

## How to Manage the Geriatric Rabbit

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Older rabbits have many debilitating problems. The veterinarian needs to be familiar with the signs and treatment of these chronic, geriatric diseases. The same problem encountered in young rabbits may have to be approached and treated differently in the geriatric rabbit. One has to remember that problems in the older rabbit may be related and treating one problem and not addressing the primary problem will lead to treatment failure.

Abscesses are common in older rabbits, especially those with a chronic history of infections, particularly pasteurella infections. These chronic infections usually spread to other organs by septicemia. Abscesses occur anywhere in the subcutaneous tissue or, commonly, along the mandible. Abscesses in the jaw typically are firm and can invade the bone. Rabbit abscesses are usually filled with a thick, caseous purulent material. Diagnosis is based on cytology, biopsy, and cultures of the tissue. Abscesses are surgically removed, if possible. Incising the abscess and placing a drain is usually not curative and not recommended. Many abscesses recur if they are not aggressively treated. Once the abscess is surgically removed, the area is flushed well and drains can be placed if much dead space is present to prevent the formation of a seroma. But drains are not useful to remove remaining infection from the wound. The rabbit is placed on long term antibiotics such as a quinolone (10-30 mg/kg q24 hrs PO, SC). Owners are warned that abscesses can recur. Abscesses with bony infiltration carry a very poor prognosis for a total cure. The whole abscess must be removed or chances are it will recur. Recently, advances have been made in treatment of these bony abscesses. Once the area has been extensively debrided, the surgeon has a choice of materials to place in the wound. Commercially available bone morphologic protein-like material is placed into the bone defect reducing healing time. Methylmethacrylate beads impregnated with an antibiotic placed in the bony wound also aids in healing.

Pododermatitis occurs in any age rabbit but in older rabbits, obesity is a primary disposing factor. Commonly, these pressure induced sores are precipitated by wire cage floors, poor sanitation, and urine soaking of the skin. It is not uncommon for an older rabbit to be sick with a primary problem which causes it to be less mobile. This lack of movement coupled with obesity predisposes to pododermatitis as the pressure increases on a small area of skin. The lesions are ulcerated, dry, fibrotic foci of chronic inflammation and are abscessed. Abscesses form under the crusty lesions and are found once the crust is removed. Sometimes, a purulent discharge is present. *Staphylococcus sp.* is commonly isolated. Pododermatitis is most common on the plantar surface of the metatarsal area. This is due to pressure necrosis of the affected weight-bearing metatarsal skin. The diagnosis is based on signs and physical examination findings. Radiographs are useful to determine if there is bony extension. The lesions must be debrided, flushed, and cultured. Antibiotics are instituted and daily flushes of the affected area is recommended. Along with treatment of the pododermatitis, obesity must be addressed and any other primary problems including poor husbandry conditions, must be considered. The prognosis is not good for recovery unless all associated problems are resolved.

Dental disease is frequent in older rabbits. Dental disease includes incisor and/or molar malocclusion, tooth root abnormalities, and abscesses. Malocclusion in young rabbits is usually due to an inherited trait but in older rabbits, it is typically due a tooth root abnormality. The loss of an opposing tooth, more common in an older rabbit, also can cause malocclusion. The loss of an opposing incisor usually means frequent clipping of the remaining tooth. These teeth, like all rabbit teeth, are ever-growing and grow at the rate of 4-5 inches per year. Overgrown teeth can penetrate surrounding tissue and lead to ulcers and potentially oral abscesses. These conditions lead eventually to anorexia. Teeth should be clipped or filed frequently. If this is not possible, an alternative is to remove the remaining incisor. If this procedure is performed, it is important to remove the pulp or the tooth will regrow. Molar malocclusion is common in older rabbits and is almost always caused by tooth root abnormalities. If the molars have points and are causing discomfort to the rabbit, these teeth need to be clipped or filed like incisors. It is difficult to remove a healthy molar and is usually easier to file these at regular intervals. The best way to approach molar malocclusion is to

recommend skull films, including oblique views. Tooth root positioning should be evaluated. If the tooth roots are abscessed, the affected teeth should be removed. If the tooth root positioning is abnormal, even if it is not abscessed, removal will help decrease the need for clipping the molar points. Removal of a healthy tooth, or at least one that is not abscessed is very difficult and there is a chance of fracturing the jaw. And one then has to consider removing the opposing tooth. Dental disease in older rabbits can be fairly easy to diagnose but difficult to properly treat.

Ocular disease can occur in any age rabbit but chronic nasolacrimal duct occlusion (dacryocystitis) is common in older rabbits. This is evidenced by either unilateral or bilateral epiphora. The ducts are flushed with a cannula and the initial material that leaves the nares can be cultured. This disease can cause permanent blockage of the ducts leading to constant epiphora and irritation of surrounding ocular tissue. Infection and fibrosis can lead to nasolacrimal duct occlusion. Overgrown cheek tooth roots, tooth root abscesses, and malocclusion may all lead to nasolacrimal duct blockage. Along with nasolacrimal duct flushing, skull films to evaluate tooth roots are valuable in the diagnosis of an etiology of dacryocystitis. It may not be possible to clear the nasolacrimal ducts if they are blocked by an elongated tooth root. Other common ocular problems in older rabbits include cataracts, intraocular infections and retrobulbar masses. Cataracts can be caused by a variety of diseases and a full work up is suggested to determine the etiology. Intraocular infections are important in that they may signal a septic process leading to infection in the eye. Finally, retrobulbar masses can be abscesses or neoplasia, especially since these are older rabbits.

Chronic respiratory disease is common in geriatric rabbits. These rabbits usually have a long history of respiratory signs including sneezing and nasal discharge. If these upper respiratory infections are not effectively treated when the rabbit is younger, this may lead to lower respiratory disease and septicemic spread of infection leading to abscesses in other areas of the body.

Uterine adenocarcinoma is the most common tumor type in rabbits. Adenocarcinoma develops from the glandular epithelium. In pet rabbits, the first sign of this disease is "bloody urine". Actually, the blood is from the uterus but is frequently reported by the owner as bloody urine. In breeding rabbits, it can present as a disturbance in the normal cycle of the female evidenced by dystocia, stillbirths, and decreased litter size. Generally, altered reproductive behavior can precede palpable tumors by 6-10 months. The growth rate of tumors is variable. Reported time from clinical detection to death from metastasis is 12-24 months. If found and treated in time, this type of cancer can be cured with surgery. The mass is removed along with the ovaries, the rest of the uterus, and the liver is biopsied. Uterine adenocarcinoma neoplasms invade the myometrium, then the peritoneal cavity, and then hematogenously spread to the rest of the body. Occasionally, mammary gland carcinoma is seen in association with uterine adenocarcinoma. Less frequently, it is seen without uterine adenocarcinoma. Mammary gland cysts may be antecedent to mammary gland adenocarcinoma.

Renal disease is observed in older rabbits. It may be due to chronic renal infections, toxins, neoplasia, or degeneration. Rabbits with renal disease are like other mammals in that they exhibit polyuria/polydipsia, anorexia, diarrhea, and wasting. Physical examination may reveal abnormally shaped kidneys. Usually BUN and Cr are elevated. A non-regenerative anemia may be present as well as an elevated white blood cell count. The urinalysis exhibits little concentrating ability. Radiographs may reveal misshapen kidneys. Ultrasound can show the architecture of the kidneys, help to determine if neoplasia is present, and aid in the prognosis. Treatment is directed at the cause, if it is known. Supportive care includes fluids, antibiotics, and nutritional support. Disease progression is measured by changes in the urinalysis and BUN and Cr concentrations.

Obesity is a common problem in older age rabbits that must be addressed. As in other animals, obesity may not kill an animal, but it complicates other diseases and may lead to a more severe form of that disease. Obesity is a predisposing factor to the formation of pododermatitis. Obesity is dangerous in the anorexic rabbit. As is seen in some other species, when rabbits become anorexic, they mobilize fat that can then lead to hepatic lipidosis. Surgery in an older rabbit is more risky if it is obese. Obesity is due to the low fiber/high ad lib calorie diet that most rabbits are given and a lack of exercise. To prevent obesity and to lose weight, rabbits are placed on a diet of limited high fiber pellets (1/8 to 1/4 cup/5 pounds of rabbit) and free choice grass hay and greens.