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Bumblefoot (Pododermatitis) in Guinea Pigs

(Inflammation of Skin of the Paws)

Basics

OVERVIEW

- *Podo-* refers to the feet or paws; *dermatitis* is the medical term for inflammation of the skin. “Sore hocks” (pododermatitis) is a painful and sometimes irreversible condition in guinea pigs.
- Constant pressure applied to skin and soft tissues pressed between the bones of the feet and a hard surface can cause enough damage that these tissues can die off. Death of these tissues is followed by sloughing, ulceration, and secondary bacterial infection. This often occurs in obese guinea pigs, or when excessive weight is borne on one foot due to lameness in the opposite foot.
- Bumblefoot is common in guinea pigs housed on abrasive surfaces (wire, carpeting) or those that sit on wet or urine- and feces-soaked bedding. Prolonged contact with wire or abrasive or moist surfaces leads to inflammation of the skin, bacterial skin infection, and then extension of the infection into deeper tissues. Untreated, it may progress to deep bone infection.
- Pain associated with dead tissues and infection often causes affected guinea pigs to remain sedentary; continued weight bearing on affected feet in sedentary guinea pigs extends the areas of pressure and tissue death. Eventually, some affected guinea pigs develop deep bone and tendon infections, with permanent damage to tendons, so that standing normally is no longer possible. In these guinea pigs, damage is often irreversible.
- Conditions leading to pododermatitis may be environmental (e.g., wire cages, hard surfaces, soiled, damp bedding), or may be an underlying condition (e.g., obesity, urine scald, lameness on the opposite foot)

SIGNALMENT

No age or sex predilection

SIGNS

- Vary considerably depending on the severity of disease
- Front feet more commonly affected



- Lack of appetite, depression, lameness, reluctance to move, vocalization, weight loss, and hiding
- Early disease (Grade I)—redness on bottom of the feet
- Mild disease (Grade II)—red skin and swelling
- Moderate disease (Grade III)—red skin and swelling plus ulcers and scab formation
- Severe disease (Grade IV)—red skin, swelling, ulcers, and scabs plus abscess, inflammation of tendons or deeper tissues
- Severe, often irreversible disease (Grade V)—red skin, swelling, scabs, ulcers, and deeper bone and tendon involvement causing abnormal stance and gait

CAUSES

- Pressure sores—death of skin and underlying tissues caused by entrapment of soft tissues of the limb between bone and hard surfaces
- Scratches or scraping of the skin, friction or constant moisture on the skin and soft tissues of the bottom of the feet. Caused by feces, urine, or water coating the feet
- Bacteria—secondary infection with *Staphylococcus aureus* most common; *Pseudomonas*; *Escherichia coli*; *b-hemolytic Streptococcus* spp.; *Proteus* spp.; *Bacteroides* spp.; *Pasteurella multocida*

RISK FACTORS

- Environmental—sitting on soiled litter, wire floored cages, hard floor surfaces, abrasive carpeting, soiled bedding
- Lack of exercise—small cages or housing; abnormal amount of time spent with weight borne on a single foot; this combined with an abrasive/hard surface or soiled litter/bedding will predispose to disease
- Obesity—increased amount of weight supported by feet; long periods of recumbency
- Musculoskeletal disease, scurvy (vitamin C deficiency), or other painful conditions (dental disease, bladder stones)—reluctance to move increases time spent on feet
- Urinary tract disease or gastrointestinal disease—may cause increased urination or diarrhea leading to urine scald or pasting of feces on feet
- Trauma or puncture wounds to the bottom of the hock or feet

TREATMENT

APPROPRIATE HEALTH CARE

- It is essential to remove or correct the underlying cause for long-term success
- Outpatient—early disease (redness, hair loss)
- Inpatient—surgical procedures; daily wound care and bandaging
- Caging on soft, dry bedding alone may be effective in early disease (Grade I or II). Clean hay, pine shavings, or shredded paper over a padded surface that can be completely cleaned and dried; trim overgrown nails
- More severe disease—requires frequent removal of dead tissue and flushing (daily in severe cases), frequent bandage changes, long-term antibiotics, and pain control
- Bandaging—depends on severity of disease. This is usually only necessary in guinea pigs with open wounds or following surgical removal of dead tissue. Severely affected guinea pigs may require daily removal of dead tissue or flushing. This is a painful procedure requiring general anesthesia. Following surgery, application of specialized bandages may be required initially until a healthy tissue is formed. Bandage change interval increases with improvement. Wet or soiled bandages should be changed immediately.

ACTIVITY

- Restrict until adequate healing of tissues has taken place.
- Long term—encourage activity; prolonged inactivity may cause or worsen pododermatitis

DIET

Make sure that the guinea pig continues to eat during treatment to prevent gastrointestinal problems, such as GI stasis or bacterial overgrowth.

SURGICAL CONSIDERATIONS

With moderate or severe disease, surgical removal of diseased tissue is needed, along with medical therapy.

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered all-inclusive.

- Pain medications, such as butorphanol, meloxicam, or carprofen, are commonly used, especially after surgical treatment.
- Antibiotics may be used if the feet are infected or abscessed. The choices of antibiotics that are available for guinea pigs is very limited, due to the negative and potentially dangerous effects of many common antibiotics on the guinea pig's essential intestinal bacteria. Common, safe antibiotics used in guinea pigs include enrofloxacin, ciprofloxacin, marbofloxacin, trimethoprim-sulfa, chloramphenicol, or azithromycin.
- Vitamin C supplementation, especially if scurvy (vitamin C deficiency) is contributing to pododermatitis.

FOLLOW-UP

PATIENT MONITORING

- Depends on treatment protocol selected. With severe disease, daily wound cleaning and bandage changing may be needed.
- Make sure that the guinea pig continues to eat during treatment. Painful animals often do not want to eat, which can lead to potentially life-threatening gastrointestinal disorders.

PREVENTION/AVOIDANCE

- Provide clean, appropriate surface substrates; clean soiled substrates daily; avoid wet bedding (rain, spilled water bowls or bottles).
- Provide adequate vitamin C supplementation (30–50 mg orally daily).
- Prevent obesity.
- Encourage exercise; provide large spaces to encourage movement.

POSSIBLE COMPLICATIONS

- Depend on underlying cause and treatment protocol selected
- Severe disease: irreversible bone or tendon damage
- Development of pododermatitis on other feet due to increase in weight bearing

EXPECTED COURSE AND PROGNOSIS

- Mild disease (redness, swelling without involvement of deeper tissues)—good to fair prognosis; recurrence if husbandry problems are not addressed
- Severe disease with bone or tendon damage, extensive abscesses—prognosis for return to weight bearing depends on the severity of bone involvement and extent of abscesses. Amputation or euthanasia may be warranted in animals with intractable pain.

KEY POINTS

- Bumblefoot or pododermatitis can range from a mild, easily treatable condition to severe bone and tendon damage that is irreversible.
- Good husbandry and preventive medical practices are necessary to prevent and treat disease.
- Early treatment is most likely to be successful. Severe disease involving bone and tendons usually will require surgery, sometimes multiple surgeries and multiple follow-up visits. Recurrences are common, especially if the underlying cause cannot be corrected. This often requires a large monetary and time investment for successful treatment. In some cases, damage is permanent even with intensive, dedicated treatment.

Notes

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