CLINICAL APPROACH TO THE ANORECTIC GUINEA PIG

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The Guinea Pig (Cavia porcellus) is a rodent species belonging to the Suborder Hysteromorpha (Histrichomorpha, or Caviomorpha, “porcupine-like” or “guinea pig-like”) rodents.
Like all the porcupine-like rodents, the Guinea pig is a true herbivore, with complete elodont (open rooted, growing throughout life) dentition. Another physiological peculiarity is the inability to synthesize vitamin C, necessitating a dietary source.

CLINICAL PRESENTATION
The most common presentation of the ill guinea pig includes reduced activity, asthenia, reduced food intake, anorexia, and weight loss. Owners also frequently report chewing difficulties, absent, reduced or abnormal production of stools, and reduced or abnormal vocalizations.

For the proper understanding of clinical signs and symptoms, the veterinarian must keep in mind that free ranging guinea pigs are a prey species living in large social groups. Therefore, the general reaction to physical or psychological stress is “freeze or flight” where the former is encountered more frequently in case of illness. In general, guinea pigs tend to exhibit less evidence and lesser degrees of symptoms.
The history must always include a review of husbandry and nutrition. Guinea pigs are less able to tolerate dietary or environmental changes. A large part of underlying disease leading to anorexia is related to improper nutrition, most commonly inadequate fiber and inappropriate food items such as nuts and seeds.

DIAGNOSTICS
A very important part of the clinical exam is a complete oral examination, including evaluation of both incisor and cheek teeth. Unfortunately, the small size of the patient and of the oral cavity makes safe, effective restraint and oral examination more difficult in non-anesthetized guinea pig than in rabbits. The well-developed buccal skin folds of guinea also complicates introduction of an otoscope cone. Therefore, in most cases oral examination must be performed under general anesthesia, if the overall patient condition allows. Unless the guinea pig is anorexic, the oral cavity normally contains food debris that may impede a complete evaluation of the teeth and soft tissues.
Radiology is a very important diagnostic tool for medicine and surgery of guinea pigs, and plain abdominal radiographs in two projections should be obtained on every guinea pig presenting for anorexia. Abdominal radiographs are important not only for helping to detect the underlying cause of anorexia, but also to rule out secondary gastrointestinal abnormalities resulting from anorexia and lack of fiber.

Radiographs performed on guinea pigs and all small exotic mammals must be very good to excellent quality for adequate interpretation. If overall patient condition is not very severe, they are ideally obtained under general anesthesia. Alternatively, they can be obtained with careful and delicate restraint of the conscious patient.

Hematology and clinical chemistries should be part of the diagnostic work up of the anorectic guinea pig. The blood sample can be taken from the jugular vein or from the cranial vena cava. With the exception of very ill and depressed patients, blood samples should be taken from the guinea pig under general anesthesia.
Other additional diagnostic tests such as urinalysis, ultrasonography, cytology, histopathology and culture/sensitivity tests can be extremely valuable also in guinea pigs.

GASTROINTESTINAL DISEASES
Every abnormal condition causing discomfort or pain can potentially lead to anorexia. Compared to other herbivorous small mammal species like rabbits, chinchillas and prairie dogs, guinea pigs are much more prone to this symptom.
The most common diseases leading to anorexia are related to the gastrointestinal system. Being true (monogastric) herbivores, the anatomy and physiology of the gastrointestinal apparatus is very similar to that of rabbits. The stomach is relatively larger than in rabbits, and the caecum is well developed as well. Guinea pigs, as most of rodent species, are unable to vomit.
The most common underlying cause is reduced intake of fiber. This leads to reduction or arrest of gastrointestinal motility. The two consequences of this physiologic imbalance are gastric or gastrointestinal bloat and/or stasis. Stasis of the caecum is more frequent than gastric stasis, and is usually represented by the presence of retained dense and dehydrated low fiber food, unable to progress due to reduced intestinal motility. Abnormalities of physiologic peristalsis lead to imbalance of the intestinal bacterial microflora, followed by increased fermentation process and gas production. The outcome is gastric and/or intestinal bloat, which worsens the abnormalities of gastrointestinal motility. A severe alteration of the microflora can lead to abnormal development of toxin-producing bacteria and subsequent fatal enterotoxemia.
Abdominal radiograms are critical for diagnosis and prognosis of stasis and gastric bloat. The patient should be monitored with subsequent radiograms during the therapy.
Gastrointestinal disease can be primary or secondary to other concurrent diseases leading to reduced food intake or anorexia. The most common underlying cause is acquired dental disease, which will be discussed in another paper.
Primary bacterial enteritis has been reported in guinea pigs. It is cause by Salmonella spp, Yersinia pseudotuberculosis, Clostridium spp. Escherichia coli,
and *Pseudomonas aeruginosa*. Transmission occurs by fecal contamination of food.

Improper nutrition due to lack of fiber, behavior abnormalities or other stressful conditions, skin diseases, and breed predisposition (long-haired Abyssinian or Peruvian guinea pigs) can lead to the formation of trichobezoars (haiballs) (Fig. 1). Anorexia is caused by the discomfort, ulcerations of the gastric mucosa, and the space-occupying haiball. Palpation during physical exam provides a presumptive diagnosis. Plain or contrast radiographs are very useful to confirm the presence of trichobezoar(s). Medical therapy with traditional remedies like pineapple or papaya juice is always unrewarding, even if associated with supportive therapy.

**Figure 1.**

Hepatic lipidosis or steatosis can be the only underlying disorder of the anorectic guinea pig, and is more frequent in obese animals improperly fed high-caloric diet. Biochemical analyses are often unrewarding; the diagnosis can be achieved with abdominal ultrasonography, biopsy-guided cytology or only at necropsy.

**UROGENITAL DISEASES**

Ovarian and uterine diseases are very frequent in intact females, with a reported incidence of more than 75%. Uterine diseases frequently associated with ovarian cysts are cystic endometrial hyperplasia, endometritis, and uterine neoplasia (leiomyoma). Anorexia, when present, is related to abdominal distention and the space-occupying cysts (Fig. 2).

Impaction of scrotal folds due to abnormal stools, improper bedding material and sebaceous secretions can be another cause of anorexia. While hair rings around the penis are not as frequent as in chinchillas, sebaceous secretion and debris can accumulate under the prepuce in male guinea pigs, causing severe discomfort related to balanopostitis.

Urolithiasis is common in guinea pigs. Calculi are usually located into the urinary bladder, or the distal tract of the urethres, proximal to the papilla entering the urinary bladder.

Anorexia is related to cystitis. Clinical signs and symptoms typically include hematuria, dysuria, stranguria, abnormal vocalization and painful posture. Diagnosis is easily achieved with plain radiograms of the abdomen. Two projections are mandatory for the proper localization of the calculi.

**Figure 2.**

**OTHER CONDITIONS AND DISEASES**

Another physiologic condition resulting in anorexia includes the 12-24 hour temporary anorexia that occurs prior to delivery in the late-term pregnant sow. Physical exam, the absence of other clinical signs and symptoms other from abdominal distention, and abdominal palpation and radiology can easily help to diagnose this condition and rule out other concurrent diseases.

Vitamin C deficiency is common in improperly fed guinea pigs, and affects collagen synthesis, resulting in blood vessel damage and subsequent joint hemorrhages. The most painful abnormality leading to anorexia is severe arthropathy. This condition is more frequent in young patient between 2 and 6 months, and it is often diagnosed when severe lameness and ankylosis of femoral-tibial (Fig. 3), carpal and tarsal joints are already present. Vitamin C, analgesic therapy, and supportive therapy are often unrewarding in advanced cases.

**Figure 3.**
Pododermatitis, also called “bumblefoot” is a very painful condition leading to anorexia. It is commonly seen in overweight or obese animals housed in wire-bottom cages or improper abrasive beddings. Abnormal posture following fractures or severe arthropathies is another important predisposing factor. Hyperkeratosis of palmar and plantar surfaces are usually followed by ulceration complicated by secondary contamination by bacteria like *Staphylococcus* spp.

Severe skin diseases, especially if pruritic, can produce anorexia and weight loss. The most common is mange, caused by *Trixacarus caviae* and, less frequently *Sarcoptes scabiei*. Other parasitic skin diseases such as fungal dermatitis and lice are usually much less pruritic.

Ocular diseases may lead to anorexia depending on severity.

**PROGNOSIS**

Secondary gastrointestinal complications occurring in anorectic guinea pigs such as severe bloat and/or enterotoxemia make the prognosis guarded until normal, spontaneous feeding, gastrointestinal motility and the production of stool is reestablished.

**MEDICAL TREATMENT AND SUPPORTIVE CARE**

Supportive therapy is essential in every guinea pig with reduced food intake or anorexia. The goal is to provide specific therapy when the diagnosis is primary disease of the gastrointestinal tract, or symptomatic therapy when the diagnostic work up is still open, or when anorexia is related to other underlying disease.

The keys of medical treatment are:

- hand feeding by syringe or through a nasogastric tube using high fiber fluid products such as Oxbow Critical Care. The average daily dosage for a completely anorectic guinea pig is 50 ml of mixed product (1 part of dry powder to 1.5 parts warm water) per kg body weight, divided into 4-6 feedings per day;
- administration of fluids, SC, IV or IO
- administration of drugs enhancing the gastrointestinal motility, like Cisapride 0.1-0.5 mg/kg PO q12h or Metoclopramide 0.2-0.5 mg/kg PO, SC q8h;
- administration of Simethicone to aid in reabsorption of gastrointestinal gas;
- administration of analgesics.

If antibiotic therapy is indicated, species-specific contraindications to many common antibiotics must be taken in consideration.

Parenteral nutrition for small exotic herbivores with dextrose, lipid and amino acid formulations has been described in guinea pigs.

**SURGICAL TREATMENT**

Surgical treatment for resolution of anorexia in guinea pigs is essential in cases of malocclusion of incisor or cheek teeth, periapical abscessations, cystolithiasis, ovarian cysts or uterine diseases. All these surgical procedures are well described in guinea pigs, and if general conditions are not severe, carry a good prognosis from the surgical standpoint. Conversely, gastrotomy for removal of hairballs carries a poor prognosis in guinea pigs.

**REFERENCES**