Exotic Companion Mammal (The Herbivores)
Common Presentations and How to Tackle Them

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Objective

- Familiarize with common species seen in private practice
- Brief anatomical & physiological differences
- Dietary needs
- Species-specific presentations
- Common presentation amongst herbivores (ADD, GIS, GIO, urolithiasis)
References

- VIN.com, VIN exotics formulary
- Carpenter formulary 5th ed.
- “The Pink Book” Quesenberry 's
- *Lafebervet.com*
- Oxbow Animal Health
- Association of Exotic Mammal Veterinarians (JEPM & proceedings)
- Veterinary Clinics of North America: Exotic Animal Practice
Kaytee Complete Guinea Pig Kit, 30"L X 18"W X 16.5"H
(Guinea pig ~ 10", 4-6y)
Common Facts: Herbivores

- Rabbits, Guinea pigs, Chinchillas, Degus
- Prey species, high level of stress
- Obligate nasal breathers
- All teeth are open rooted (Elodont), lack canine teeth, large diastema
- Premolars and molars are commonly referred to as “cheek teeth” (CTs)
- Tight LES so cannot vomit
- Pronounced cecum
- Consume cecotropes, “soft feces” or “night feces” > vit/AA
- Hay, NOT pellets should be their primary diet
- Limited plain pellets, not pellet mixes > selective feeding
Remember... On Herbivores...

- Avoid antimicrobials that attack only gram-positive bacteria such as beta-lactams

  "P.L.A.C.E."
  - Penicillin
  - Lincosamide, lincomycin
  - Amoxicillin, ampicillin
  - Cephalosporins, clindamycin
  - Erythromycin
Rabbits
(Oryctolagus cuniculus)
Facts:

- “Peg teeth”, lagomorphs
- I 2/1 C 0/0 PM 3/2 M 3/3 = 28
- Well-developed nictitans (3rd eyelid)
- Compensate for the central blind spot & poor near vision, by relying on sensitive whiskers and lips to find forage
- Delicate skin and fine hair, no foot pads
- Calciuric
- Large thymus persists into adulthood
- Does are induced ovulators > cancer
- Nurse their young 1-2 daily, milk is extrxemely rich
- Preventive medicine: neuter/spay
Handling!
Cecal dysbiosis

- Very common!
- Rabbit needs to be bathed most likely has it, r/o obesity, ortho/neuro
- Instead of completely fermenting all ingested plant fiber, rabbits utilize a mechanism to sort out indigestible fiber and expel it from the body
- Owners complain of diarrhea but is really loose cecotrophs
- Cause: consumes a diet rich in sugars and other simple carbs such as whole or cracked corn, fruits, seeds, crackers, cereals, or "yogurt" treats, or just too many greens
- TX: supportively, strictly hay, no pellets and gradually add veggies once better, transfaunation
- Can also be caused by improper use of antibiotics (acute)
Diarrhea

- True diarrhea is most often seen in young rabbits
- Usually secondary to coccidiosis (*Eimeria spp.*)
- TMS, toltazuril, ponazuril
Pasteurellosis

- Many pet rabbits carry *P. multocida*
- Most common cause of respiratory disease
- CS: rhinitis, lower respiratory tract infection, otitis media, dacryocystitis, conjunctivitis, abscesses in various tissues, reproductive tract disease, and septicemia
- DX: C/S, PCR
- TX: chloramphenicol, tetracyclines, TMS
- +/- penicillin, higher generation macrolides, such as azithromycin, and fluoroquinolones
“Bo, 4y, M(n), Lop
3yr Hx. of “puffy eye”, treated with ophthalmics on/off
PE: Severe epiphora/matting, dermatitis blepharitis, blepharospasms, hazy cornea, conjunctivitis
DX: Fluorescin(+), C/S; Pseudomonas sp.
TX: NLD flushes, Systemic (NSAIDs, Amikacin), Ophthalmic (Flurbiprofen, Ofloxacin)
Pasteurellosis

- Medical therapy alone is unlikely to be effective for treatment of abscesses
- Surgical debridement, including removal of the entire abscess capsule, is recommended whenever possible
Chronic unresponsive rhinitis

• Cuddles, 6yr, M(N), Lopped, several years of nasal discharge
• PE: bilateral otitis media, bilateral nasal mucourulent discharge
• CBC, Chem, Rads: unremarkable
• CT: bone lysis and soft tissue mass/abscess
• TX: Rhinotomy, flush/debridement; biopsy: neoplasia
• Several months of good quality, importance of biopsy!
Encephalitozoonosis (ECUN)

- *Encephalitozoon cuniculi* is an obligate, intracellular, microsporidian parasite; fungus?
- Shed in urine
- Ingestion of spores is the most important mode of transmission; in utero
- Chronic infection and asymptomatic x yrs
- Predilection for kidneys & brain
- Neuro CS: torticollis, nystagmus, ataxia, rolling, seizures, urinary incontinence, a stiff rear gait, and posterior paresis
- Dx: CS, ECUN panel UM (IgM, IgG, CRP), PCR, histo
- Tx: supportive, fenbendazole
- Zoonotic
- Neuro also R/O Sarcocystis (parasitic protozoa in the *Apicomplexa* family)
• “Bunny”, 9yr, F(S),
• HX: 2-3 yrs blepharosphasms, discharge, treated with ophthalmics on/off, ECUN x yrs
• Chronic non healing ulcer OS
• DX: Fluorescin (+), Cytology: neutrophils, macrophages, cocci, C/S: Staph spp.
• Tx: Debridement, contact lens, Ofloxacin & Flurbiprofen OS, Orbax PO, Meloxicam PO
ECUN

Torticollis

- Supportive, NSAIDs?

Phacoclastic uveitis

- In utero
- Tx: Topical, systemic NSAIDs, Phaco, Enucleation
Urolithiasis “sludge”

- Calciuric
- Kidneys excrete the vast majority of blood calcium, and once the rabbit kidney has reached its relatively limited capacity for reabsorption, calcium precipitates within the rabbit’s alkaline urine
- Ca+ is then excreted as insoluble crystalline salts in cloudy, white urine
- As Ca+ content of the diet rises, the urine volume remains the same until the rabbit eventually develops thick bladder “sludge” or “sand”
- Over a matter of weeks, this massive aggregation of crystals may form a concretion or urolith
- Versus red, orange, or brown urine in the rabbit is most commonly caused by porphyrin in the urine secondary to the diet or hematuria
Urolithiasis “sludge” management

- Low-calcium diet, grass hay-based maintenance diet for adults
- Administer fluids to diurese the urinary tract
- Analgesia (meloxicam, buprenorphine)
- Aseptically catheterize and lavage the bladder in selected cases
- Prescribe antibiotics in selected cases
Guinea pigs “cavies” (Cavia porcellus)
Facts:

- Rodents, suborder Hystricomorpha, "porcupine-like" rodents
- Domesticated in South America ~ 500-1000 AD, possibly as early as 1000 BC
- Wild cavies (Cavia aperea, C. tschudii, C. cutleri, C. rufescens, and C. fulgida) - different!
- Peruvian (long hair), American or English (short hair), Abyssinian (Whorled or rough hair)
- Strict herbivores, crepuscular, feeding primarily dawn/dusk
- Exhibit coprophagy 50–200x/day, if prevented, they lose weight
- Don’t tolerate dietary/environmental changes well, often refuse to eat if their food is changed in type or presentation
Facts:

- When hospitalized may become depressed or go off feed
- Attitude and food consumption should be carefully monitored
- Weigh daily, in grams!
- Feed & make them feel comfortable when 1st place in cage
- Good-quality grass hay should be available at all times
- Pellets (1 tbsp q12) supplemented with fresh vegetables
- Fruits & vegetables with high vit C content include red & green peppers, broccoli, tomatoes, kiwifruit & oranges. Leafy greens (kale, parsley, mustard greens, spinach) are high in vitamin C but may also contain high levels of calcium or oxalates, limited amounts
Anatomy and Physiology

- I 1/1, C 0/0, PM 1/1, M 3/3) = 20
- Palatal ostium, which makes ET intubation tricky
- Monogastric, GIT ~ 7 ½ feet
- Lack L-gulonolactone oxidase, which synthesizes vit C it from glucose
- Daily vit C (Ascorbic acid), light sensitive, do not put in water bottles
- GI transit time ~ 20h, when coprophagy factored in ~60-70h
“Boars” have lateral scrotal swellings on each side of the anus

Accessory glands (prostate, coagulating gland, bulbourethral gland & seminal vesicles)

Seminal vesicles are large, yellow-white tubular structures which lie dorsal to the bladder

The seminal vesicles may be confused with the uterus
Males
(Calculi located in seminal vesicles)
Female facts

- “Sows”, gestation 59-72 days
- The pelvic symphysis remains cartilaginous in primiparous sows so the pelvic canal can dilate allowing passage of the large fetus
- Females must be bred before 6-9 months of age
- Pups are precocious and populate their gut with beneficial flora by eating the sow's droppings
- Dystocia is common, mainly d/t breeding at a later age
Ovarian cysts

- Most are physiologic & intraovarian, derived from rete ovarii or ovarian follicles
- Numerous uterine diseases are associated with ovarian cysts
- CS: Nonpruritic truncal and/or inguinal alopecia, pain, bleeding
- DX: Palpation, US,
- Tx: Surgery (Ove/Ovh), percutaneous drainage, Leuprolide acetate depo, Deslorelin acetate implant
Ovarian cysts
Anesthesia- Laparotomy

- Tracheal intubation, difficult
- Reflux!!! Aspiration, GI protectants?
- Capnograph
- SaO2, HR, +/- ECG
- Temp probe
- IVC, warm fluids
- Tilt table
- The smaller the patient the more surface area, the more heat losses!
- Minimize anesthesia time
Anesthesia
Trichofolliculoma

- ETT
- Reflux!!! Aspiration, GI protectants? > Tilt table
- Capnograph
- SaO2, HR
- Temp probe
- IVC, warm fluids
- Minimize anesthesia time
Scurvy (hypovitaminosis C)

- CS: painful joints and teeth that result in generalized immobility and prevent the consumption of food r/o ADD
- Frequent vocalizations, weakness, decreased mobility, anorexia, diarrhea, flaky to ulcerative skin lesions, stiffness, petechia of the mm, SQ hemorrhages, and death due to starvation or secondary infection
- Tentative dx: symptoms and dietary history
- Definite dx: feed analysis, gross and microscopic pathology, and serum ascorbate levels
- TX: supportive, analgesics, vit C
Chinchillas (*Chinchilla* spp.)
Facts

- Andes mountains of South America
- Hunted and trapped for their pelts to near extinction early 1900s
- Endangered in the wild, only found in Northern Chile
- Natural diet: grasses, cactus fruit, leaves, the bark of small shrubs & bushes
- Captive diet consists of 1-2 tbsp of chinchilla pellets, free-choice hay and small amounts of fresh vegetables
- Chinchillas are relatively easy to restrain
- Gently hold around the chest and grasp the tail base
- When frightened or held overzealously, can shed patches of fur "fur slip"
- They need a lot of “elbow room"
- Daily supervised outside the cage time
Chinchillas have more hairs per square inch than any other animal
Dense coat makes them sensitive to heat and humidity > Heat Stroke
Barbering or fur chewing d/t boredom, dirty fur, dietary imbalances & hereditary factors
Provide your chinchilla with chew toys and lots of play time outside of the cage to avoid this problem
Dust baths
Dental formula I 1/1, C 0/0, PM 1/1, M3/3 = 20
Yellow incisors d/t iron in the enamel
UVB!
Common Diseases

Dental caries (cavities, tooth decay) of CTs:
- Characterized by brown discoloration and loss of tooth substance along the occlusal and inter proximal tooth surfaces
- One study showed 51% prevalence

Periodontal disease:
- Very common, one study showed 63% prevalence.
- CS: may have a poor coat, drooling, refuse food and lose weight
- DX: Radiographs and stomacoscopy. Untreated periodontal disease and caries will lead to progressive tooth resorption
Fractures:
• Particularly the tibia and radius/ulna
• ESF works well, can cause poor healing due to lack of blood supply at extremities
• Amputation of both fore and hind limbs is well tolerated
• Surgical management of multiple metatarsal fractures in a chinchilla (JAVMA 2016)
• SPIDER Secured pin intramedullary with dorsal epoxy resin
Paraphimosis - the inability to replace the glans back into the prepuce

A. Fur ring: in breeding males or those kept alone, may be painful and cause urethral obstruction, they should be gently removed
B. Excessive smegma accumulation
C. Secondary to acute balanoposthitis (*Pseudomonas aeruginosa*)
D. Phimosis – inability to completely protrude the glans penis from the prepuce or entrapment of the penis within the prepuce
CS: 7y, F, acute onset of hemorrhagic vaginal discharge
US: hyperechoic mineralizations in uterus and mild effusion
SX: Severely enlarged uteri, incomplete fetal resorption
Histopath: Endometritis
Degus (*Octodon degus*)
Facts

- Endemic to Chile
- Hindgut fermenters
- Pronounced cecum and should be fed 1-2 tsp guinea pig food and ad lib hay
- Sugary foods and fruits should be avoided

Tail slip: NEVER pick up by the tail as they can shed their tails, requires amputation.

Dental disease: Difficult to deal with due to the small size of these patients.

Diabetes mellitus: Presents with dyspnea, weight loss, cataracts or collapse. Sugary foods are a predisposing factor. Treat with diluted insulin or an oral hypoglycemic.
Common presentations among herbivores

- Acquired Dental Disease (ADD)
- GI Stasis (GIS)
- GI Obstruction (GIO)
- Urolithiasis
Acquired Dental Disease (ADD)
ADD

- Diets deficient in fiber/vit C (GPs), infection, trauma, genetics, lack of UVB
- Sharp edges and points may develop on CTs
- Ulcerations, tongue entrapment
- With insufficient wear, CT crowns elongate and, if the mouth cannot fully close, the incisors may elongate as a result
- TX: Trimming or filing molar points and/or shortening CTs to allow the mouth to close
- Primary incisor malocclusion is rare, if present suggests cheek tooth abnormalities
- Incisor trimming alone is rarely indicated, DO NOT use cutters
- If caught early prognosis is good with regular recheck and tooth trims in most cases
ADD

- Hx: chronic, anorexia, weight loss, “slobbers”, poor coat
- DX: visual, stomacoscopy, skull/dental rads
- TX: supportive, file, extract
Equipment
Tilt table with cheek dilator
Rabbit anatomical lines

tip of nasal bone

occipital protuberance

alveolar crest at proximal end of hard palate

1/3 of bulla height
Guinea pig anatomical lines

Slightly elongated incisors with abnormal wear

3/4 of bulla height
Chinchilla anatomical lines

- Dorsal margin of maxillary incisor
- Notch of the bulla
- 3/4 of bulla height
- Through tips of incisors if normal length
A+B: normal
C: Elongation upper CT
D: Elongation/malocclusion
E: Elongation lack of attrition from previous extraction
F+G: Spurs
H: Ulceration
I: Diamond burr
GI stasis

- Due to their fastiduous grooming habits, always have some hair present in GIT
- Inadequate dietary fiber, stress, pain, and/or dehydration secondary to underlying conditions like dental disease
- CS: lethargy and hypo/anorexia
- PE: hypothermia, doughy stomach and cecum on palpation, gas filled intestinal loops
- GI auscultation reveals normal or hyperactive gut sounds early
- Later gut sounds reduced or absent
- Painful, +/- hunched posture or bruxism
GI stasis

- Intestinal loops distended with gas
- Very small cecum
GI stasis

- Painful (buprenorphine, meloxicam)
- Fluid support with vit B (IV, IO, SC)
- SF Emeraid herbivore or Oxbow CC
- Nasogastric tube feeding in very weak or easily stresses
- Prokinetics (metoclopramide, cisapride)
- Simethicone
- Abdominal massage, exercise
Herbivores: GI obstruction (GIO) = ER
“Walking the fine line”

What causes bloat and obstruction?
- Mat of fur (own) or housed with long-haired breeds
- A diet with inadequate dietary fiber
- Less commonly ingested foreign materials like carpet, cloth fibers, rubber, or plastic can also block the gut
- Sites: distal duodenum and the ileocolic junction
Herbivores: GI obstruction (GIO)

- **CS:** sudden onset anorexia, abdominal pain, and depression
- **PE:** Tachypnea and tachycardia
- Disease progresses, metabolic derangements and shock develop
- Depressed or minimally responsive to external stimuli (obtunded)
- Severely dehydrated
- Hypothermic (<99F)
- Hypotensive (< 90 mmHg)
- Bradycardic (< 130-180 bpm)
- Large, fluid-filled or tympanic stomach is often palpable
Herbivores: GIO

- Upper GIO - stomach filled with gas and/or fluid and food
- Lower GIO - loops of dilated intestine proximal to site of obstruction may be seen
- Serial radiographs
- Once obstruction passes through the ileoceccolic junction, gas in cecum and more gas-filled loops of intestine are seen radiographically
GIO

- IVF
- Buprenorphine, meloxicam
- Prudent use of metoclopromide
- Gastroprotectants (H2s, PPIs)
- Sedate/anesthetize GI decompression
- Follow up rads
- Unresolved within 2-6h > surgery
Urolithiasis

- Diet related, inactivity, too many pellets, Alfalfa is high in calcium
- Calcium-containing stones such as calcium carbonate (calcite) & calcium oxalate
- CS: stranguria, hematuria, hunched posture, bruxism...
- Dx: rads, c/s, UA (herbivores high pH)
- TX: diuresis, low Ca diet, surgery, cystoscopic removal, nephrotomy, nephrectomy
Endoscopic removal (females and some males if in urethra)
Conclusion:

- ECM medicine can be a rewarding addition to your practice
- Prey species, minimize stress
- Anxiolytics, analgesics
- Anatomical and physiological knowledge is imperative prior to seeing them
- At presentation the conditions are usually chronic since they are masters of disguise
- Most of the time need to stabilize prior to diagnosis and treatment
- Minimize handling at all means
Questions...

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