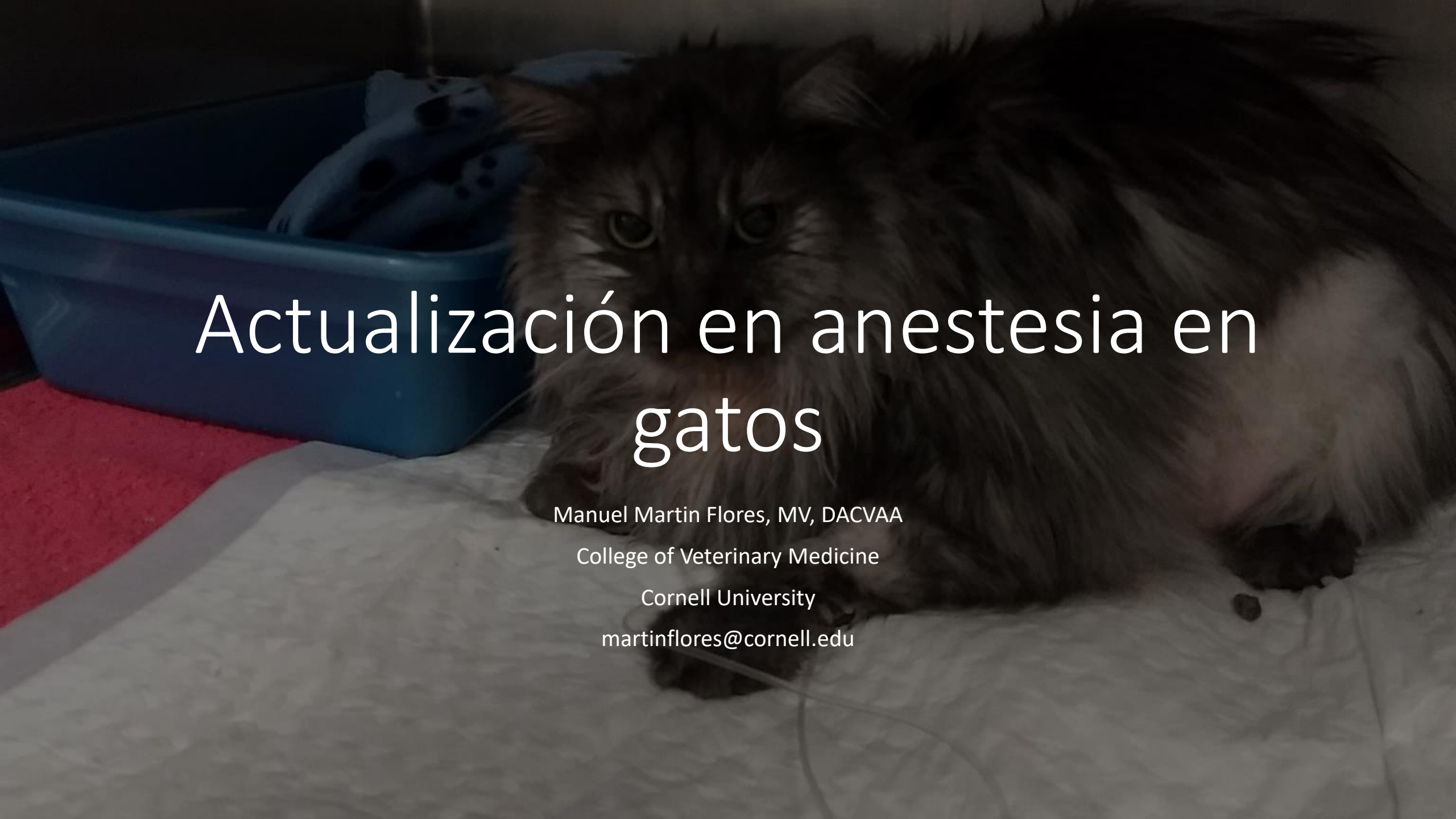

Actualización en anestesia en gatos

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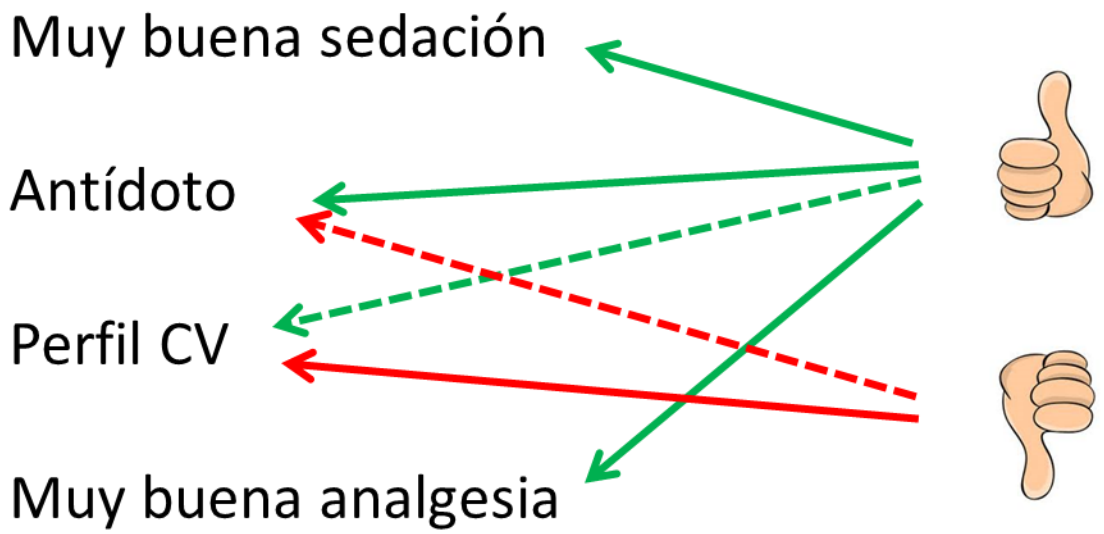
Que hay nuevo?

- Dexmedetomidina y antagonistsas (y efectos CV)
- Hipertermia inducida por opioides
- Ceguera posanestésica
- Intubación e instrumentación de vía aérea

Dexmedetomidina

Dexmedetomidina

- En USA y Europa ha reemplazado completamente a xilacina y casi completamente medetomidina
- No asociada a aumento de mortalidad (xilacina si)



Dexmedetomidina – que sabemos y como la usamos?

- Sedante (y preanestésico) en >90% de gatos (se puede dar OTM)
- Adyuvante en anestesia general (por infusión; analgesia, PA, FC)
- Adyuvante de anestésicos locales

Como sedante **preanestésico**
Dexmedetomidina + opioide IM
Catéter
Oxigeno
Inducción/mantenimiento (también con oxigeno)
Antídoto en **recuperación**

Como sedante (**sin anestesia**)
Dexmedetomidina +/- opioide IM
Catéter (depende el procedimiento)
Oxigeno
~~Inducción/mantenimiento (también con oxigeno)~~
Antídoto en **recuperación**

Los cuidados básicos en anestesia son siempre iguales

Dexmedetomidina *cardiovascular*

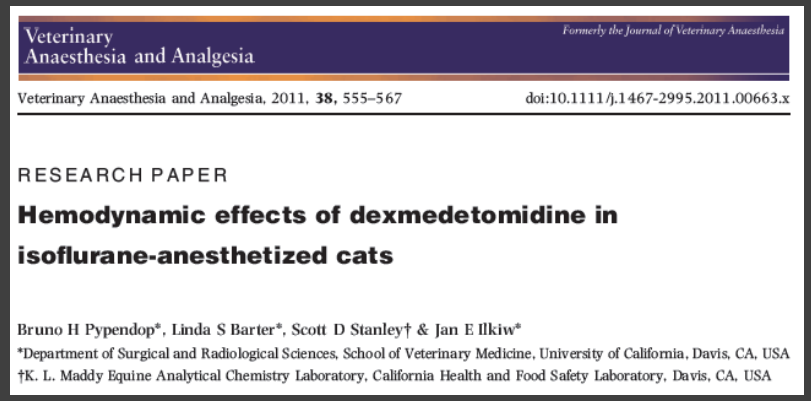
Vasoconstricción

Sube la RVP (**poscarga**)

Sube la PA

Bradicardia (refleja y central)

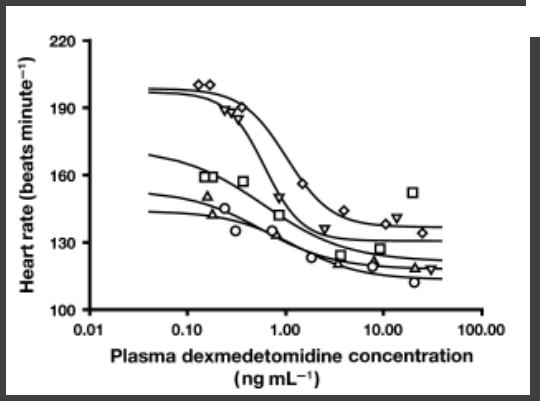
FC Y GC **bajan 30-50%**

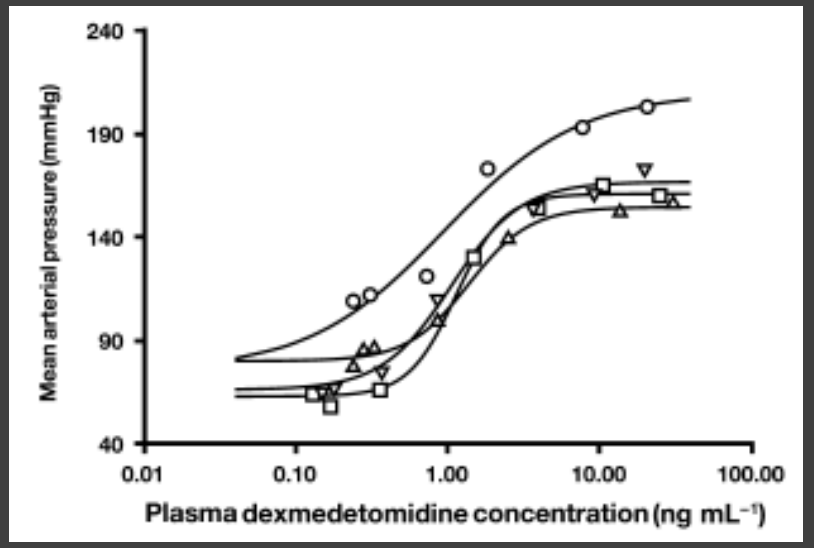

Veterinary Anaesthesia and Analgesia
Formerly the Journal of Veterinary Anaesthesia
Veterinary Anaesthesia and Analgesia, 2011, 38, 555–567 doi:10.1111/j.1467-2995.2011.00663.x

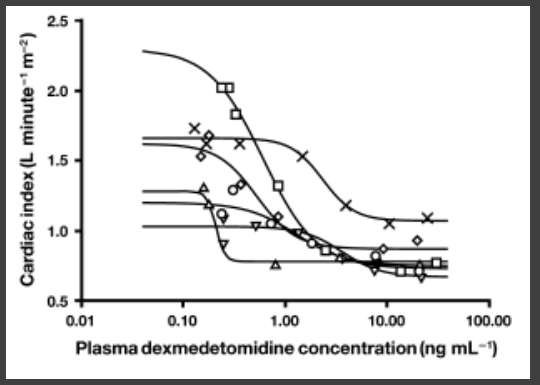
RESEARCH PAPER

Hemodynamic effects of dexmedetomidine in isoflurane-anesthetized cats

Bruno H Pypendop*, Linda S Barter*, Scott D Stanley† & Jan E Ilkiw*
*Department of Surgical and Radiological Sciences, School of Veterinary Medicine, University of California, Davis, CA, USA
†K. L. Maddy Equine Analytical Chemistry Laboratory, California Health and Food Safety Laboratory, Davis, CA, USA







Pregunta del millón:
Que hacer con la **bradicardia**?

Bradicardia es **inevitable**

Tratamiento con atropina:

Hipertensión

Aumento del **trabajo** del miocardio

Aumento de **disritmias**

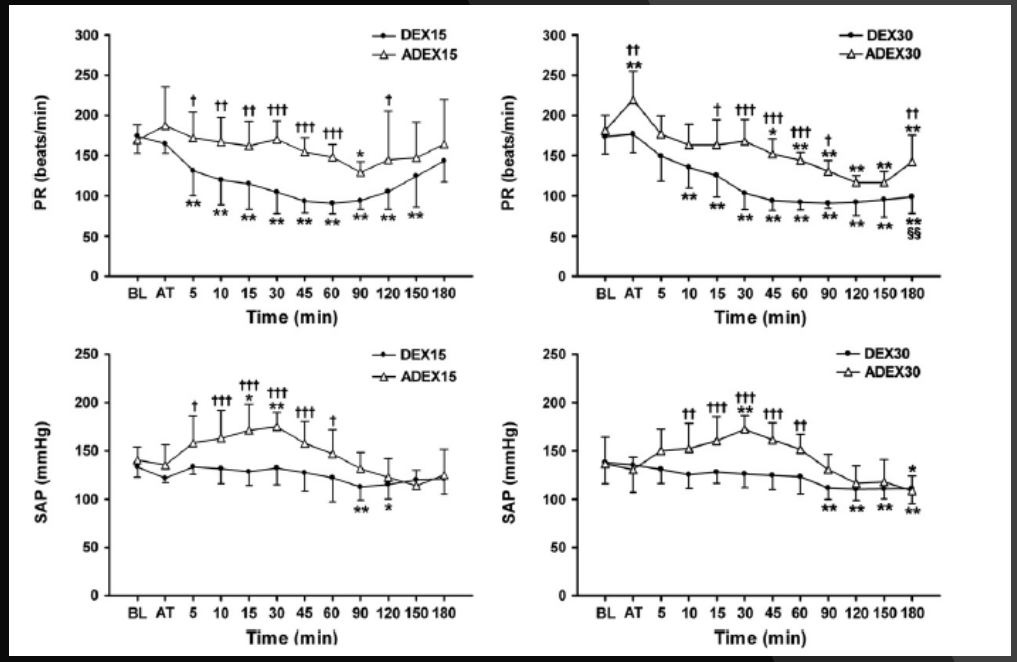
Sin aumento de **GC**

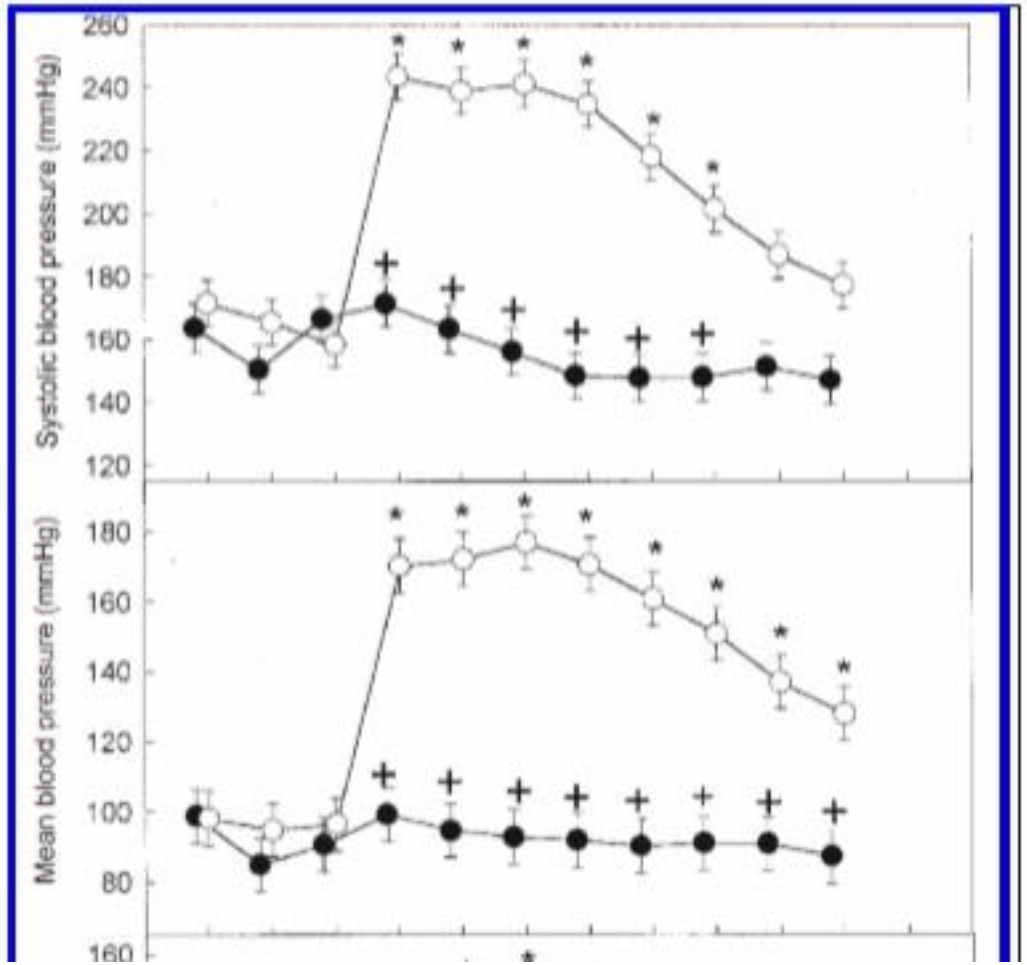
ELSEVIER

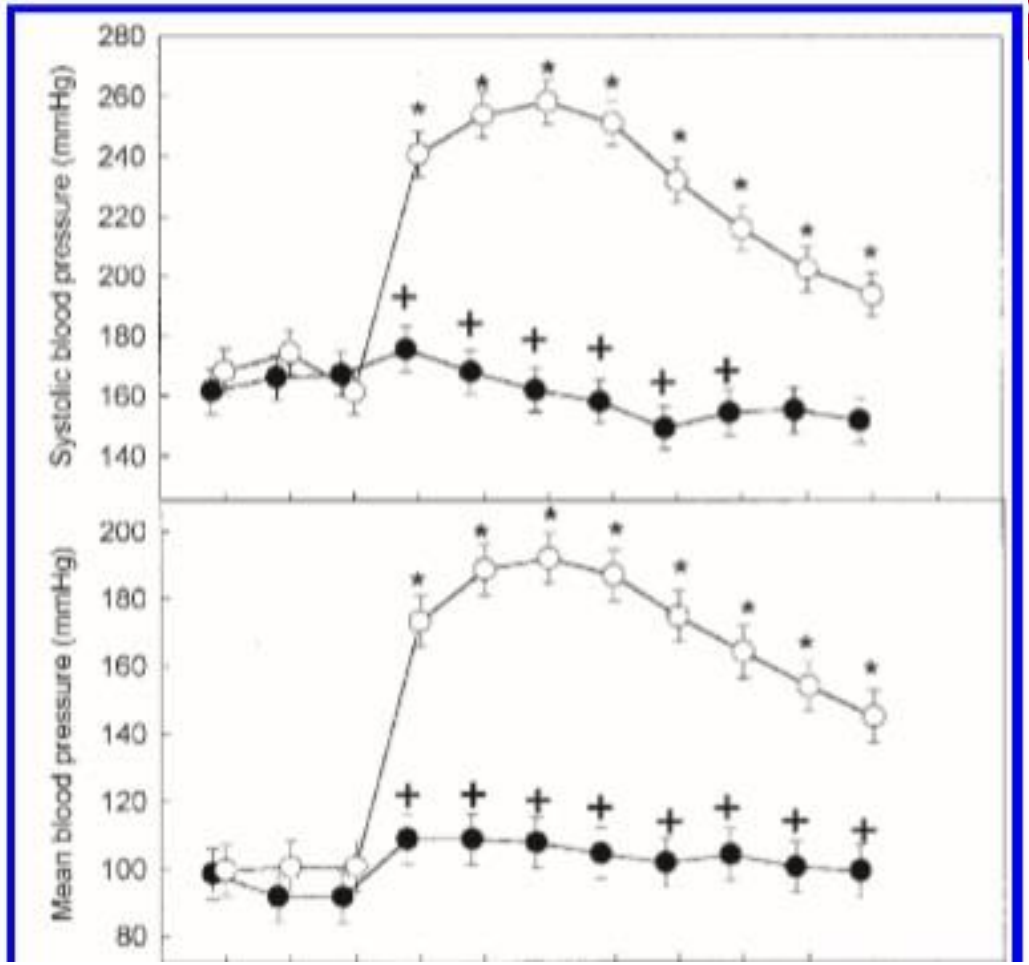
jfms

Evaluation of cardiorespiratory effects of combinations of dexmedetomidine and atropine in cats

Eduardo R Monteiro DVM, PhD[1]*, Daniela Campagnol DVM, MSc[2], Letícia R Parrilha DVM[3], Luísa Z Furlan DVM[3]




Systolic blood pressure (mmHg)
260
240
220
200
180
160
140
120
Mean blood pressure (mmHg)
180
160
140
120
100
80
160


Systolic blood pressure (mmHg)
280
260
240
220
200
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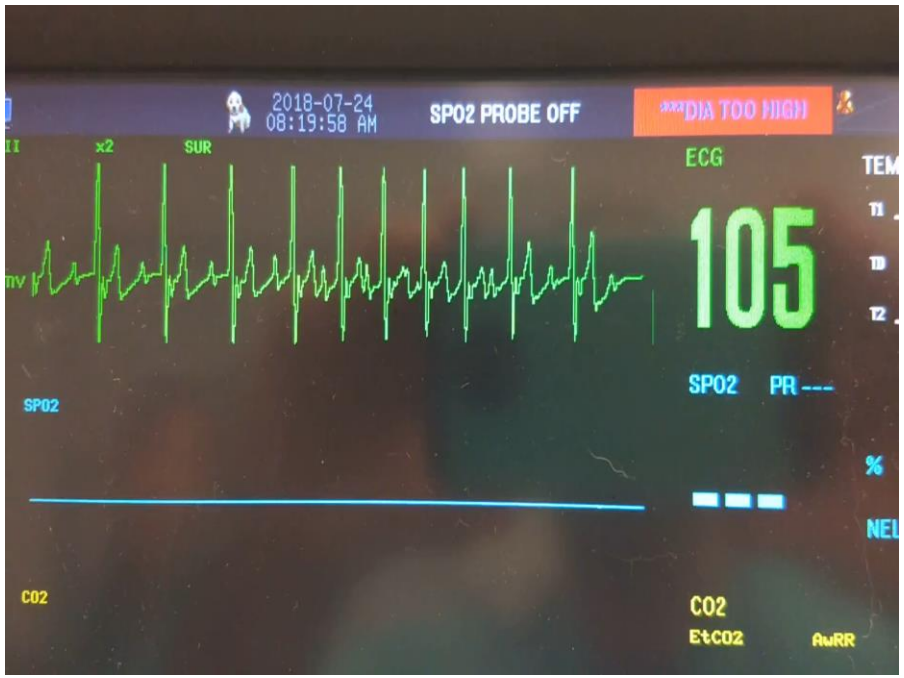
140
Mean blood pressure (mmHg)
200
180
160
140
120
100
80

Ko et al. 2001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***DIA TOO HIGH
II
x2
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105
SPO2
PR ---
%
SPO2
CO2
CO2
EtCO2
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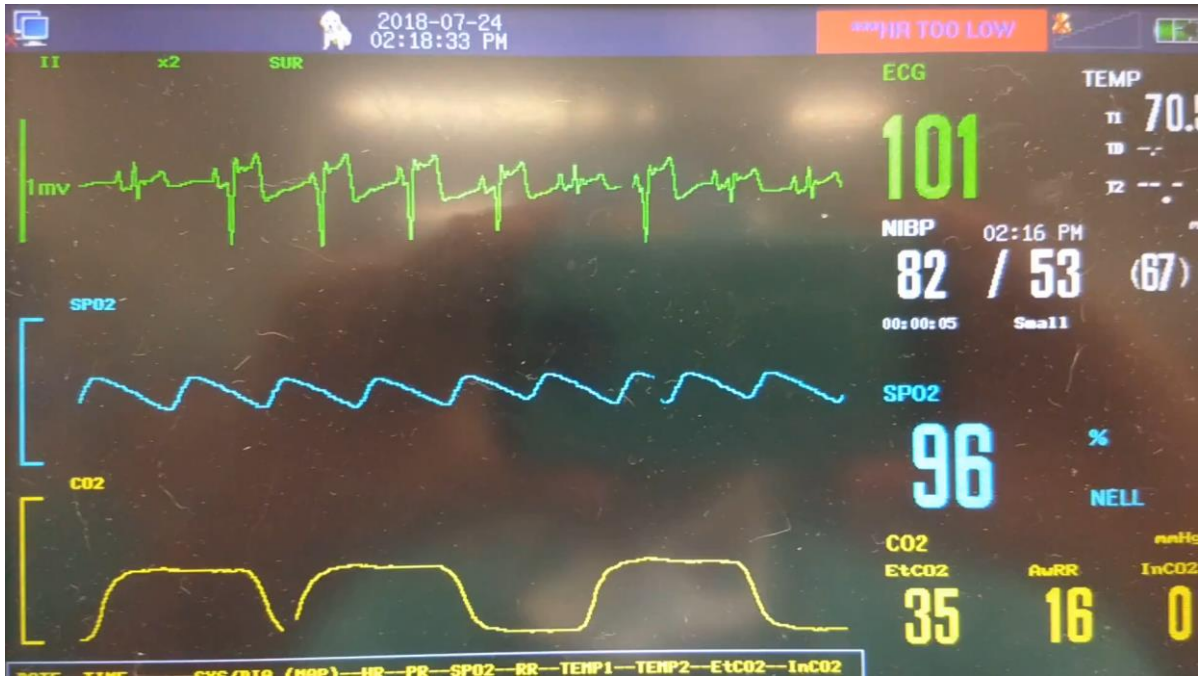
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II
x2
SUR
ECG
101
1mv
TEMP
NIBP
02:16 PM
82 / 53 (67)
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Small
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96
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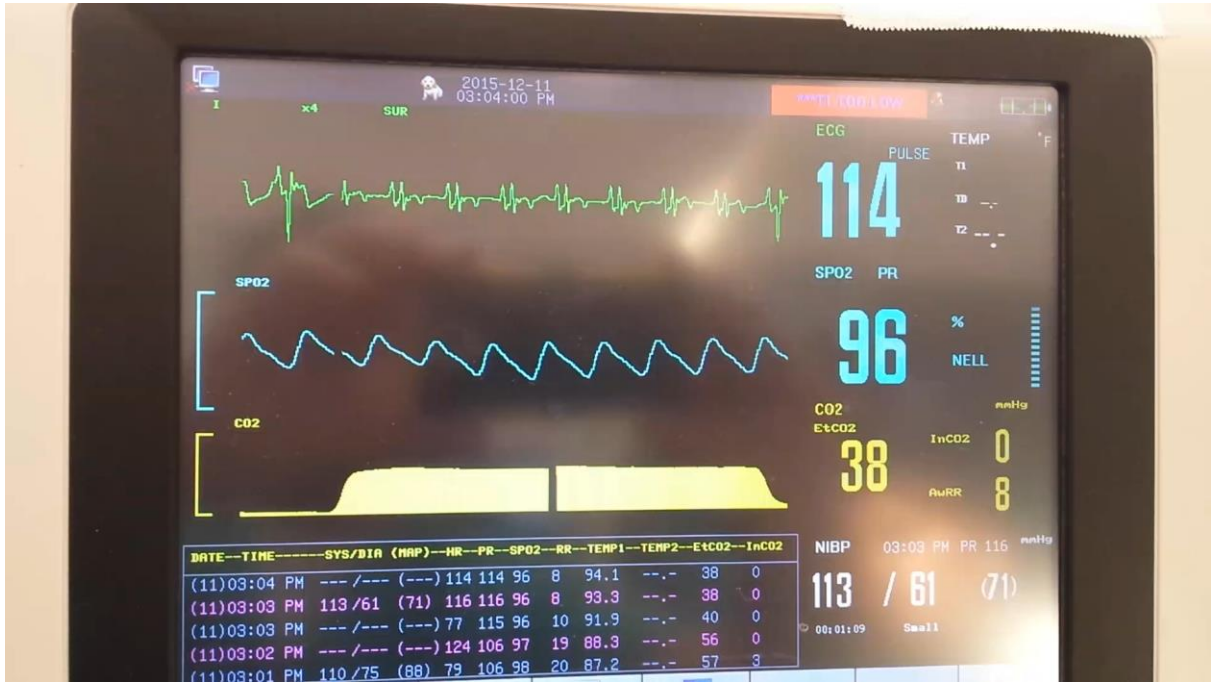
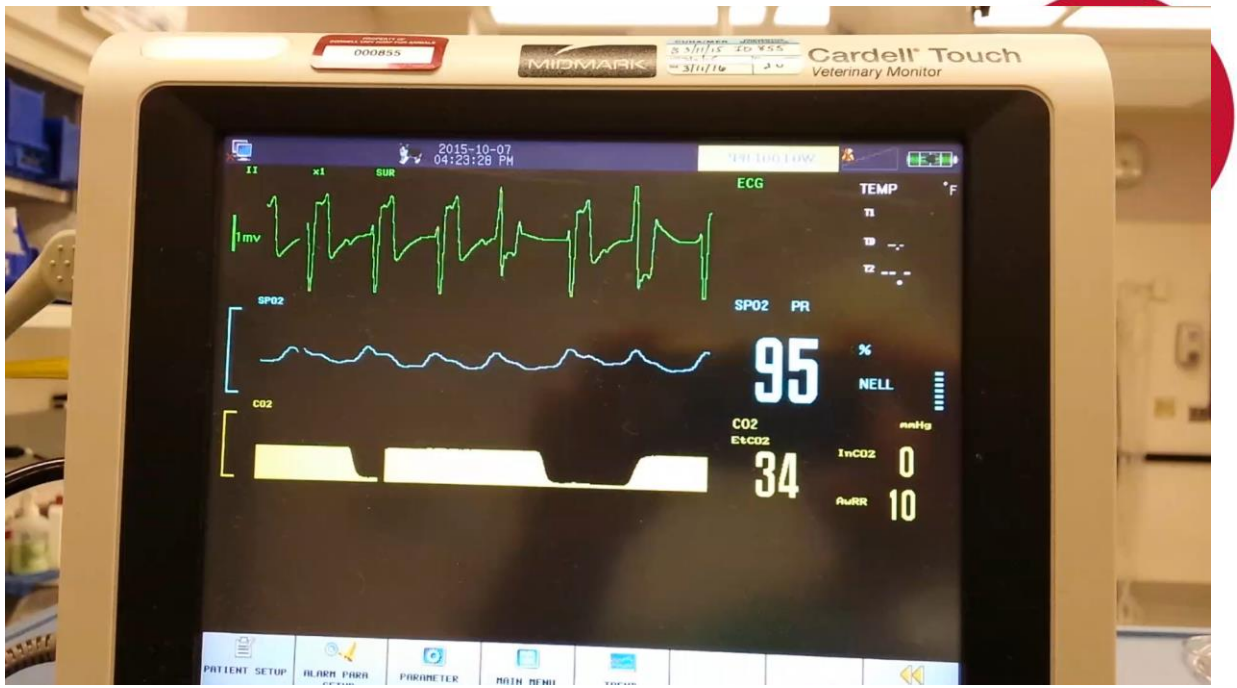
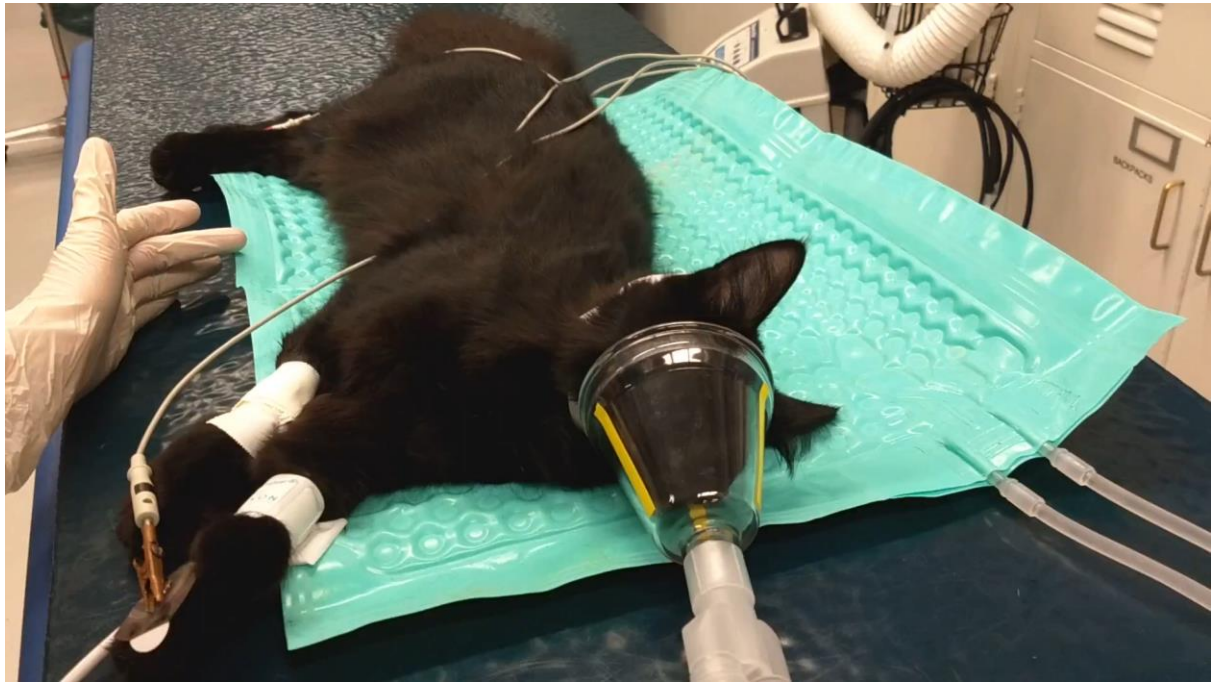
SPO2
CO2
CO2
EtCO2
AwRR
35
16
0

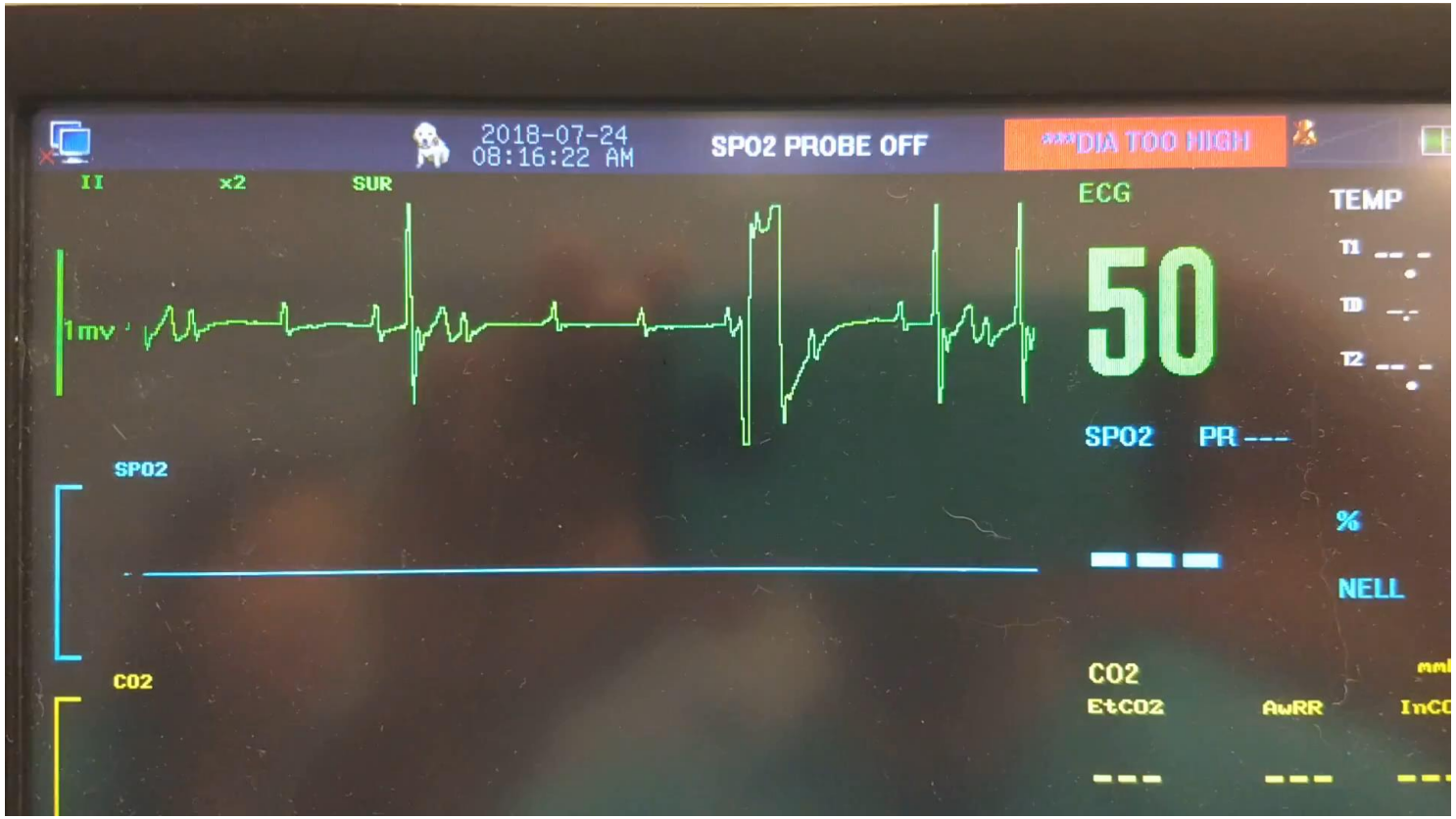
Que es esto?







La bradicardia es parte de usar dexmedetomidina



Perro sedado con dexmedetomidina (no anestesiado)

Arritmia post-atropina

Que tiene?

Que hacer?
atipamezol

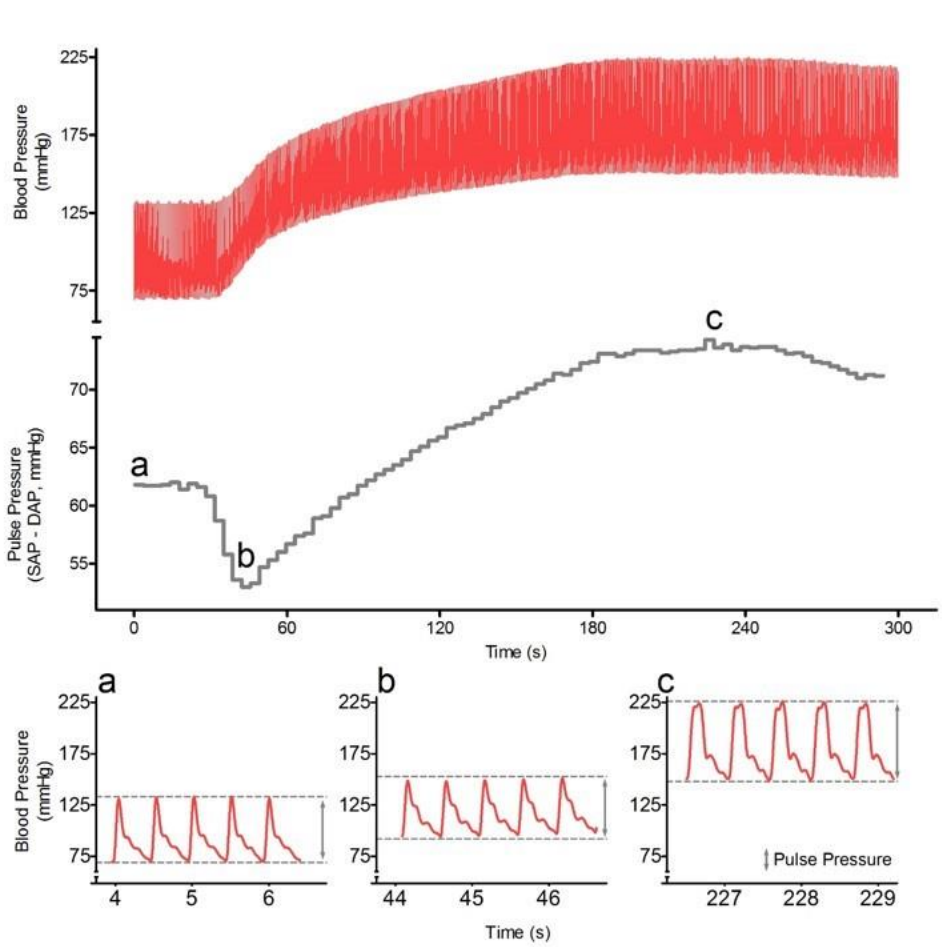
Antagonista alfa2

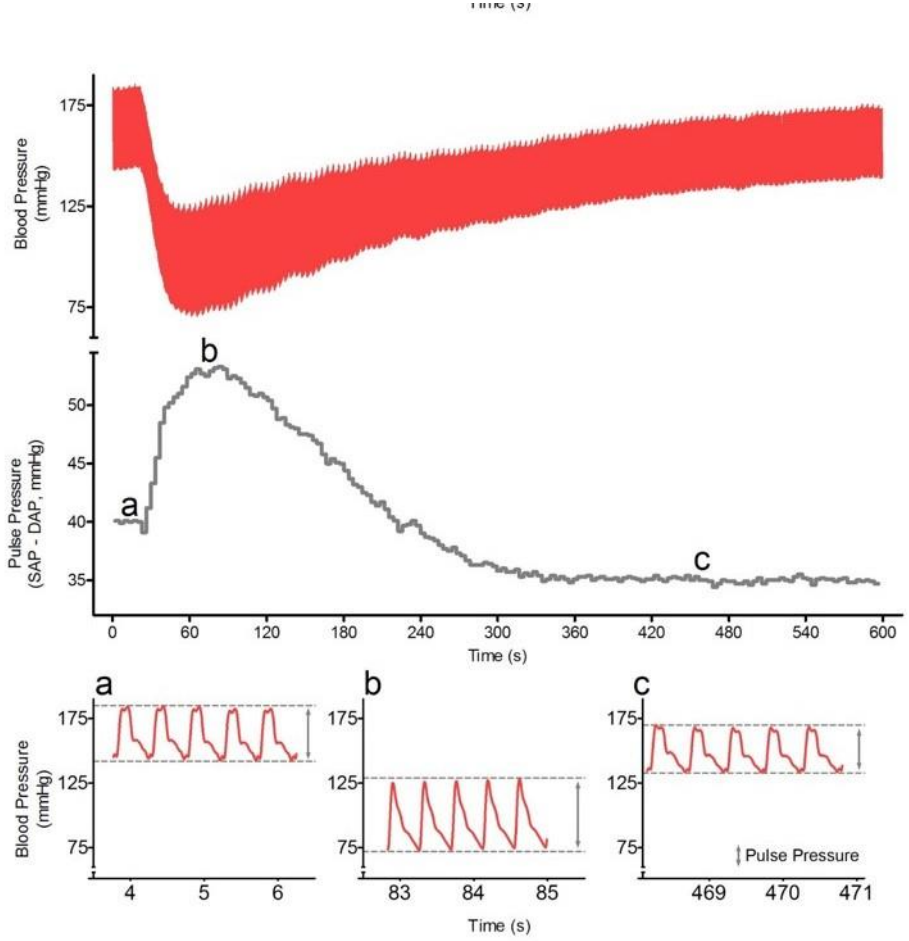
Muy útil para revertir sedación

En gatos sedados, atipamezol los despierta y revierte la bradicardia

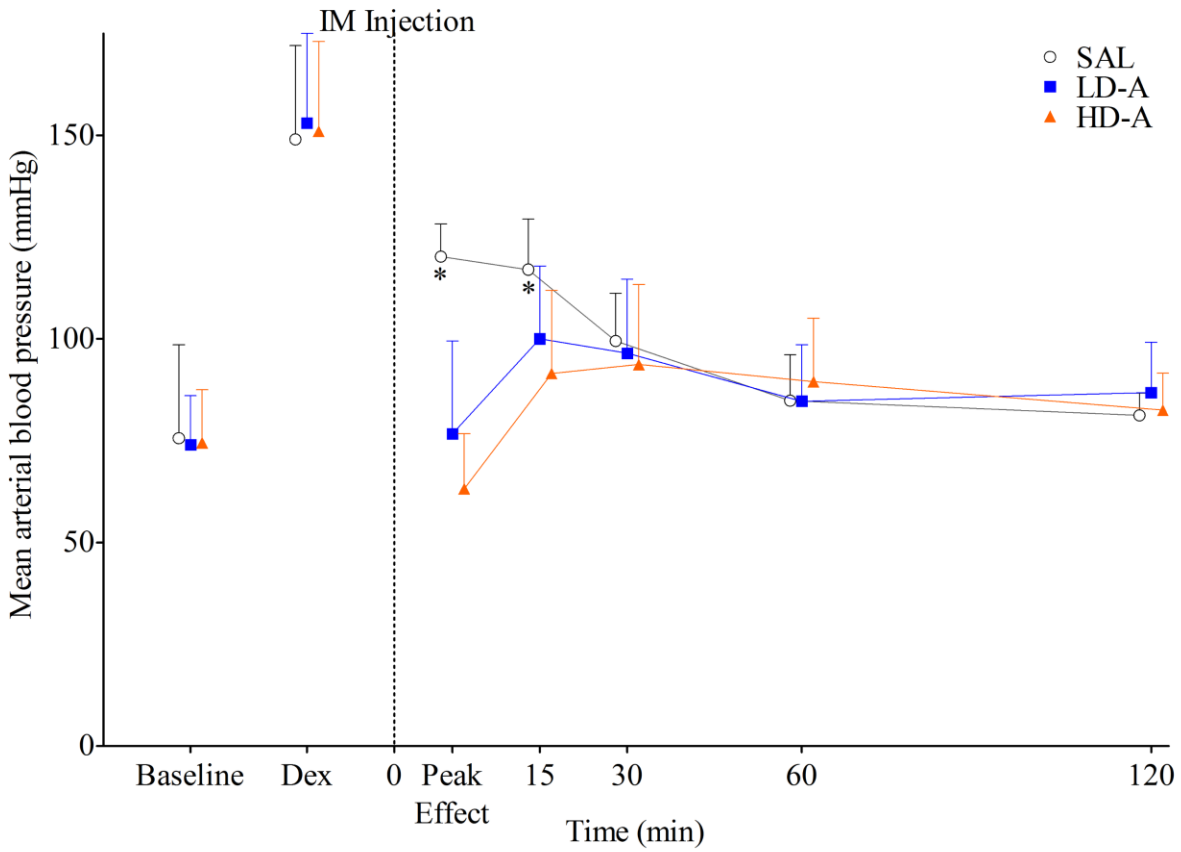
Y en gatos anestesiados?

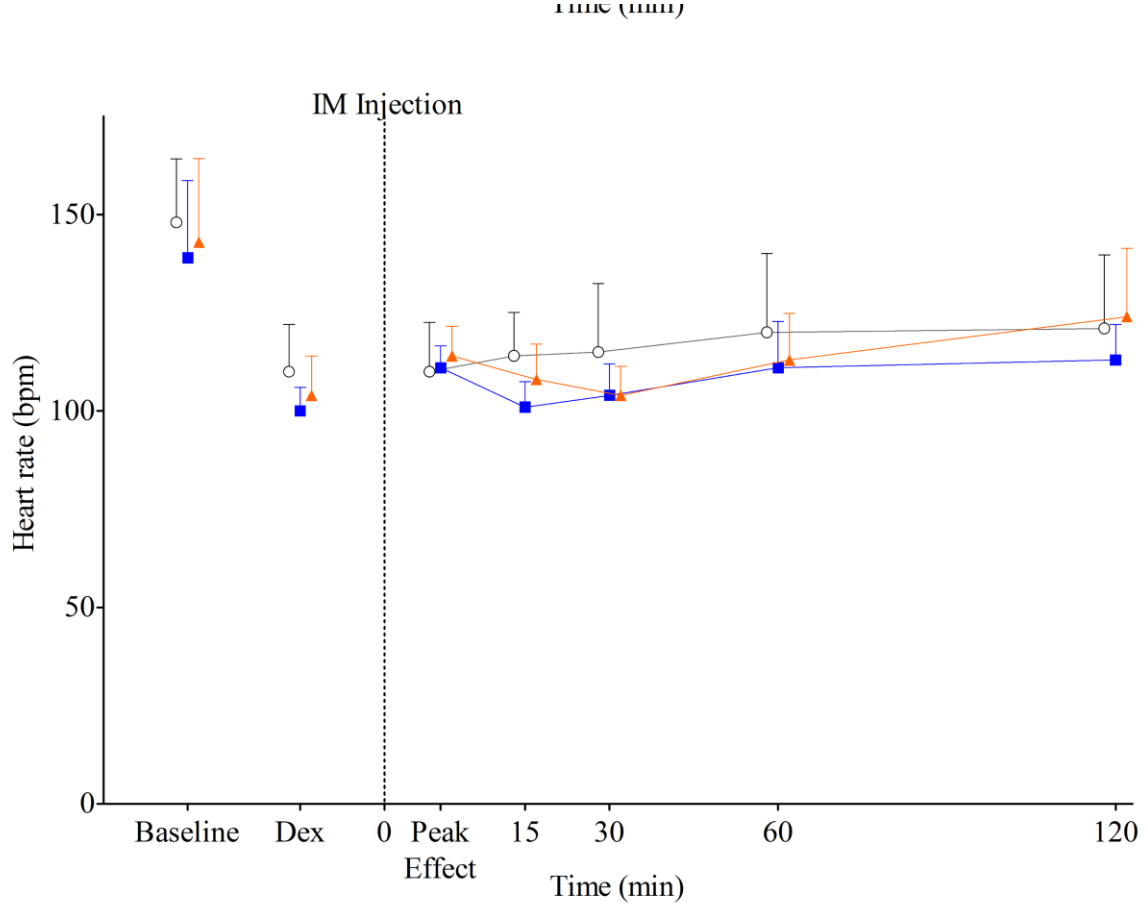
Atimapezole IV en gatos anestesiados



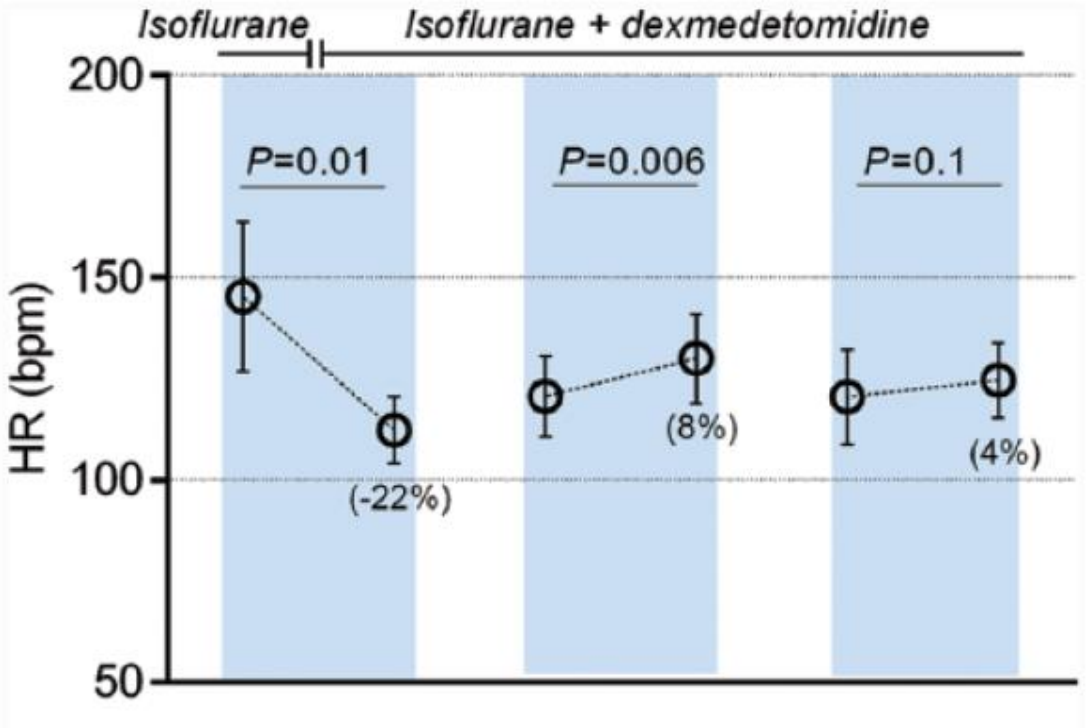


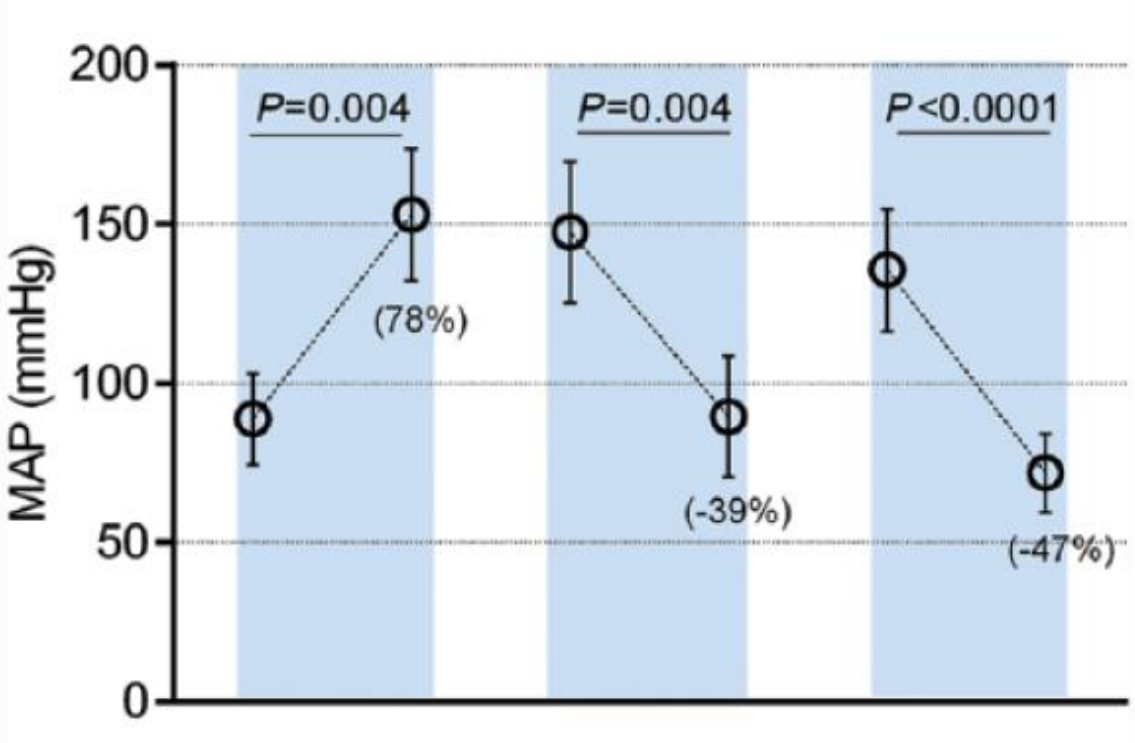
Atipamezole IM en gatos anestesiados





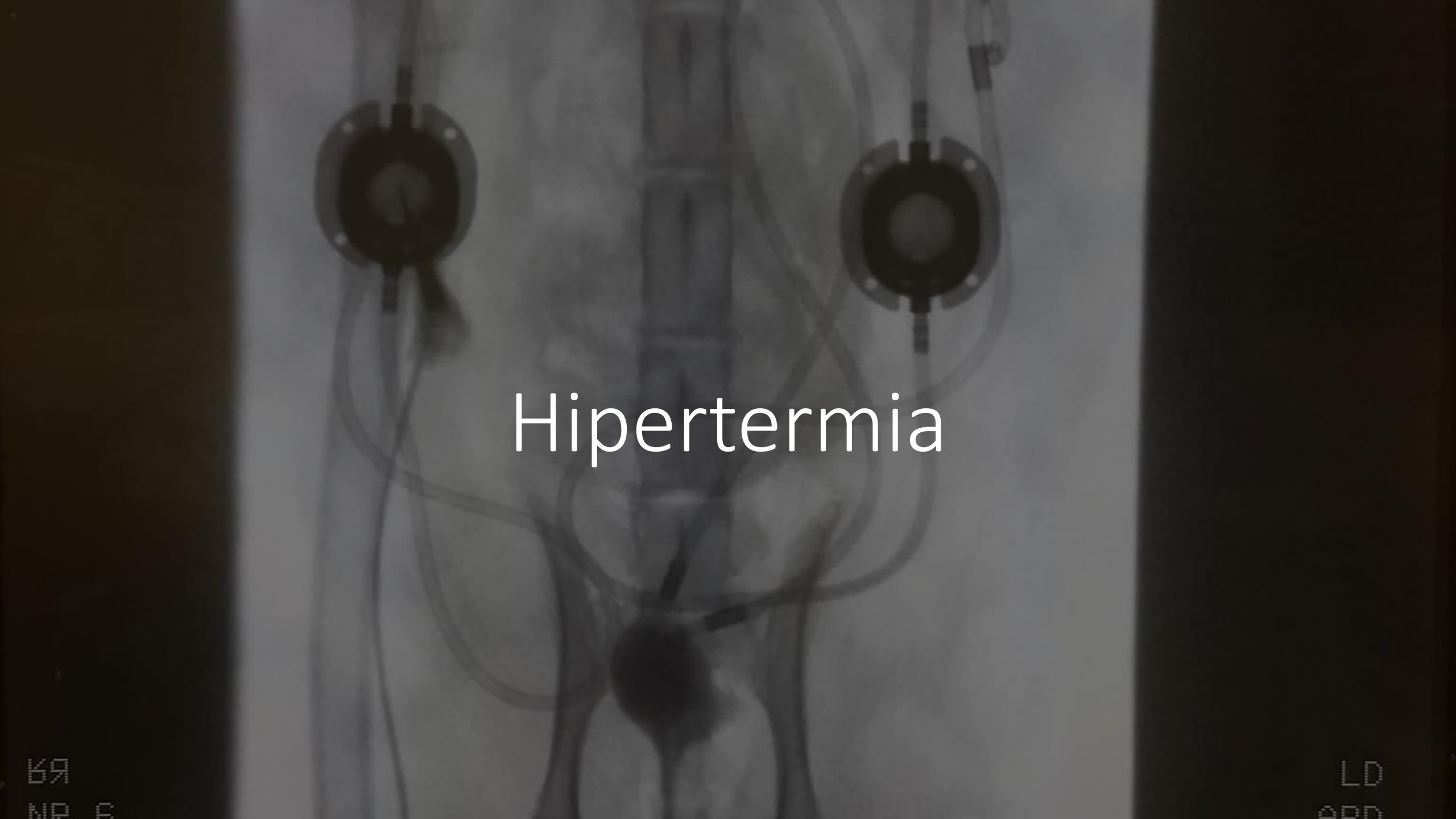
Efectos del MK-467 (Vatinoxan) en FC y PA en gatos anestesiados





Resumen dexmedetomidina y bradicardia

- El tratamiento con atropina no se recomienda
- El tratamiento intraoperatorio con antagonistas alfa2 (atipamezole o Vatinoxan) producen hipotension sin mejorar la FC
- La dexmedetomidina viene con bradycardia, y por ahora no hay tecnicas eficientes para cambiar esto



Hipertermia

Hipertermia inducida por opioides

Particularidad de gatos (y aparentemente hurones)

Veterinary
Anaesthesia and Analgesia
Formerly the Journal of Veterinary Anaesthesia

Veterinary Anaesthesia and Analgesia, 2010, **37**, 35–43 doi:10.1111/j.1467-2995.2009.00508.x

RESEARCH PAPER

Effects of opioids and anesthetic drugs on body temperature in cats

Lysa P Posner*, Alana A Pavuk*, Jennifer L Rokshar*, Jennifer E Carter* & Jay F Levine†

1er estudio asociando hipertermia con opioides y no otras drogas (aunque aparentemente exacerbado por ketamina)

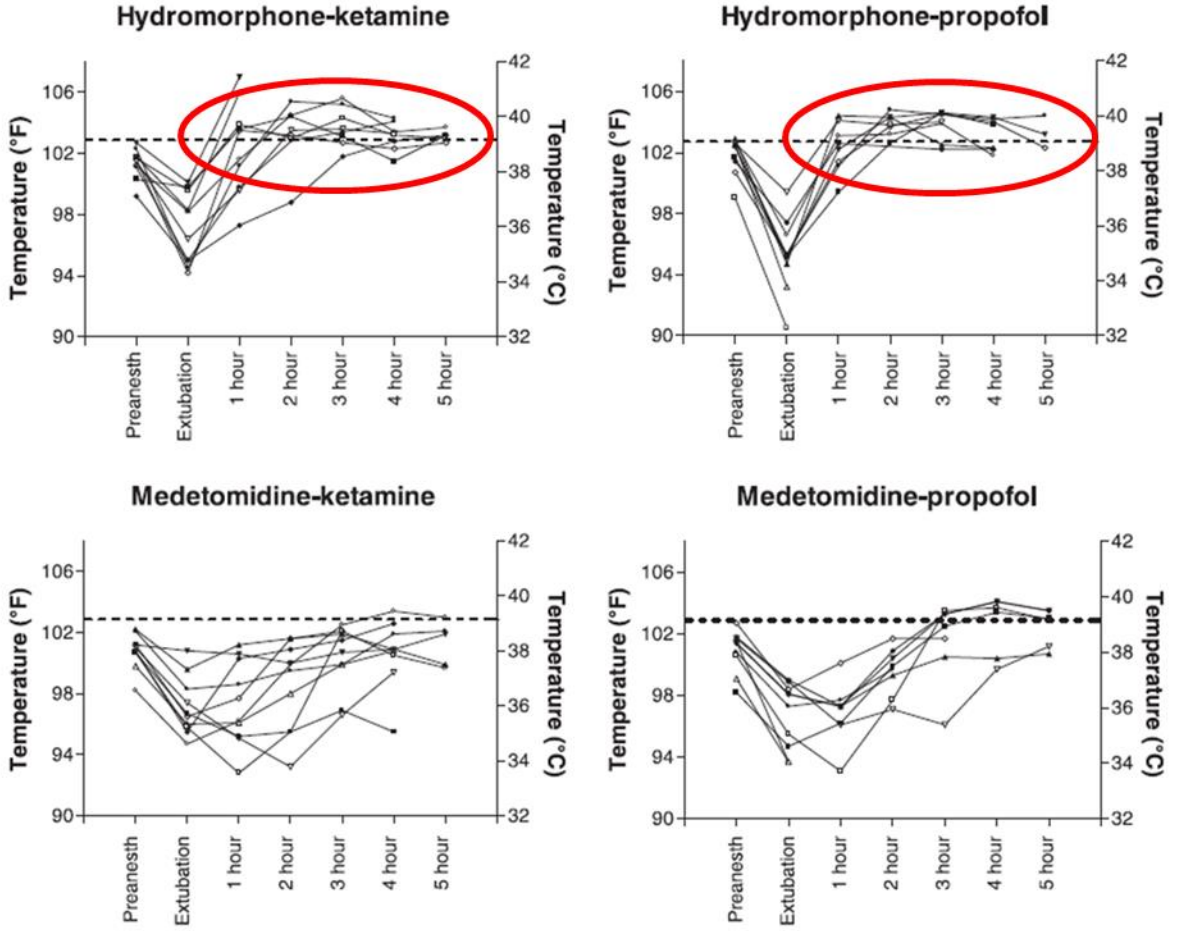


Figure 1 Rectal temperature of cats before pre-anesthetic medication (pre-anesthetic), at tracheal extubation, and hourly for 5 hours following surgery for each treatment group. Dotted line is the upper limit of normal body temperature in cats [39.2 °C (102.5 °F)].

La hipertermia **NO** es dosis-dependiente

ni agente-dependiente

La duración **SI** es dosis dependiente

Hasta ahora **sin consecuencias**

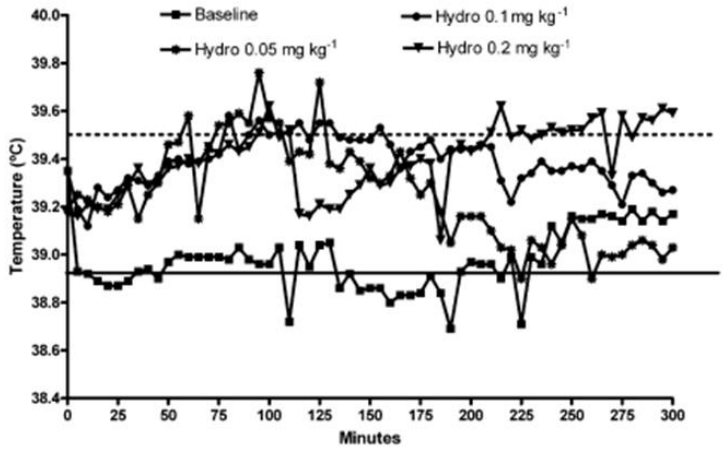


Figure 1 Mean body temperatures following administration of hydromorphone at 0.05, 0.1, or 0.2 mg kg^{-1}. Mean baseline temperature included for comparison. The straight line is the mean temperature for this population of cats and the dotted line is 1 SD from the mean. Treatments are all significantly different from baseline.

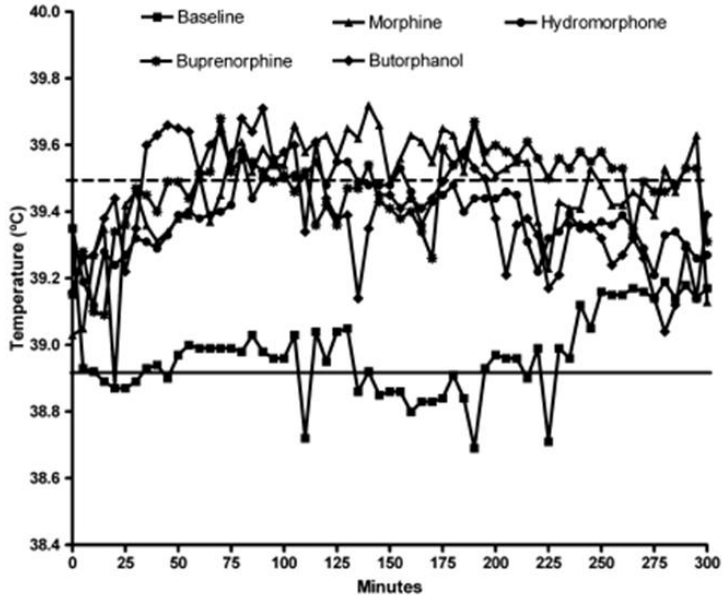
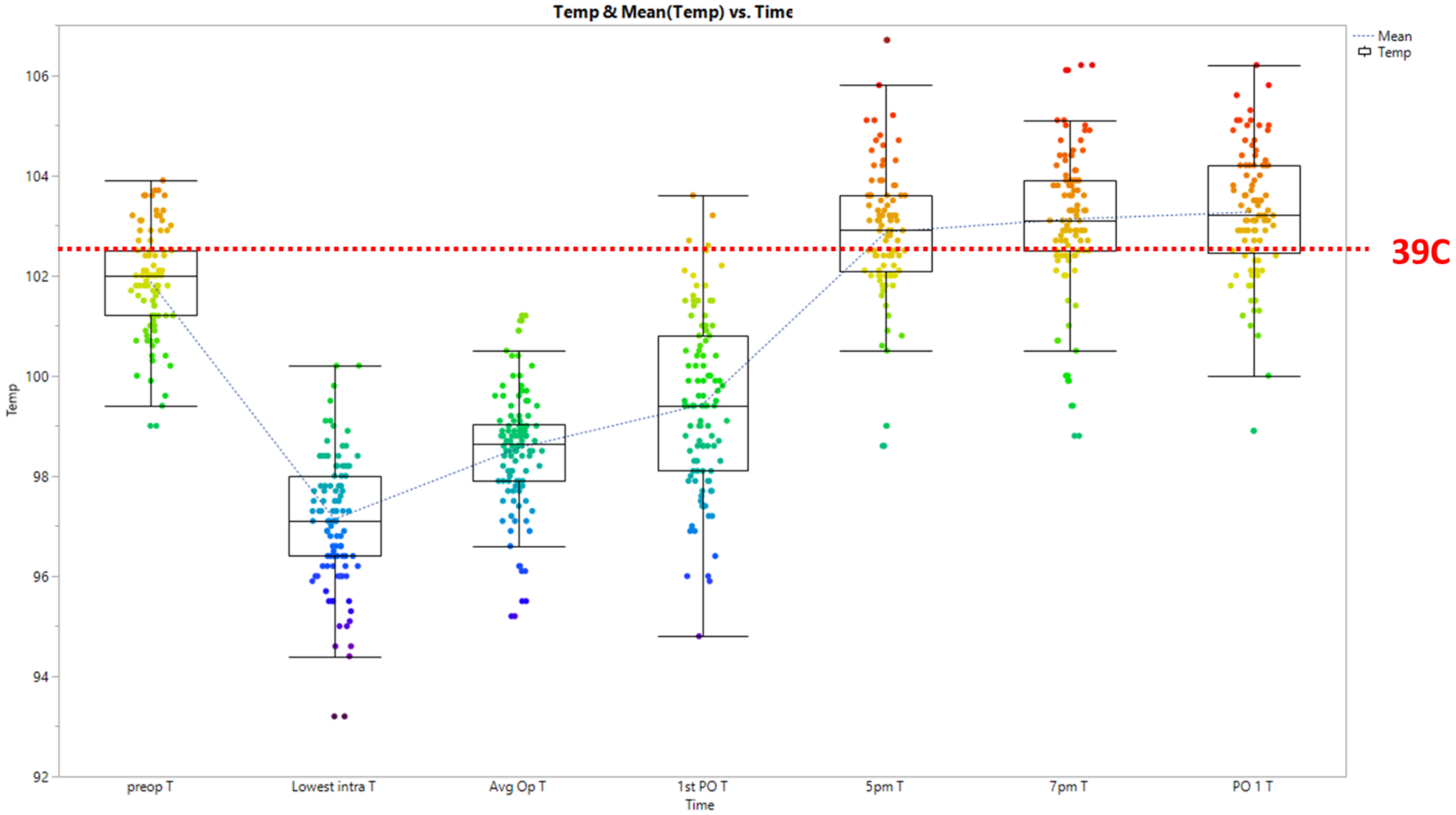
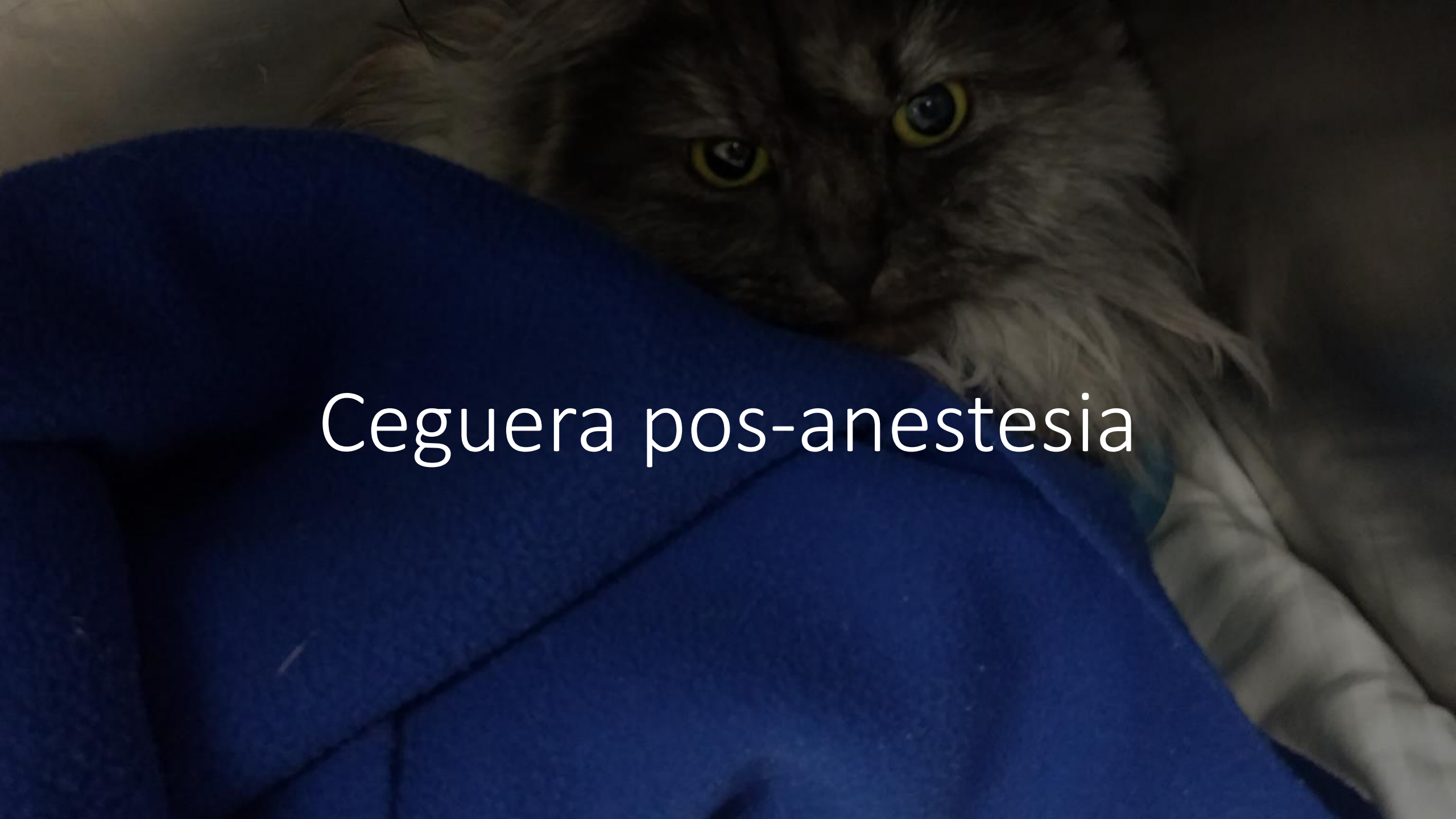


Figure 2 Mean body temperatures following administration of hydromorphone (0.1 mg kg^{-1}), morphine (0.5 mg kg^{-1}), buprenorphine (0.02 mg kg^{-1}), or butorphanol (0.2 mg kg^{-1}). Mean baseline temperature included for comparison. The straight line is the mean temperature for this population of cats and the dotted line is 1 SD from the mean. All treatments are significantly different from baseline.

Hipertermia en gatos con simbadol (buprenorfina de larga duracion)





Ceguera pos-anestesia

Ceguera posanestésica

Contents lists available at SciVerse ScienceDirect

The Veterinary Journal

journal homepage: www.elsevier.com/locate/tvjl

Post-anesthetic cortical blindness in cats: Twenty cases

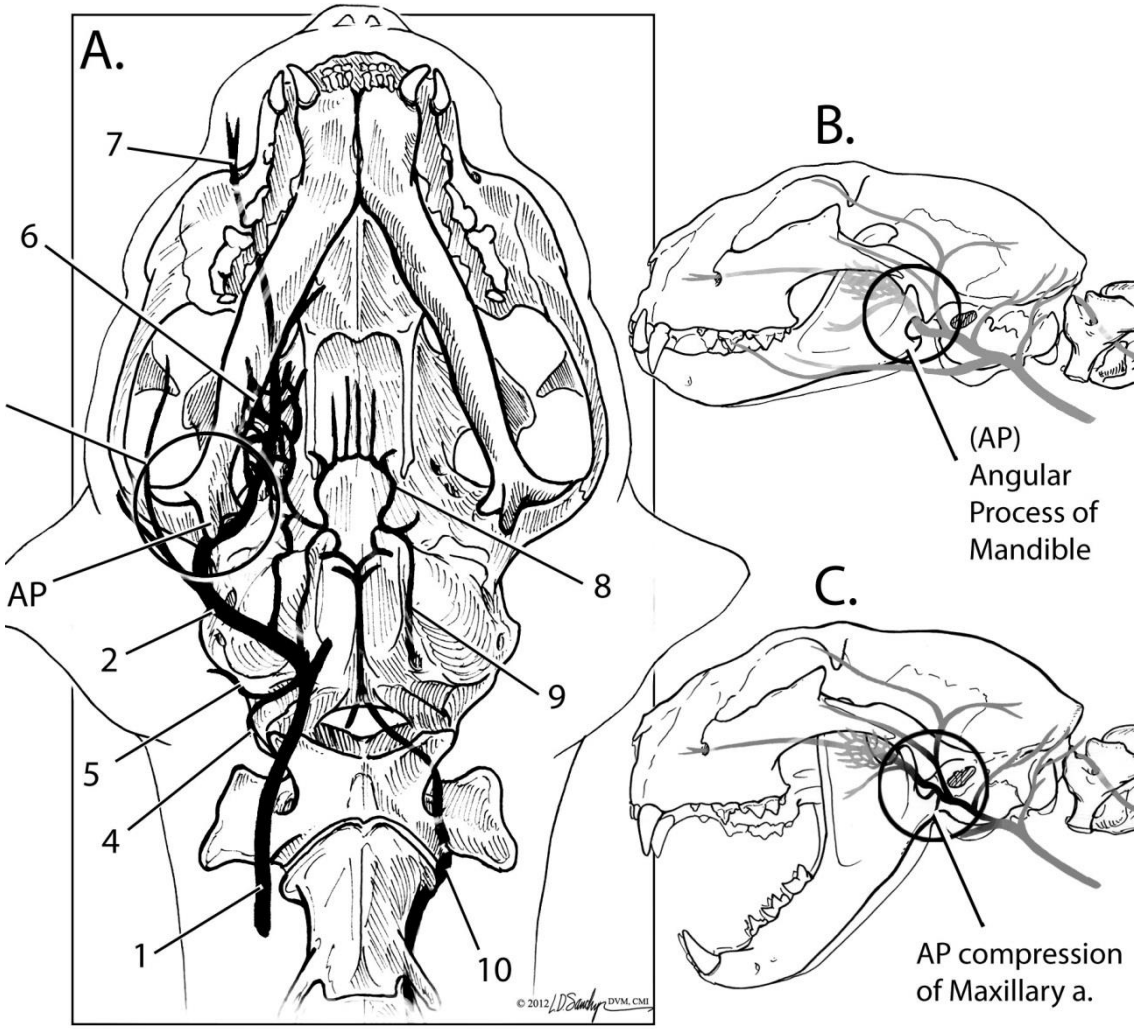
J. Stiles [a,*], A.B. Weil [a], R.A. Packer [a,b], G.C. Lantz [a]

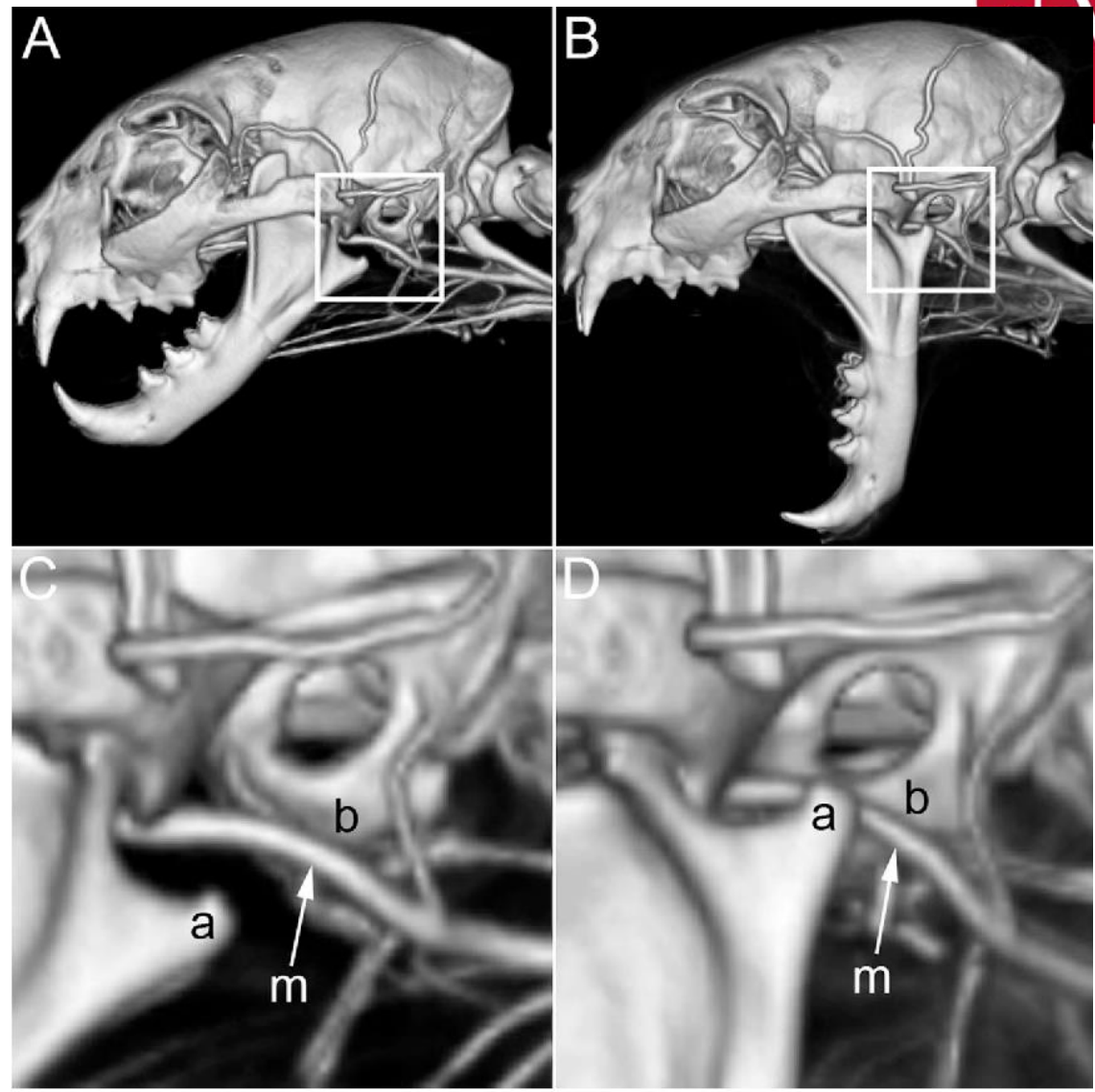
[a] Department of Veterinary Clinical Sciences, School of Veterinary Medicine, Purdue University, West Lafayette, IN 47907, USA
[b] Department of Basic Medical Sciences, School of Veterinary Medicine, Purdue University, West Lafayette, IN 47907, USA

1er estudio asociando ceguera a uso de abrebocas

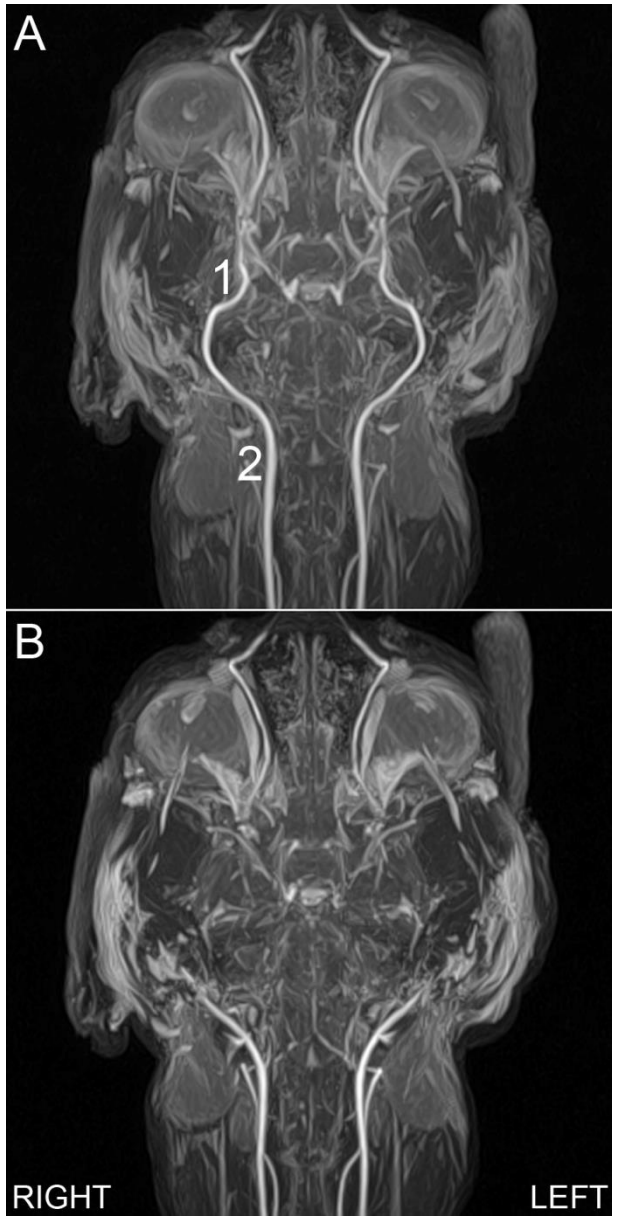
Table 1
Pre- and post-anesthetic clinical information on 20 cats with cortical blindness and other neurological deficits.

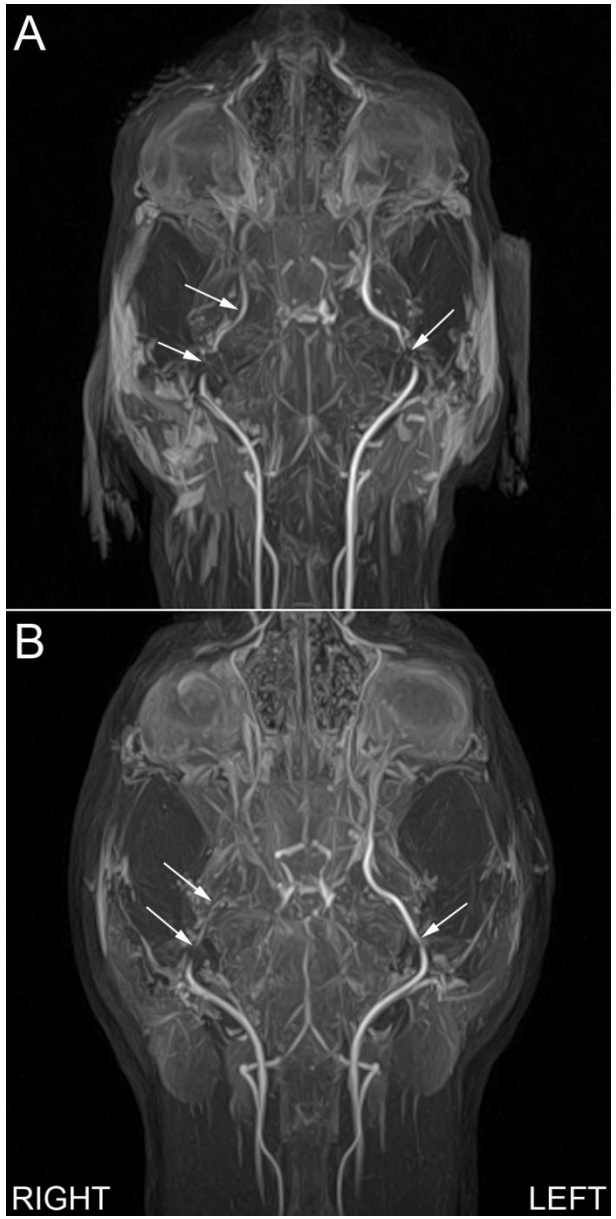
Cat number	Signalment (health problems identified prior to anesthesia)	Reason for anesthesia, body position MG (Y/N)	Post-anesthetic abnormalities	Cause of brain ischemia	Outcome
1	12 year MN DSH (dental disease)	Dentistry – cleaning, multiple extractions dorsal MG-Y	Blind, ataxic, circling	Unknown	At 3 days neurologic signs improved. Still blind at 2 weeks, no additional follow up
2	6 months M DSH	Neuter lateral MG-N	Blind, ataxic	Cardiac arrest	At 6 weeks first sign of minimal vision, resolution of ataxia. At 4.5 year visual, good on tracking and maze testing, no menace OU
3	14 year FS DLH	Dentistry – cleaning lateral MG-Y	Blind, initial opisthotonus, then ataxic, circling	Unknown	At 2 days visual, at 4 days all neurologic signs had resolved
4	15 year FS DSH (dental disease, chronic renal disease)	Dentistry – cleaning, multiple extractions lateral MG-Y	Blind, recumbent for 24 h, ataxic, circling	Unknown	At 1 month some vision, still slightly ataxic, no additional follow up
5	18 year FS DSH (dental disease, chronic renal disease)	Dentistry – cleaning, multiple extractions lateral MG-Y	Blind, weak, ataxic, circling	Unknown	At 2 days some vision. At 1 month vision and gait appeared normal
6	14 year FS DSH (dental disease, chronic renal disease)	Dentistry – cleaning, multiple extractions lateral MG-Y	Blind, weak	Unknown	At 2 days visual and able to walk. Two weeks later knuckling of pelvic limb with pain, systemic hypertension diagnosed, euthanased
7	11 year MN DSH (dental disease)	Dentistry – cleaning lateral MG-Y	Blind, left thoracic and left pelvic limbs weak	Unknown	At 7 days vision began to return, vision improved over next 2 months, but OS still had deficits. Weakness in left pelvic limb persisted
8	10 year FS DSH (dental disease)	Dentistry – cleaning, multiple extractions lateral MG-Y	Blind, opisthotonus, vocalising, no postural reactions or CP, circling once ambulatory 3 days later	Unknown	At 3 days minimal vision. By 2 months vision appeared normal, resolution of neurologic abnormalities
9	12 year MN (chronic inflammatory bowel disease)	Endoscopy sternal MG-Y	Blind, abnormal mentation	Unknown	At 2 days some vision, at 6 days good vision based on maze. Mentation was normal by 24 h. At 1 month visual OU, but cotton ball test weak and visual placing poor. At 3 months vision normal including placing and cotton ball
10	14 year FS DSH (gastrointestinal lymphoma, heart murmur)	Endoscopy sternal MG-Y	Blind, unable to stand, ventroflexion of neck, limb rigidity, deaf	Unknown	At 6 days able to walk but ataxic, still blind and deaf, CP deficits. At 1 month remained blind, deaf and ataxic, euthanased, no necropsy
11	2 year MN DSH (dental disease)	Dentistry – cleaning, one extraction lateral MG-Y	Blind OS, visual OD, decreased CP on left side, circling	Unknown	At 9 days, still blind OS, weak CP on left side, not circling. Next exam at 4 months, normal vision, neurologic signs resolved
12	9 year MN DSH (dental disease)	Dentistry – cleaning lateral MG-Y	Blind	Unknown	At 1 day some vision. At 1 month, good vision but with residual deficit OD. At 1.5 years no visual deficits detected
13	10 year FS DSH (inflammatory bowel disease)	Endoscopy sternal MG-Y	Blind, abnormal mentation, ataxic	Unknown	Neurologic signs improved over 5 days but still ataxic. At 11 days still non-visual, but ataxia resolved. No further follow up
14	14 year FS DSH (dental disease, diabetic)	Dentistry – cleaning, multiple extractions lateral MG-Y	Blind, circling, abnormal mentation	Unknown	At 10 days visual, no information on neurologic abnormalities
15	6 year MN DSH (dental disease, heart murmur)	Dentistry – cleaning dorsal MG-Y	Blind	Unknown	At 3 days visual. Six months later developed seizures and died. At necropsy encephalitis of unknown cause diagnosed
16	15 year MN DSH (chronic renal disease, hepatobiliary cyst, intestinal foreign body)	Endoscopy, MG-Y 2 days later laparotomy MG-N	Blind OD, decreased vision OS, decreased CP on right thoracic and pelvic limbs	Unknown	At 5 months visual OS, blind OD. At 4 months CP normal. No information on exact time to return of vision OS
17	4.5 months F DSH	OHE MG-N	Blind, initially non-ambulatory, intention tremors, abnormal mentation, nystagmus	Cardiac arrest	Remained blind. At 5 months intention tremors, ataxic in pelvic limbs. At 14 months still slightly ataxic right pelvic limb, but no other neurologic abnormality
18	14 year FS DSH (dental disease)	Dentistry – cleaning, multiple crown amputations lateral MG-N	Blind, circling, head tilt, abnormal mentation	Unknown	At 10 days blind, circling, but improved mentation. At 13 days visual OS, blind OD. At 1 month still blind OD, head tilt but other neurologic signs resolved, behavior change. At 3 months some vision OD, head tilt resolved, behavior change persisted
19	16 year MN Himalayan (dental disease, chronic renal disease)	Dentistry – cleaning, multiple extractions lateral MG-N	Blind	Unknown	Remained blind

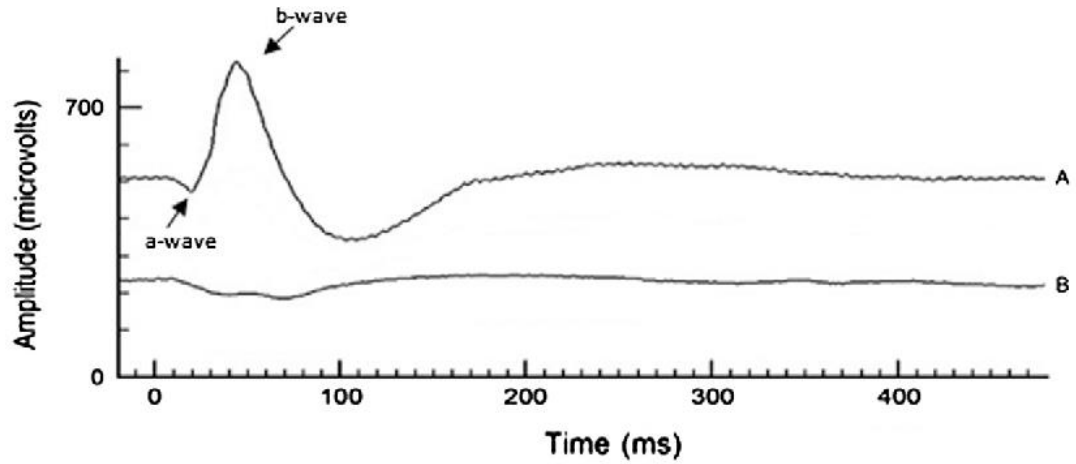


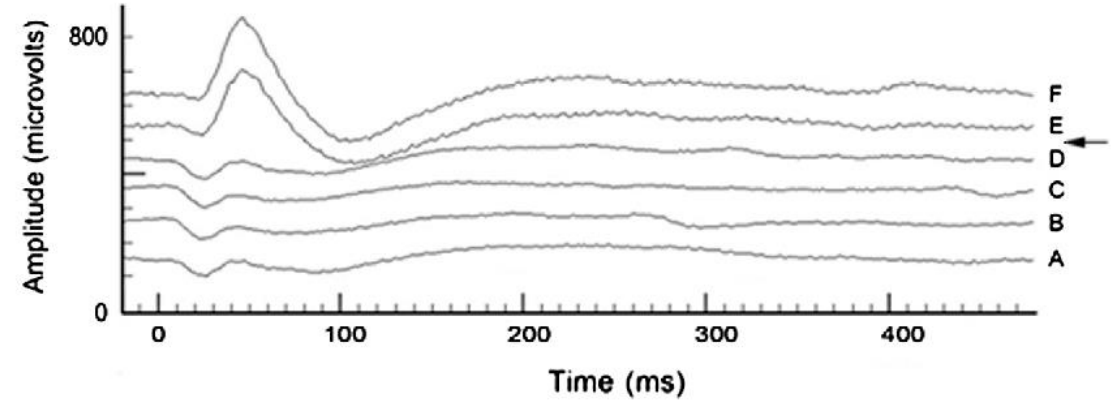


direct three-dimensional volume reconstructions of the head and cranial neck of the same cat with









No usen abrebocas

Via aerea

Intubación e instrumentación de vía aérea

Veterinary Anaesthesia and Analgesia, 2007, **34**, 213–216 doi:10.1111/j.1467-2995.2006.00314.x

CASE REPORT

Traumatic endotracheal intubation in the cat

Erik H Hofmeister* DVM, Cynthia M Trim† BVSc, DVA, Diplomate ACVA, ECVA, Saskia Kley* DVM & Karen Cornell* DVM, PhD, Diplomate ACVS
*Department of Small Animal Medicine and Surgery, College of Veterinary Medicine, University of Georgia, Athens, GA, USA
†Department of Large Animal Medicine, College of Veterinary Medicine, University of Georgia, Athens, GA, USA

Tracheal rupture in cats: 16 cases (1983–1998)

Elizabeth M. Hardie, DVM, PhD; Gary J. Spodnick, DVM; Stephen D. Gilson, DVM; John A. Benson, DVM; Eleanor C. Hawkins, DVM

Tracheal rupture associated with intubation in cats: 20 cases (1996–1998)

Susan L. Mitchell, DVM; Robert McCarthy, DVM, MS, DACVS; Elke Rudloff, DVM, DACVECC; Robert T. Pernell, DVM, MS, DACVS

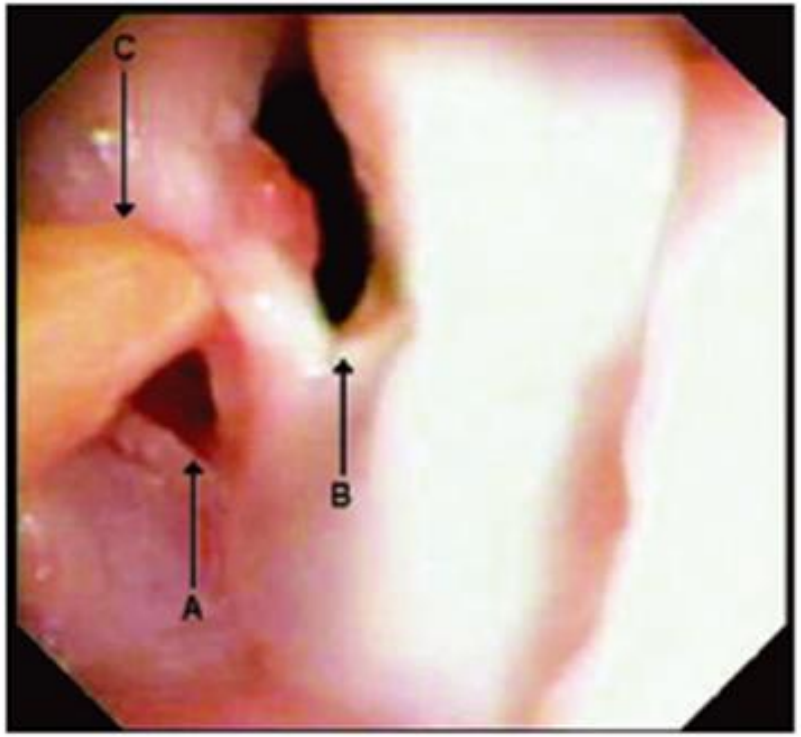


Figure 1 Still image obtained during video laryngoscopy of a cat with laryngeal trauma secondary to orotracheal intubation. (a) Tear in arytenoid. (b) Lumen of larynx. (c) Q-tip passing completely through tear in arytenoid.

Laringoespasmo

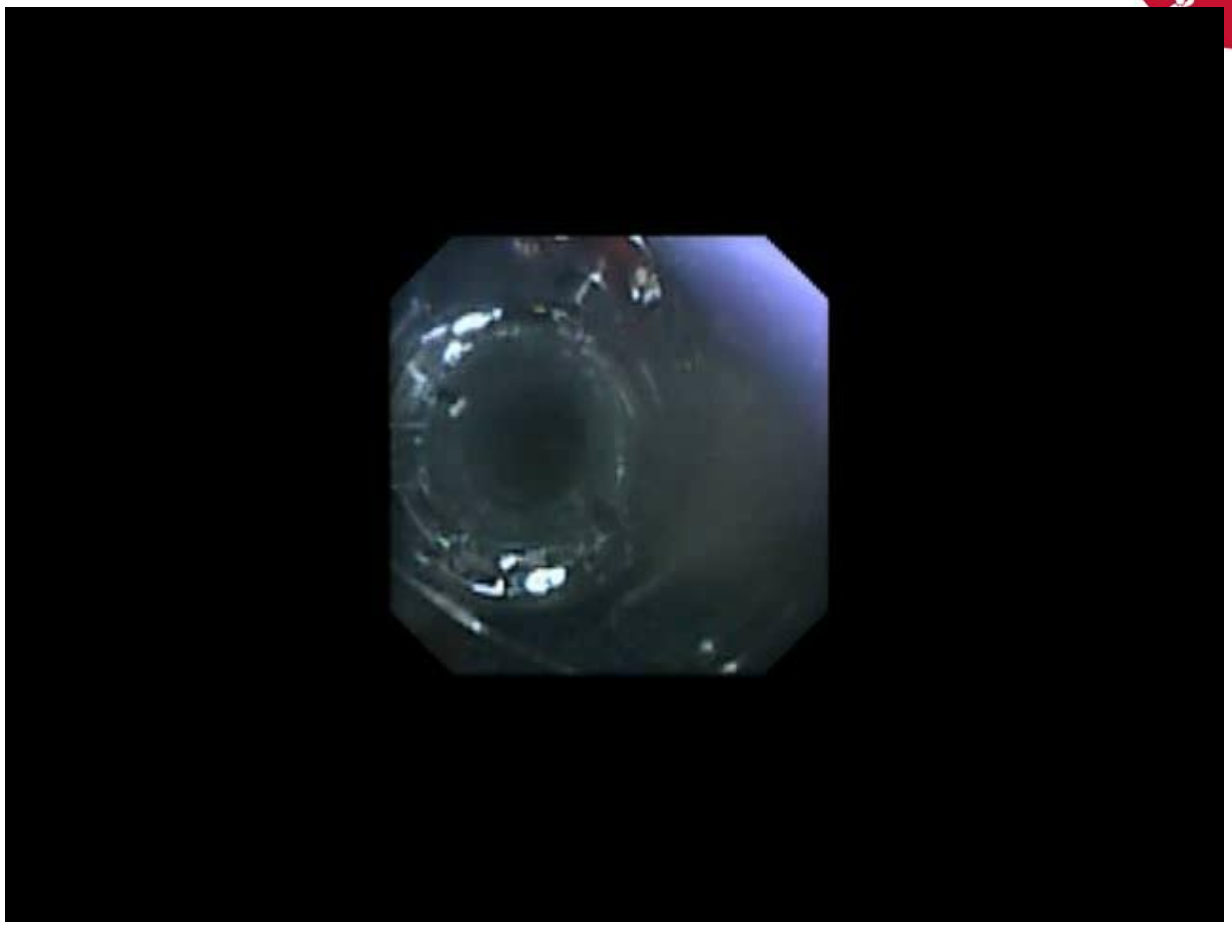
El laringoespasmo en gatos es muy vigoroso (como en humanos)

3 opciones:

~~1. No intubar~~

2. Intubar mejor

3. Usar otro instrumento



Intubar mejor

La ketamina (+benzo) son **ineficaces** en inhibir el **laringoespasmo**

El propofol es mas eficaz

Usamos propofol y lidocaína en spray

Gato anestesiado con Propofol+dexmedetomidina

En humanos esto se soluciona paralizando

- Y en gatos tambien

1er estudio mostrando los beneficios del BNM en la intubacion en gatos

Veterinary Anaesthesia and Analgesia
Formerly the Journal of Veterinary Anaesthesia

Veterinary Anaesthesia and Analgesia, 2013, **40**, 351–358 doi:10.1111/vaa.12028

RESEARCH PAPER

Use of neuromuscular blockade with rocuronium bromide for intubation in cats

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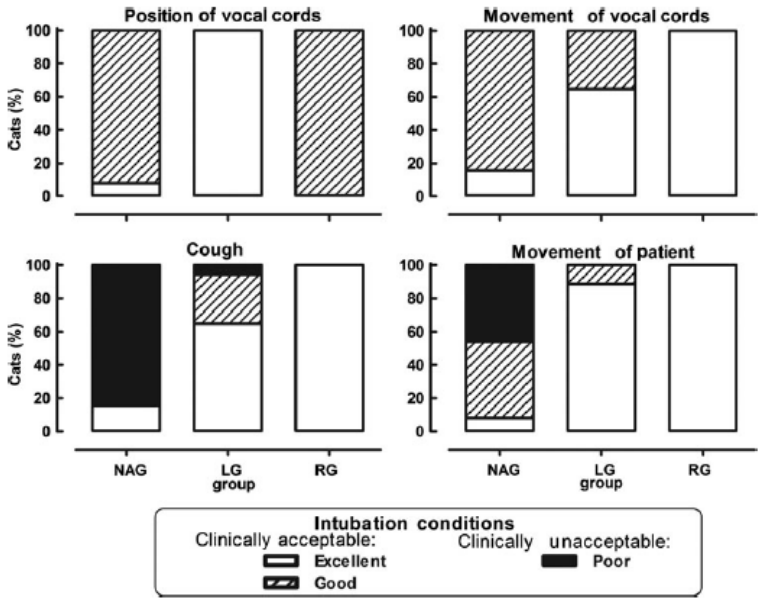
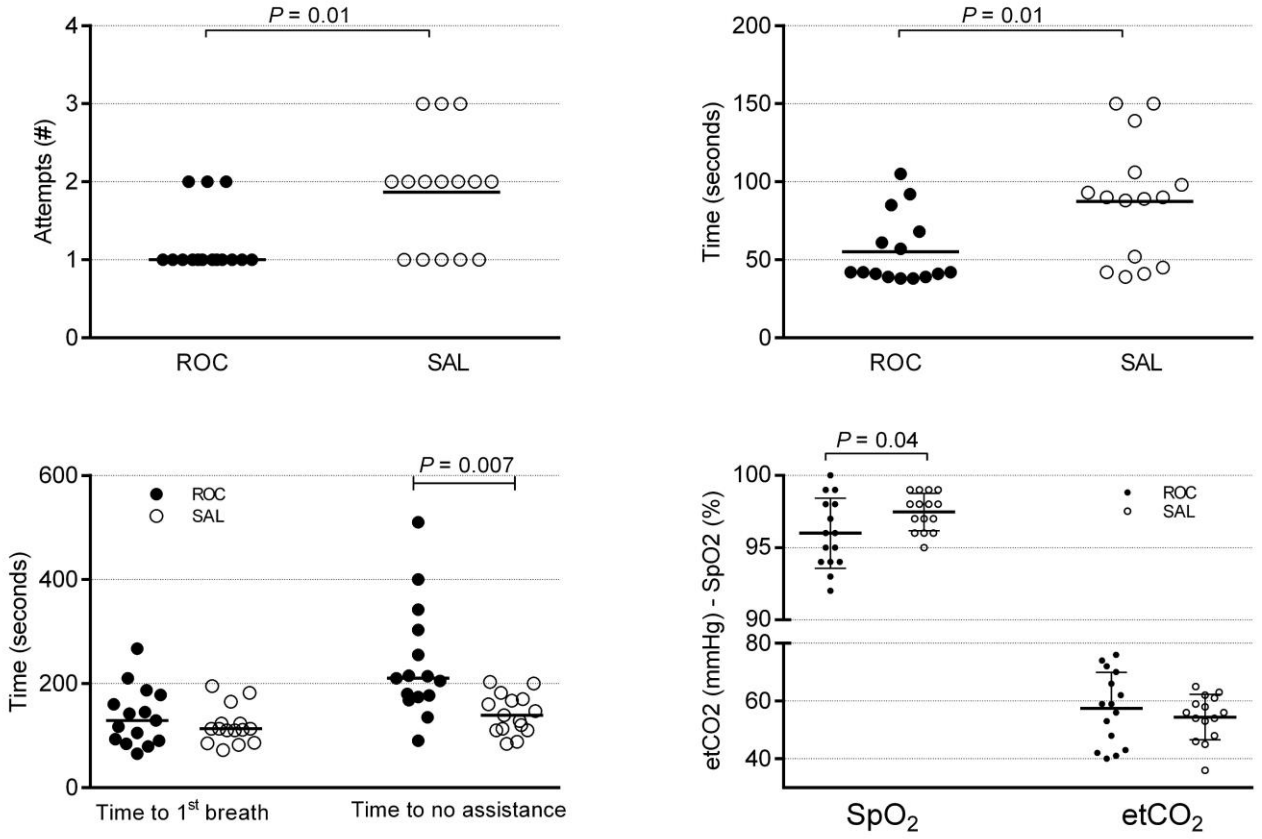
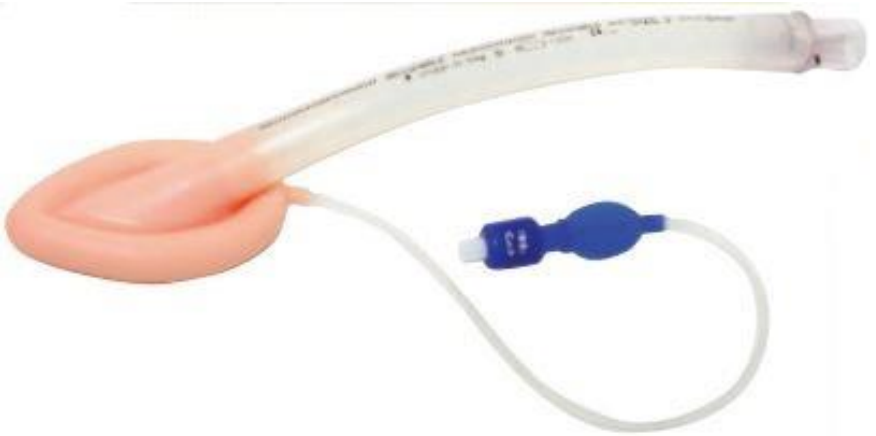


Nosotros evaluamos una dosis menor



Usar otro instrumento

- Mascara laríngea (humanos)
- V-Gel (gatos)



- Instrumentos supraglóticos

Supraglóticos

No pasan la laringe

No afectan la tráquea

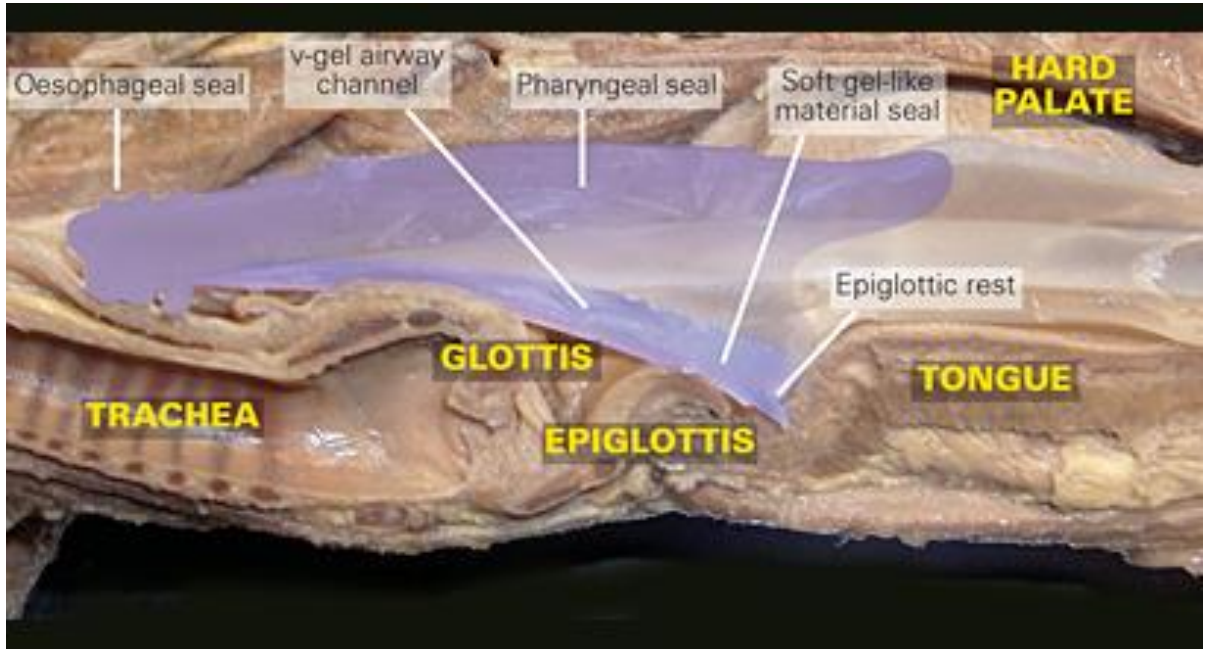
Requiere menos anestesia que TT

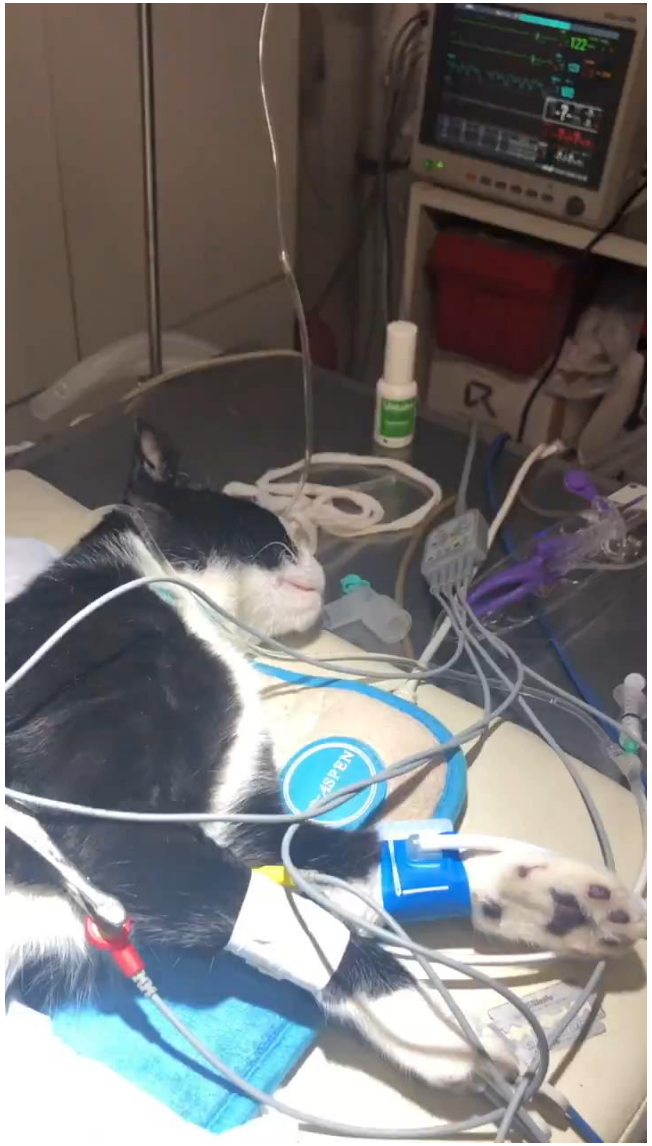
Permite dar gases y monitorizar

Sellado mas bajo que TT

Poca prevención a aspiración

Se pueden mover





Cortesia Dr. Juan M Baldivieso, Cordoba, Argentina


Y esto?
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Gracias