2
Patient responds to commands only	3
Patient exhibits brisk response to light glabellar tap or loud auditory stimulus	4
Patient exhibits a sluggish response to light glabellar tap or loud auditory stimulus	5
Patient exhibits no response	6



THANK YOU VERY MUCH

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