Pain Management in Small Mammals, Birds and Reptiles

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Introduction

- More and more exotic pets…
- More and more analgesics used in domestic animals…
- But lack of knowledge in exotic pet analgesia
- “First do no harm.” => No pain medication!?!?

- Of course, all vertebrate animals can feel pain…

Plan

- Why treat pain in exotic pets?
- How to recognize pain in exotic pets?
- What we can use (or not) to manage their pain?
- In Practice… A few clinical cases.

Before starting…

- Literature not extensive!!!

$\Rightarrow$ Based on clinical experience

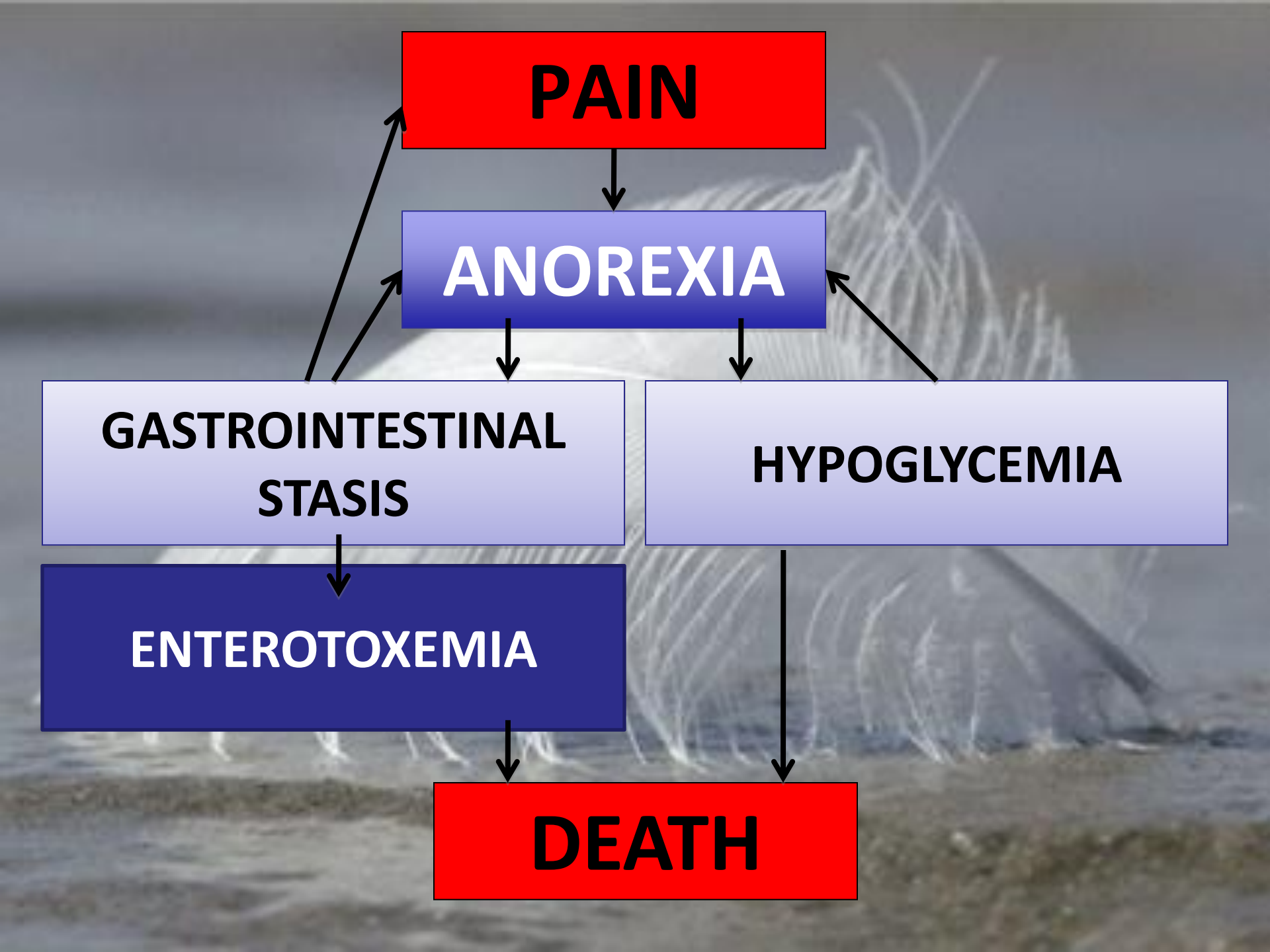
$\Rightarrow$ Controversial subject / Various opinions

Why treat pain?

- Moral and ethical obligation
- But much more…

Why treat pain?

- Same reasons as in other species
- Risks of gastrointestinal stasis in herbivores
- Risks of hypoglycemia in small species
- Risks of automutilation
- Post-surgery complications
- Delayed healing
- Risks of diseases secondary to immune system suppression


PAIN
ANOREXIA
GASTROINTESTINAL STASIS
HYPOGLYCEMIA
ENTEROTOXEMIA
DEATH

How to recognize pain?

- **What would be painful for us (or cats and dogs) should be considered painful in exotics too (even reptiles!!!).**

Recognizing pain in Small mammals

- Immobility
- Lethargy
- Isolation
- Aggression in normally docile animal
- Half-closed or dull, unfocused eyes
- Pushing abdomen on the floor
- Production of fewer, smaller or no fecal pellets
- Chewing at affected site / Overgrooming

Recognizing pain in Small mammals

- Lack of grooming
- Vocalization
- Stretching with back arched
- Flinching on palpation
- Hunched posture
- Teeth grinding
- Reluctance to curl when sleeping (ferrets)
- Strained facial expression, bulging eyes

Recognizing pain in Small mammals

- Increased frequency and depth of respirations or rapid shallow breathing
- Lameness
- Anorexia
- Head extended and elevated (rabbits)
- Piloerection (guinea pigs)
- Porphyrin secretion in rats (stress)
- Squinting (especially ferrets)

Recognizing pain in Birds

- Feather picking, biting or scratching area
- Aggression in normally passive animal
- Striking out to avoid being handled
- Lameness/Wing droop
- Vocalization
- Closed eyes
- Overgrooming or lack of grooming
- Ruffled feathers

Recognizing pain in Birds

- Increased respiration/Open-beak breathing
- Immobility/Lethargy/Isolation
- Anorexia
- Reluctance to perch
- Absence of normal behaviors

Recognizing pain in Reptiles

- Anorexia
- Hunched posture, remain standing
- Scratching or flicking foot at affected area
- Aggression in normally passive animal
- Flinching on palpation
- Closed eyes
- Head elevated and extended
- Color changes

Recognizing pain in Reptiles

- Immobility
- Lethargy
- Lameness
- Absence of normal behaviors
- Intermittently pulling head into shell and then extending the neck out and up


Gretchen E. Kaufman, DVM, (c) 2002

How to treat pain?

- Opioids
- NSAIDs
- Local analgesia
- Ketamine (and other anesthetics)
- Gabapentin
- Other drugs…
- Environment

Opioids

Advantages	Drawbacks
Good analgesia	Can cause severe respiratory depression (++ ferrets, rats).
μ-opioids > κ-opioids in mammals?	May cause digestive hypomotility.
κ-opioids > μ-opioids in birds?	
μ-opioids > κ-opioids in reptiles?	Most are short-acting.
Injectable	Controlled drugs.
Oral form: tramadol	Most are injectable only.
Patches	Patches can be ingested!!!
Can be reversed if needed.	Sedative effects.

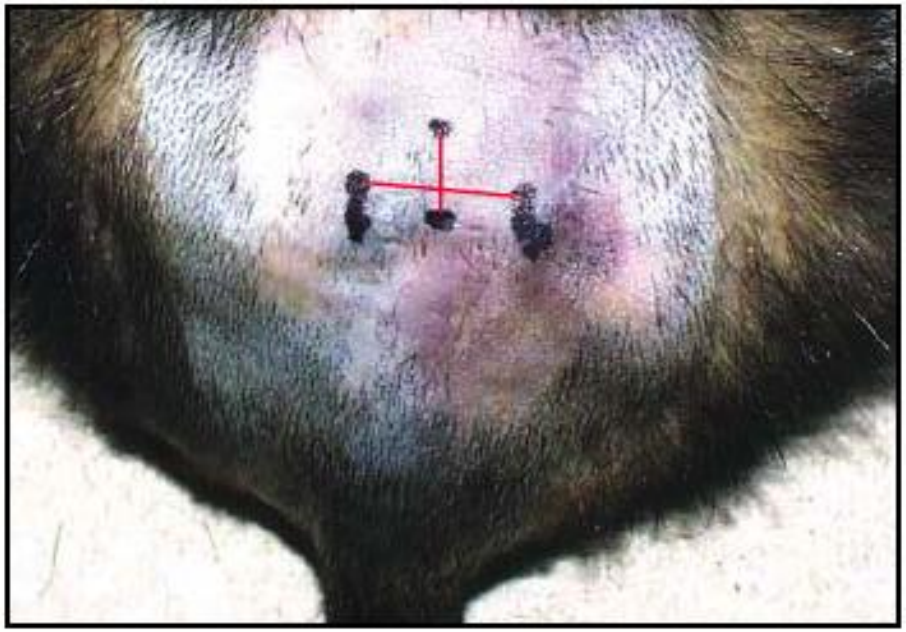
Non-Steroidal Anti-Inflammatory Drugs

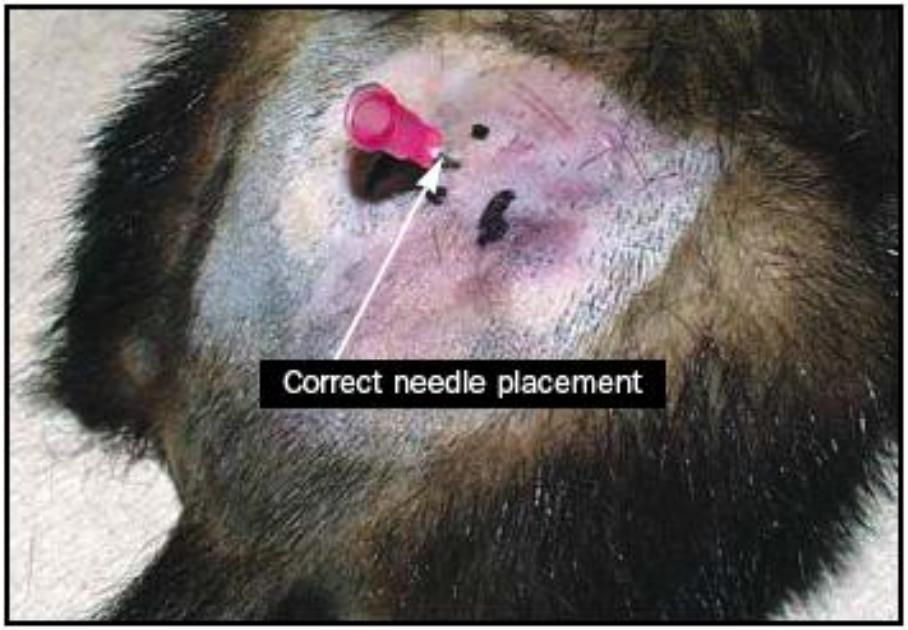
Advantages	Drawbacks
Good analgesia Injectable and oral forms Meloxicam: liquid form, tastes good, PK in rabbits, studied in birds. Newer drugs less side-effects.	May cause renal failure in dehydrated or hypotensive animals. May cause gastroduodenal ulcerations (ferrets, guinea pigs ++).

Local Anesthesia

- Lidocaine < 2 mg/kg total
- Bupivacaine < 2 mg/kg total

- Same principles as for cats and dogs
- Epidural analgesia





Figs 2a,b Landmarks for administering epidural analgesics in a ferret (shown on a cadaver). The hips are flexed to open the lumbosacral space. The space lies at the intersection of lines (red) drawn between the cranial aspects of the wings of the ilea, and between the dorsal spinous processes of the last lumbar vertebra and S1, all marked in black.

From Exotic DVM Vol. 4.3 July 2002

Other analgesic agents

- Ketamine
- Medetomidine
- Gabapentin
- Amitryptilline
- …

Environment

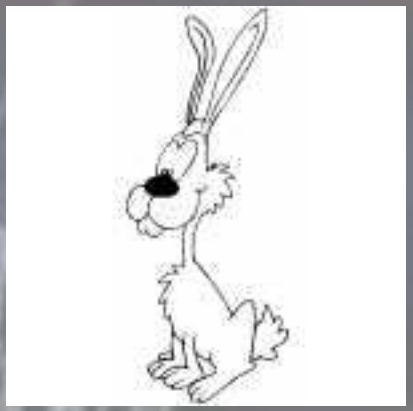
- A good environment is essential to improve the welfare of exotic pets when they are hospitalized.
- Diet (Favorite food?)
- Comfortable cage (Shredded paper…)
- Stress-free environment
- Tender Loving Care
- Social interaction
- Bandages…


Tirage: 35 497


OASIS
100%

In Practice…

Case #1



- 6-month old male dwarf rabbit
- Castration

- Preoperatively: κ-opioid

(butorphanol 0.2-0.3 mg/kg IM)

- Postoperatively: NSAID + κ-opioid

(meloxicam 0.3 mg/kg SC + butorphanol 0.1-0.2 mg/kg SC)

- Following days: NSAID

(meloxicam 0.3 mg/kg PO q12h for 3-5 days

- Avoid GI stasis (no stress, food, activity…)

Case #2

- 3 year-old female dwarf lop rabbit
- Femur fracture => Orthopedic surgery (IM pins)

- Preoperatively: μ-opioid (+ ketamine in the protocol)

(hydromorphone 0.2 mg/kg IM)

- Postoperatively: NSAID + μ-opioid

(meloxicam 0.5 mg/kg SC + hydromorphone 0.1-0.2 mg/kg SC q4-6h)

- Following days: NSAID +/- hydromorphone as needed

(meloxicam 0.5 mg/kg PO q12h for 10 days)

- Avoid GI stasis (no stress, food…)
- Choose a good surgeon (check the bandage, wound…)

Case #3

- 6-month old male ferret
- Enterotomy (Foreign body removal)

- Preoperatively: μ-opioid

(hydromorphone 0.1 mg/kg IM)

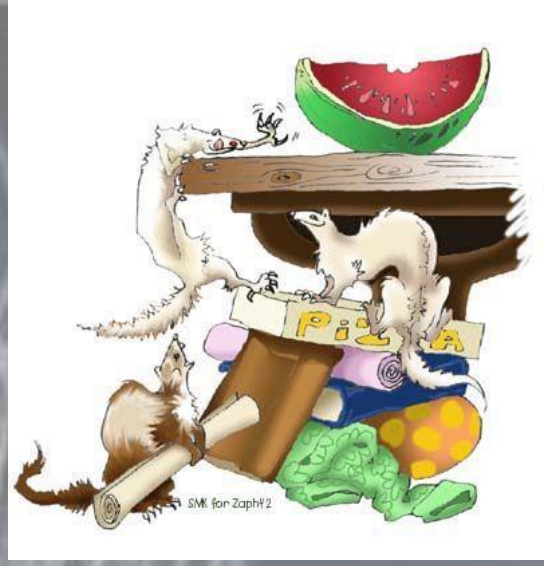
- +/- Intraoperatively: ketamine CRI
- Postoperatively: NSAID + μ-opioid

(meloxicam 0.1 mg/kg SC + hydromorphone 0.05-0.1 mg/kg SC q4-6h)

- Following days: NSAID

(meloxicam 0.1 mg/kg PO q24h for 3 days)

Case # 4



- 3-year old male ferret
- Pelvic limb amputation

- Preoperatively: μ-opioid + epidural

(hydromorphone 0.1 mg/kg IM + morphine 0.1 mg/kg epidurally + bupivacaine 1.1 mg/kg epidurally)

- Intraoperatively: nerve local anesthesia + CRI

(lidocaine diluted + ketamine 10 μg/kg/min IV)

- Postoperatively: μ-opioid + NSAID

(meloxicam 0.1 mg/kg SC + hydromorphone 0.05-0.1 mg/kg SC q4-6h)

- Following days: NSAID +/- μ-opioid

(meloxicam 0.1 mg/kg PO q24h for 7 days)

- Environment

Birds…

Case # 5

- 3-year old male African Grey Parrot
- Primary feather bleeding

⇒Needs to be extracted.

- General anesthesia with isoflurane
- Local anesthesia (lidocaine diluted)
- +/- NSAID?

Case # 6

- 8-year old female Blue-fronted Amazon Parrot
- Tibiotarsal fracture => Orthopedic surgery (IM pin)

- Preoperatively: κ-opioid

(butorphanol 1 mg/kg IM)

- Postoperatively: κ-opioid + NSAID

(butorphanol 0.5 mg/kg IM q2-4h + meloxicam 0.5-1 mg/kg IM)

- Following days: NSAID

(meloxicam 1-2 mg/kg PO q12h)

- Environment

Case # 7

- 4-year old male Senegal Parrot
- Self-mutilation

- Acute phase: κ-opioid + NSAID

(butorphanol 1-2 mg/kg IM q2-6h + meloxicam 0.5 mg/kg IM q12h)

+ topical treatment + E-collar

- Chronic phase: NSAID + gabapentin

(meloxicam 0.5-1 mg/kg PO q12h + gabapentin 5-10 mg/kg PO q8h)

Reptiles…

Case # 8

- 5-year old female water dragon

(Physignathus cocincinus)

- Ovariosalpyngectomy

- Preoperatively: μ-opioid

(hydromorphone 0.2 mg/kg IM ???)

- Postoperatively: μ-opioid + NSAID

(hydromorphone 0.2 mg/kg IM ??? + meloxicam 0.1 mg/kg IM ???)

- Following days: NSAID (meloxicam 0.1 mg/kg PO q24h ???)
- Environment

Wild and Zoo Animals

- Hard to recognize pain (They hide it!)
- Stress plays a major role.
- Not easy to handle or examine.
- Pharmacokinetics of drugs?
- Efficacy of drugs?
- Toxicity of drugs??????
- Higher risks of GI ulcers because of chronic stress in some species?

Case # 9

- 16-year old male Amur Tiger

(*Panthera tigris altaica)*

- Right front limb chronic severe lameness

- NSAIDs (meloxicam 0.05 mg/kg q24-48h PO)
- Glycosaminoglycanes (PO, IM and IA)
- Corticosteroids (PO, periarticular)
- μ-opioid (tramadol PO)
- Gabapentin (PO)
- Amitryptilline (PO)

Conclusion

- Still a lot to discover!
- Difficult to assess pain
- Limited side-effects at recommended dosages
- To be continued!

Thanks for your attention!


Questions ?