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Bumblefoot (Pododermatitis) in Rodents

(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 pet rodents.
- 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 die off. Death of these tissues is followed by sloughing, ulceration, and secondary bacterial infection. This often occurs in obese rodents, or when excessive weight is borne on one foot due to lameness in the opposite foot.
- Bumblefoot is common in rodents housed on abrasive surfaces (wire, carpeting) or those that sit in 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 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 pets to remain sedentary; continued weight bearing on affected feet in sedentary animals extends the areas of pressure and tissue death. Eventually, some affected animals develop deep bone and tendon infections, with permanent damage to tendons, so that standing normally is no longer possible. In these pets, 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
- Most commonly seen in rats, hamsters, and mice

SIGNS

- Vary considerably depending on the severity of disease



- 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

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
- Arthritis or other painful conditions—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
- The degree and duration of wound care depends on the severity of disease. Early disease may respond to husbandry changes, daily warm soaks in saline or antibiotic solution, and application of topical silver sulfadiazine (SSD) cream, along with pain control and antibiotic treatment if secondary infection is present.
- Long-standing, deep infections usually require application of wound dressings followed by soft, padded bandages to promote healthy skin formation. The frequency of bandage changes depends on the severity of the lesion. Severe infections may initially require daily bandage changes.
- Pain control is important to restore mobility.

ACTIVITY

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

DIET

- Correct any underlying deficiencies. Dietary restriction for weight loss is indicated in obese patients.

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, carprofen, or tramadol, are commonly used, especially after surgical treatment. Pain control is an important component for restoring mobility.

- Antibiotics may be used if the feet are infected or abscessed. Common, safe antibiotics used in rodents include enrofloxacin, ciprofloxacin, trimethoprim-sulfa, chloramphenicol, and azithromycin.

FOLLOW-UP

PATIENT MONITORING

Depends on treatment protocol selected. With severe disease, daily wound cleaning and bandage changing may be needed.

PREVENTION/AVOIDANCE

- Provide clean, appropriate surface substrates; clean soiled substrates daily; avoid wet bedding (spilled water bowls or bottles).
- Prevent obesity.
- Encourage exercise; provide large spaces and exercise wheels 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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