

RABBIT – MEDICAL CONSIDERATIONS

SURGICAL CONSIDERATIONS

NEUTERING

Pet rabbits not intended for breeding should be neutered at any time after six months of age. Male rabbits (especially of the dwarf varieties) have a tendency to become assertive and aggressive upon reaching sexual maturity. Neutering (castration) is the best way to reduce the severity of the problems (biting, urine spraying, etc.) that result from the attainment of sexual maturity. Female rabbits should be spayed (ovariohysterectomized) to prevent unwanted pregnancy and uterine cancer. The latter condition is the most common type of tumour afflicting female rabbits (a female rabbit has more than a one in three chance of developing uterine cancer) and is often associated with serious blood loss (please see section on uterine cancer). Spaying female rabbits may also help to prevent or reduce territorial aggression among females.

INFECTIOUS MEDICAL CONDITIONS REQUIRING VETERINARY ATTENTION

BACTERIAL DISEASES

PASTEURELLOSIS

The bacterium, *Pasteurella multocida*, is the major infectious agent of rabbits. It is most often transmitted between chronically infected does and their litters or between breeding pairs. The bacteria most often reside in the nose, lungs, and eye membranes but can spread to other areas of the body.

Pasteurellosis of rabbits may be manifested in many different ways. Respiratory disease, including infection of the nasal passages and sinuses as well as pneumonia, is extremely common. Infections of the ocular (eye) membranes, middle ear(s), jawbone, and uterus are most often the result of the *Pasteurella* organism. Abscesses (single or multiple) are also extremely common and result when the *Pasteurella* organism localizes in a specific location. The rabbit's body responds to this invasion with an influx of tremendous numbers of white blood cells to fight the infection. Pus results from the accumulation of dead and dying white blood cells and tissue cells in the area of the infection. *Pasteurella* infections traditionally have been considered essentially incurable if allowed to reach a chronic state. Aggressive antibiotic therapy with the appropriate drugs, however, especially if undertaken early in the course of the disease, is often rewarding. Many antibiotics have great difficulty making their way into the relatively inaccessible sites of most infections and penetrating the solid-type pus that rabbits create in the face of bacterial infections and surgical debridement of the lesion is often needed. Pasteurellosis is a chronic and persistent problem in most rabbitries and very difficult to eradicate. This disease complex creates its most serious problems under conditions of malnutrition, overcrowding, poor sanitation, temperature extremes, inadequate air circulation and other stressful situations. It is advisable that all newly acquired pet rabbits, regardless of origin, be thoroughly examined by a veterinarian.

ABSCESSSES

As mentioned in the above section on Pasteurellosis, rabbits are very prone to abscess formation. The bacteria most often isolated from these abscesses include *Pasteurella multocida*, *Staphylococcus aureus*, and others. Abscesses represent focal areas of infection and may be in single or multiple locations. The most important consideration regarding this condition is the way in which abscesses must be treated. Because rabbit pus is roughly the consistency of toothpaste, simply lancing and installing drains, as with cat abscesses, is not advised. Until recently it was believed abscesses must be aggressively treated as if they were tumors and be surgically excised. Now we can use antibiotic impregnated materials and surgically implant them at the site of the abscess to prevent recurrence. In addition, an appropriate oral or injectable antibiotic should be administered.

RESPIRATORY DISEASE

Most respiratory diseases of rabbits results from infection with the bacterium, *Pasteurella multocida*. Although other bacteria are often involved. In rare instances, the protozoan (one-celled) organisms that cause coccidiosis will colonize the nasal passages and cause respiratory disease. As mentioned in the above section on Pasteurellosis, respiratory symptoms often include sneezing, nasal congestion and discharge, ocular discharge, listlessness, inappetence, and pneumonia. Respiratory disease of rabbits must be aggressively treated with an appropriate antibiotic (determined by a bacterial culture and antibiotic sensitivity test) and for an appropriate length of time in order to prevent relapses. Sometimes, treatment with antibiotics is very long term, occasionally life-long. Unfortunately, research has shown that the *Pasteurella* organism often sequesters within pus in



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inaccessible areas (such as the labyrinthine nasal passages) and remains isolated from the therapeutic effects of antibiotics. These "protected" organisms serve as a source for recolonization of the bacteria and reinfection of the previously treated tissues. It is for this reason that a total cure for Pasteurella-related disease may be very difficult or impossible.

Eye infections are relatively common extensions of sinus infections in rabbits and should be treated aggressively with systemic (body-wide) and topically applied antibiotics. This is because of the close association between the eyes and the brain to which they are connected by important nerves. If infections of the eyes get out of hand, encephalitis (infection of the brain) is a common and dangerous consequence. One of the most common symptoms of eye infections in rabbits is the continual accumulation of tears and matter at the corner of the eye(s) and soiling of the hair under the lower eyelid(s). Tears, pus, and other debris tend to accumulate in the eyes in response to infection and inflammation. Tears would normally be conducted from the eyes into the nasal cavity by way of a tiny little canal called the nasolacrimal duct. There is one such duct between each eye and the nasal cavity. These ducts frequently become clogged with the material and debris mentioned above. As a result tears spill over the eyelids and soil the hair below them. It is relatively simple for the veterinarian to test whether or not these ducts are open and functional. If they are not, long term use of topical eye ointments may correct the problem. If the ducts are occluded, they may require flushing or the rabbit may need dental procedures for overgrown molar roots.

INTERNAL BACTERIAL INFECTIONS

Systemic (internal) bacterial infections from a host of bacterial organisms are common among rabbits. These individuals usually present with a wide variety of symptoms because multiple organs (liver, kidney, intestinal tract, brain, etc.) are usually involved. Laboratory work-ups (blood, urine, bacteriology) are vital in order to properly diagnose and monitor the progress of these cases. Laboratory data is also important for its prognostic value. Rabbits suffering from these serious multiple organ bacterial infections (septicemias) must be aggressively treated with appropriate antibiotics and be given proper supportive care (nutritional, fluids, etc.). Recovery usually requires several weeks or more of treatment.

VENEREAL SPIROCHETOSIS = RABBIT SYPHILLIS

A relatively rare sexually transmitted (venereal) disease of pet rabbits is rabbit syphilis. This disease is caused by a curious slender, spiral-shaped bacterium (Spirochete) and is transmitted by direct contact between an infected rabbit and one that is not. Transmission is more likely to occur in rabbitries than between pet rabbits in a household. In fact, exchange of bucks (breeding males) among rabbit breeders greatly promotes dissemination of the bacteria and the disease. Infected rabbits will exhibit multiple raised, crusted, and sometimes bleeding ulcerations on the external genitalia, around the anus, and on the face (particularly the nose). Affected rabbits remain alert and the condition usually regresses after several weeks. Treatment is recommended and involves injectable penicillin.

FUNGAL DISEASES

RINGWORM

Ringworm of rabbits is a relatively uncommon fungal disease that is caused by an agent similar to that which causes athlete's foot of man. It is transmitted easily by direct contact with fungal spores on hair coats, bedding, and soil. Ringworm most commonly afflicts juvenile rabbits and susceptible adults and usually causes multiple hairless areas with slightly reddened skin. Often the lesions are covered with slight to heavy crust formation. The lesions are usually noted on the head, ears, and forelimbs. Ringworm is a treatable disease. Topical preparations are used unless there are many lesions with a generalized distribution in which case an oral medication is usually employed in the treatment of this condition. Ringworm is potentially transmissible to people (including children) who possess a particular susceptibility to it. Caution should, therefore, be exercised in the handling of infected rabbits.

VIRAL DISEASES

Viral diseases affecting pet rabbits are rarely identified. Fortunately, the well known devastating viral diseases such as Myxomatosis are very uncommon in pet rabbits.

PARASITIC DISEASES

EAR MITES

Ear mite infestations cause typical changes to the ears; accumulation of a light brown crusty material that fills or nearly fills the external ear canal. The underlying tissues are usually very raw and irritated. In especially severe cases, lesions from the infestation may spread to adjacent areas of the head. The infestation may be treated with a topical preparation, although an injectable medication has proven highly successful in the treatment of this condition.

CHEYLETIELLA SKIN MANGE ("WALKING DANDRUFF")

Most rabbit owners overlook the early signs of skin mange, a parasitic infestation of the skin by the Cheyletiella sp. mange mite.

As this condition worsens, however, the accumulation of dried scale and scurf ("dandruff") within the fur and limited hair loss (often in clumps) become obvious. This type of mange almost always causes problems over the top side of the rabbit and sometimes in the area of the tail base. Affected rabbits may or may not exhibit increased scratching behaviour. This parasitic problem is easy to diagnose and relatively easy to treat. An injectable drug works very well in most cases in conjunction with a medicated shampoo to eliminate the offending mites and clear up the lesions.

FLEAS

Fleas can plague pet rabbits. Fleas suck blood and can cause anemia if present in large enough numbers and if aggressive attempts to eliminate them are not undertaken. The relatively new flea product Advantage, is licensed for use in and on dogs and cats only. However if applied properly, under the advisement of your veterinarian, Advantage can provide safe and effective flea control. Flea collars should not be used on rabbits. Sponge-on products containing d-limonene have proven harmful to some rabbits and should be avoided.

COCCIDIOSIS

Rabbit coccidiosis is a disease of the liver and/or intestinal tract caused by a protozoan (one-celled organism) parasite. Rabbits become infected by ingesting food and/or water that has been contaminated by infective feces. Symptoms depend on whether the disease is localized within the liver (inappetence, diarrhea, death) or the intestinal tract (failure to gain weight or weight loss, soft to watery feces, mucus and/or blood in feces, soiled anal area, dehydration, increased thirst, and possibly death). The relative severity of both types of infection depends upon the number of coccidial organisms ingested, the age of the rabbit infected, the strength of its immune system, and the existence of concurrent disease. Occasionally, the coccidial organisms colonize the nasal passages resulting in respiratory disease (nasal coccidiosis). Coccidiosis may be treated with sulfa antibiotics but it is sometimes difficult to achieve a cure. Emphasis must be placed on prevention (good husbandry and sanitation) of this disease in all rabbitries.

GIARDIASIS

A very serious and potentially fatal intestinal disease that appears to be rising in frequency is caused by the one-celled protozoan parasite, Giardia. This organism inhabits the small intestine and causes diarrhea or very soft stools. In both cases, a significant amount of mucous is usually noted in the feces. The disease is almost always seen in recently purchased, very young rabbits (under 6 months of age). These rabbits usually exhibit very abnormal feces as described above, dehydration, lethargy, and low body temperature. Many of these rabbits possess a second protozoan parasite, Coccidia (see section on coccidiosis), which seems to make their overall condition even more serious. Rabbits with giardiasis (and/or coccidiosis) must be treated very aggressively by a veterinarian with appropriate medication. These rabbits must also receive aggressive supportive care (fluids, heat, nutritional support, etc.) in order to better insure their survival. Recently purchased rabbits (especially very young ones) should be examined by a veterinarian as soon as possible after acquisition. The new owner should provide a fresh fecal sample so that the appropriate test(s) for giardia (a wet saline mount and/or a fecal trichrome test) and coccidiosis (a fecal flotation) can be conducted.

PINWORMS

Pinworm infections are rarely detected unless routine fecal examinations are conducted. These worms reside within the large bowel and rarely cause the host any difficulties. Pinworm eradication is somewhat difficult because a number of treatments and periodic fecal examinations are necessary. This parasite is not transmissible to people.

HUTCH SORES = SORE HOCKS

Hutch sores are chronically ulcerated and infected wounds on the weight-bearing surfaces of the rear (and sometimes the front) paws that result from one or more of the following predisposing factors; reduced thickness of fur on the bottoms of feet, continued thumping of the rear feet when frightened, increased weight-bearing from excessive body weight, lack of movement from living in a small enclosure, and abrasions from irregular cage flooring. Hutch sores can occur in rabbits housed on both solid and wire floors but are a more frequent consequence with the latter circumstance. Hutch sores are treatable, requiring judicious use of antibiotics (both topically and by injection) and periodic bandaging of the affected feet. Treatment is usually long-term and also requires identification and correction of the underlying cause(s). Hutch sores must be treated aggressively to prevent infection of deeper soft tissues and bone.

OVERGROWN TEETH

Malocclusion (improperly aligned teeth resulting in abnormal dental growth and wear) in the rabbit usually results in

overgrown incisor and/or molar teeth. Many rabbits suffering from malocclusion probably possess a genetic deficiency that results in an abnormally short upper jaw. This structural defect prevents the continuously growing upper and lower incisors from meeting each other as the rabbit chews. Consequently, the incisors grow unimpeded, causing considerable trauma to the tongue and lining of the mouth. A rabbit's "bite" must be absolutely perfect in order for normal dental wear to occur. Recent evidence suggests that poorly formulated rabbit pellets may lead to lysis of the bone that hold the teeth causing the teeth to move and become malaligned. Infections of the jawbone in the area of the incisors can also result in malalignment of these teeth. Initial symptoms of this disorder include the desire to eat but failure to properly chew and swallow food, slobbering, and wet dewlap. Soon, inappetence and weight loss become noticeable. Death from starvation can occur if the problem goes unnoticed and untreated. Treatment involves periodic clipping of the incisors and attention to the wounds within the mouth inflicted by them. The clipping procedure should be carried out by an experienced veterinarian or veterinary technician and must be done for life. An alternative involves the extraction of affected teeth which is surprisingly well tolerated. Rabbits possessing this affliction should NEVER, under any circumstances, be bred.

OVERGROWN CLAWS

Overgrown claws are a liability to the rabbit because they become easily torn when caught in fabric (wire, etc.) and to the handler because a panicked rabbit can inflict painful scratches with them. Clipping claws requires experience and judicious restraint of the rabbit and should be done on an as needed basis. Declawing of rabbits is not recommended.

HEAT STRESS (STROKE)

Rabbits are especially susceptible to heat stroke, particularly those that are overweight and/or heavily furred. Environmental temperatures above 85 F., high humidity (above 70%), inadequate shade and ventilation, crowding, and physiological stress are additional predisposing factors. Signs of heat stroke include panting, slobbering, redness of the ears, weakness, and refusal to move about; delirium, convulsions and, eventually death. Heat stroke is a treatable condition if recognized relatively early.

APPENDIX

Important Physiologic Values

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| Body Temperature | 101.5- 103 F. |
| Average Life Span | 5 - 10 years |
| Potential Life Span | 12 - 15 years |
| Breeding Age | Male: 6-10 months Female: 5 - 9 months |
| Gestation Period | 29 - 35 days |
| Litter Size | 4-10 |
| Weaning | 4-6 Weeks |