

animals accidentally consume cattle feed containing Rumensin<sup>®</sup>. Because horses seem to be sensitive to higher levels of Rumensin<sup>®</sup>, they should not be allowed to consume feeds containing 100 grams or more per ton.

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# Common Rabbit Diseases

by  
Warren S. Thompson\*

## SUMMARY

This article deals with six of the most common problems associated with commercial and laboratory rabbit raising. It deals specifically with pasteurellosis, hepatic coccidiosis, cysticercosis [*Taenia pisiformis*], ear canker, sore hocks, and malocclusion. Each disease will be discussed from the aspects of general information, gross clinical signs, and treatments.

## INTRODUCTION

Although the rabbit is no longer as popular as an experimental animal or a source of meat and fur, one can still find an abundance of the rabbit in small meat production units and laboratory colonies. Northern Arkansas has the largest rabbit population for commercial means in our area. Even in this situation, people admit they can make little money raising rabbits but they still do it to produce for themselves an inexpensive source of meat. Prices for live rabbits vary from 32-49c/lb., which makes a five pound animal worth about two dollars, or close to 75c profit over the cost of

feed, water, and equipment. The veterinarian will seldom be called to the commercial rabbitry because slaughter of any problem animals is cheaper than a seven to eight dollar service call. It is probably best this way as he would no doubt have some problems making a diagnosis and recommending adequate treatment, unless he makes a special effort to gain experience in this area. Therefore, he may expect to see the pet rabbit, the Easter bunny, or the wild rabbit caught early in the spring. A telephone call will be more likely his experience and less expensive to the low budget rabbit raiser.

## PASTEURELLOSIS

Pasteurellosis is the principle disease of domestic rabbits. It is a highly contagious, persistent infection of rabbits world-wide. The many forms it takes will be discussed, as will aids in diagnosis and prevention. The organism causing pasteurellosis is *Pasteurella multocida*, which is a gram-negative, bipolar rod easily isolated from nasal exudate or blood. It grows easily on blood agar causing no hemolysis and forming either smooth, rough, or mucoid colonies on various other culture media.<sup>6,9</sup>

Clinical signs vary with the part of the body affected by the organism. Primary

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occurrence is in the upper respiratory tract as "Snuffles." This causes serous to mucopurulent nasal exudate to be seen around the nostrils and in the nasal cavity. Exudate on the medial aspect of the front paws is frequently noted as the animal attempts to rub the nostrils clear of the obstruction.<sup>4,7,9</sup> Sneezing, coughing, and shaking of the head will also be noted.<sup>9</sup> Culture of the nasal exudate may show *Staphylococcus aureus* and *Bordetella bronchiseptica*, which are common inhabitants of the nasal cavity but do not cause "Snuffles" or predispose to it.<sup>9</sup>

A second form of pasteurellosis is conjunctivitis, which frequently is seen in conjunction with "Snuffles." The bacteria gains access to the optic region by passing retrograde up the nasolacrimal duct. A white mucopurulent exudate is common at the medial canthus with reddening of the conjunctiva.<sup>7,9</sup> The fur under the eyes may become wet and matted due to epiphora and may eventually fall out.<sup>7</sup>

Otitis media is also a result of *P. multocida* as the bacteria ascends the eustachian tube to colonize the middle ear. Clinical signs at this point are absent, but if entry is made into the inner ear, torticollis toward the affected side will result.<sup>6,9</sup> The idea that ear mites predispose to otitis media has never been proven even in the case of ruptured tympanic membranes. Treatment is not recommended in this form of pasteurellosis as full recovery is almost nil.<sup>9</sup>

Migration of the infection in a third direction results in enzootic pneumonia involving the anterior and ventral areas of the lungs. Clinically, very little will be noticed before a rabbit is found dead in its cage, because the animal is not exercised or stressed in its confinement.<sup>9</sup> At death, a transparent fluid from the lungs is often noted when the animal is placed head down.<sup>3</sup>

Subcutaneous abscesses are not usually linked to the respiratory form of the disease even though they can indirectly be caused by septicemias initiated by respiratory infections. Any fight wound or scratch can be infected topically with *P. multocida* and form an abscess. These abscesses have white to tan, creamy exudate which drains when the lesion is lanced. Topical as well as

systemic treatment is recommended with isolation of this rabbit from the colony.<sup>9</sup>

Reproductive problems can be linked to pasteurellosis as a result of infection through copulation or a septicemia. Metritis or pyometra in the does and orchitis or epididymitis in the bucks will be noted from *P. multocida* infections.<sup>4,9</sup> Vaginal and penile discharges may be absent or show as yellowish-grey pus.<sup>4</sup> Does may die acutely or form chronic infections having normal litters or litters of smaller number if only one horn of the uterus or part of one horn is affected. Bucks can have acute or chronic infections with the latter being detectable only by testicular palpation or discharge from the penis.<sup>4,9</sup>

Treatment of all forms of pasteurellosis includes good management and close watching of the colony. Penicillin and streptomycin at levels of 400,000 units and ½ gram, respectively, per rabbit have shown good results if given for 7-10 days.<sup>7,9</sup> A four day preparturition dose of .13% sulfamethazine in the water has shown positive results.<sup>5</sup> The sulfonimides at dosages equal to that effective against coccidiosis have also been noted as advantageous and will be stated later.<sup>6</sup> Tetracycline at 16 mg/kg given in the water or cephalothin at 12.5 mg/kg IM every six hours for six days may be of some value, even though the author doubts the value of tetracyclines from past experience.

The main preventive measure of this and most rabbit diseases is management and housing. Isolation for 30 days of all infected rabbits, newly purchased stock, and animals returning from shows is a must. Routine prophylactic treatments should be initiated against all diseases on a regular schedule and a complete examination be given for any clinical problems that develop.<sup>1,3,7</sup> Prevention of colony exposure to disease is of primary importance.

## HEPATIC COCCIDIOSIS

*Eimeria stiedae* is a common and chronic infection of most rabbit colonies. It is found world-wide in both wild and domestic breeds of rabbits. Ingestion of the sporulated oocyst starts the cycle which includes excysting of the oocyst in the

duodenum. The sporozoites penetrate the intestinal mucosa and travel to the liver in about 48 hours via the blood and lymph systems.<sup>9</sup> The sporozoites invade the bile duct epithelium and begin schizogony. After several asexual reproductions a gametogony (sexual cycle) occurs and oocysts develop. The oocysts pass down the bile duct, exit in the feces and sporulate outside the body.<sup>6,9</sup> In 2-3 days the sporulated oocysts are infectious and are transmitted by fecal contamination of feed and water.<sup>6,9</sup>

Clinical signs in the adult are negligible or non-existent as they can be immune from non-lethal infections at a young age or be carriers of low grade infections.<sup>7,9</sup> Young rabbits in the 5-12 week age group are most severely affected. Anorexia, debilitation, diarrhea or constipation, icterus, enlargement of the liver (abdomen), and death have been described but are seldom seen.<sup>6,9</sup> Necropsy reveals grayish-white nodules in the parenchyma of the liver which may progress to large coalescent areas in severe cases. The lesions may contain milky to cheesy material and follow the lines of the bile ducts which are being affected. Papillomatous hyperplasia is seen microscopically.<sup>9</sup>

Treatment is usually by one of several sulfonamides. Sulfamerazine at .02% in the water or sulfaquinoxaline at .025-.05% in the water will prevent oocyst development.<sup>4,9</sup> Treatment should be for two weeks and then continued for two additional weeks after a one week interval.<sup>6</sup> This break prevents kidney toxicity by the use of a single sulfa drug, which can be avoided by use of a combination sulfa mixture. Prophylactic treatment to a colony on a twice yearly basis is recommended, with early spring and late fall being good times to treat.

### CYSTICERCOSIS

The rabbit is the intermediate host in the life cycle of the dog tapeworm, *Taenia pisiformis*. The problem is most encountered in wild rabbits but domestic rabbits that come in contact with dog feces containing the eggs of the parasite can also perpetuate the cycle.<sup>7,9</sup> The veterinarian will most likely become aware of this

problem when some hunter who has just skinned his days bag of rabbits calls or stops by the office to ask for an identification of white lesions on the liver or small cystic or bladder structures in the mesentery. The larvae migrate through the liver on their way to the abdominal cavity and it is these lesions which you might observe. The cysts are usually less than two centimeters in diameter and attached to the mesentery like many tiny bladders.<sup>9</sup>

The tapeworm *Taenia serialis* also uses the rabbit as its intermediate host but its coenurus cysts are larger (40 to 50 mm in diameter) and are usually found in the subcutaneous connective tissue. This meat would not be as esthetically desirable to eat as would the carcass of the *Taenia pisiformis* infected rabbit because of the cyst location.<sup>4,6,9</sup>

Clinical signs are few or none as infestations do not usually reach a magnitude to cause any problems. The finding is incidental at death in most cases.

Treatment does not exist at this time but prevention of contamination by dogs and cats of feed and areas around rabbit pens is recommended. Since wild rabbits are more likely carriers, it is not a good practice for hunters to feed infected viscera to their dogs.

### EAR CANKER

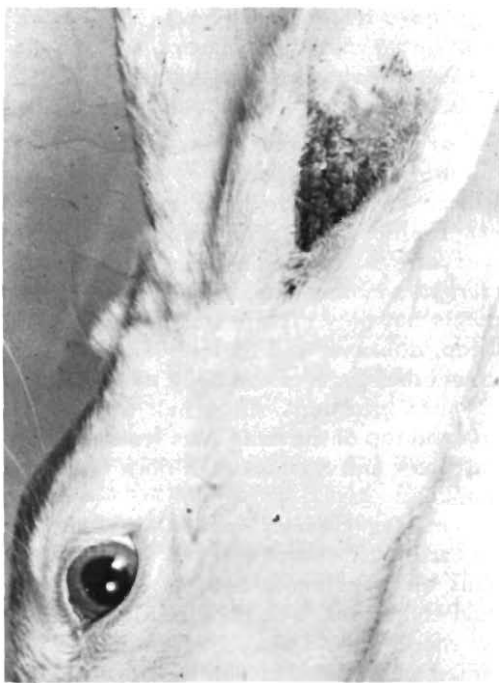
*Psoroptic otoacariasis* is the most common and expensive ectoparasitic disease of laboratory rabbits. It is found less frequently in wild rabbits much to everyone's amazement. The mite, *Psoroptes cuniculi*, occurs world-wide and infects not only rabbits but horses, goats, sheep, donkeys, and mules.<sup>9</sup> The mite can affect other parts of the body as the author has seen infections of the hair around the ears and top of the head plus lesions of the distal paw and claw areas of both front and hind feet.

*Psoroptes cuniculi* spends its complete life cycle on the host and has a full egg to adult turnover every 3 to 4 weeks under ideal conditions. The mite is identified by its round body shape, terminal anus, jointed pedicels, and bell or horn shaped suckers or caruncles at the ends of the

pedicels of the front two pairs of legs. The mouth (chelicerae) is long and narrow possessing both piercing and chewing functions.<sup>9</sup>

Clinical signs are drooping ears, scratching, shaking of the head, self-mutilation, and presence of a white-grey-tan crust in the ear at the base of the concha.<sup>4,6,9</sup> Examination of the ear should be done by otoscope and gross inspection. Manual flattening of all grooved areas is helpful because the contour of the ear may obstruct the detection of lesions.

Treatment is by any of a number of otic solutions that can act to smother the mite and prevent secondary bacterial infections. Canex 3% and mineral oil at a 1:4 mixture is excellent, as is Mitox or plain mineral oil.<sup>9</sup> These treatments should be given every three to ten days for at least 30 days and often longer because of the severity of the infection.<sup>4,6,9</sup> In chronic cases a cotton swab should be used to remove as much crust as possible, then cleansing with soap or mild antiseptic before medicating is recommended.<sup>6,9</sup> Prophylactic treatment of all rabbits in a colony is standard at three month intervals with newly developed and old recovered cases getting special attention beyond routine treatment.



Ear Canker



Sore Hocks

## SORE HOCKS

Traumatic ulcerative dermatitis occurs on the plantar surface of the metatarsal region of the rabbit. The cause is complex including such things as unsanitary conditions, trauma, excessive weight bearing and length of hair in this region of the body.<sup>7,9</sup> Nervous or disturbed rabbits will stomp their feet and predispose themselves to wounds that can easily be infected by bacteria, *Staphylococcus aureus* being the main one.<sup>9</sup> The use of wire floors increases the occurrence by adding to the trauma, but solid wooden floors are no better if proper bedding and sanitation are neglected.<sup>7</sup> The author has seen sore hocks on wire, slats, and solid floors with equal severity.

Heredity may play a part in the occurrence but opinions vary. Some believe long hair over the plantar metatarsal area cushions in the area to trauma so that short haired rabbits are the ones to be most likely candidates for this disease. However, if long hair is not kept clean and dry, it can be the source of the lesion.<sup>6,7,9</sup>

Clinical signs include anorexia, stilted movements, and death.<sup>9</sup> The most common

sign is a rabbit losing condition, poor hair coat, and continuing to shake its legs and squirm or shift its weight while resting in its cage.<sup>7</sup> The ulcerated areas are obvious when the animal is examined and may range from the hock to the first phalanges areas.

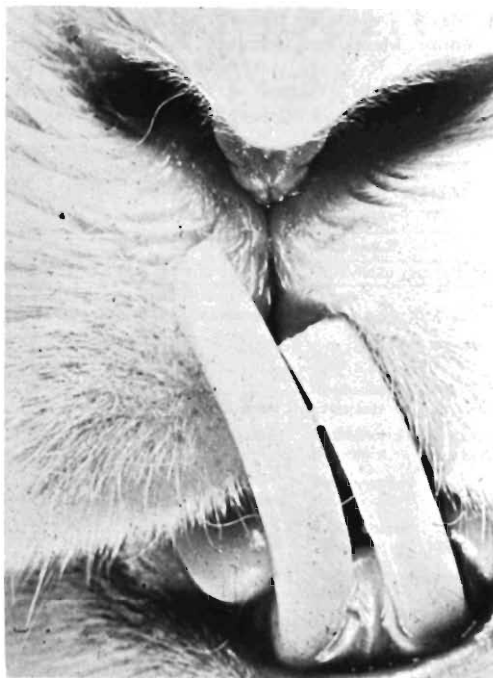
Treatment should consist of clipping around the affected areas, washing the lesions until all debris and scabs are removed, then applying topical zinc or iodine ointments every other day. A solution of .2% aluminum acetate can also be used in conjunction with systemic antibiotics if infections are severe.<sup>6,7,9</sup>

The prevention of trauma is important, so keeping the rabbit on good bedding, frequently changed, is important. The best is sod or soil, but a solid floor covered with frequently changed straw will be fine. Selecting quiet animals to keep for breeding will also help as these will stomp their feet less and not traumatize the area under study. Exclusion of dogs and other animals from the pen area is recommended as they may cause the rabbits to stomp their feet or otherwise traumatize themselves.<sup>4,7,9</sup>

## MALOCCLUSION

The teeth of the rabbit constantly grow to compensate for wear. The rate of growth for the upper incisors can vary from 4-5 inches while the lower incisors may grow 5-8 inches in a year.<sup>7,9</sup> Nowhere was the rate of premolar and molar growth stated, even though growth and malocclusion of these teeth can also occur. The problem is hereditary and has been linked to a recessive gene which causes shortening of the maxilla so the lower incisors are anterior to the upper incisors and do not occlude properly.<sup>6,7</sup>

Clinically, one sees anorexia, loss of weight, and sometimes the lower incisors may protrude from the mouth. "Slobbers" is the term used if the molars are overgrown and that name also indicates what will be seen clinically.<sup>7</sup> The lower jaw, in either "Slobbers" or malocclusion of incisors, may be wet and the fur show a roughness. Buccal and tongue lesions are not uncommon with abscesses being a secondary problem.<sup>4,7</sup>



Malocclusion

Treatment is usually limited to the malocclusion of the incisors and requires the clipping of the teeth every 3 to 4 weeks.<sup>7</sup> Knowing the problem to be inherited means one must cull the dam and sire from the breeding herd as they have the recessive gene in their gene pools.<sup>4,6,9</sup> Checking all young rabbits at time of weaning to see if proper occlusion is present will help identify the problem breeders. Proper occlusion means the upper incisors are anterior to the lower ones and in good contact.<sup>7,9</sup>

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# IPVS Congress

by  
Cheryl Hovick\*  
Re: IPVS Congress

The International Pig Veterinary Society (IPVS) will hold its fourth Congress at Iowa State University, Ames, Iowa, on June 22-24, 1976. Dr. Norman E. Hutton, D.V.M., secretary of the Congress, expects 500-700 United States registrants and 300-500 foreign registrants for the Congress, the first to be held in this country. Simultaneous interpretation will be available for the official Congress languages: English, French, German and Spanish.

To date, more than 300 papers have been received, with almost half of these from 33 foreign countries. The papers cover such topics as disease, surgery, nutrition, genetics, management and reproduction. Besides practitioners, speakers include animal scientists, nutritionists, engineers,

toxicologists, drug company personnel and others associated with the swine industry.

The IPVS, according to Dr. Hutton, is a rather "loosely-structured organization", the purpose of which is to "encourage the international exchange of knowledge and ideas related not only to the prevention and control of swine diseases but also to the broadly-related areas of nutrition, reproduction and management."

The first Congress, with 350 registrants, was held at the University of Cambridge, England, in June, 1969. The second Congress, held at Hanover, Germany, in 1972, attracted 678 registrants, a much larger group from many more countries. The most recent Congress was held in 1974 at Lyon, France, with 531 in attendance.

Anyone desiring additional information on the program, housing or registration for the fourth Congress should contact Dr. Hutton, College of Veterinary Medicine, Iowa State University, Ames, Iowa 50010.

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