

Exotic Pet

P R A C T I C E

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SCIENTIFIC ARTICLE

Paramyxovirus and Inclusion Body Disease of Snakes

Wm. Kirk Suedmeyer, DVM

Viral diseases have only recently been documented in snakes.¹ Other than ophidian paramyxovirus and inclusion body disease (IBD), viruses are rarely documented.

IBD is a viral infection found in snakes, specifically affecting snakes in the boid and python families.^{2,3} IBD is most commonly observed in boa constrictors (*Constrictor constrictor*) and Burmese pythons (*Python molurus bivittatus*), although African rock pythons (*Python sebae*) and green tree pythons (*Morelia viridis*) have also been observed with the disease.¹⁻³

The clinical signs differ in the two families. Boa constrictors are generally presented with regurgitation, whereas pythons have acute central nervous system disease.¹⁻³ Other presenting signs can include incoordination, opisthotonos, an inability to right itself, and lower respiratory tract disease.^{2,3} Evaluation of blood samples generally demonstrates a leukocytosis (>30,000) in acutely affected animals, and chronically ill snakes have demonstrated a lymphopenia.² Other disorders with similar presenting signs include trauma, cryptosporidiosis, paramyxovirus infection, thiamine deficiency, and protozoal myelitis.

Eosinophilic intracytoplasmic inclusions are seen within neurons and epithelial cells obtained from biopsies of the liver or stomach, although inclusions can be seen in any tissue with epithelial cells. Electron transmission studies and Koch's postulates generally indicate the probability of a retrovirus, but significant differences exist to suggest the virus may be unique. It is generally accepted that the name of this disease is *inclusion body disease virus of boid snakes*.²

It appears that the common boa constrictor may be the natural host for the virus, although serologic tests are not available to ascertain the true natural reservoir. Outbreaks of IBD have been associated with heavy infestations of the snake mite *Ophionyssus natricis*, although transmission of the virus has not been documented.² It is possible that direct contact, breeding, or vectors play a role in transmission of the virus.

Because of the inapparent carrier state in boas and the severe disease form in pythons, it is strongly recommended not to house the two groups together.^{2,3} Since serologic tests are not available and treatment is unrewarding, a clinical diagnosis of IBD dictates a poor prognosis, and euthanasia is recommended.

Ophidian paramyxovirus infections are generally observed in viperid snakes, although it has been observed in a rat snake (*Elaphe* species) as well.⁴ Clinical signs are generally respiratory in nature. Open-mouth breathing, nasal discharge, and accumulations of caseous debris are often encoun-

tered upon examination.⁴ Necropsy findings revealed caseated debris throughout the respiratory tract.

Diagnosis is made through a combination of history, clinical signs, species affected, and lack of response to treatment. Serologic tests have been developed, but they are commercially unavailable.⁴ Treatment is unrewarding, and most animals succumb to the disease. Treatment is aimed at preventing secondary bacterial infections and should include the use of systemic antibiotics, fluid therapy, and supportive care.

Quarantine of newly arrived animals is essential to avert the introduction of either disease into a collection. To prevent viral infections in species at risk, biopsies, physical examination, removal of

continues on page 2

ISSUE HIGHLIGHTS:

Head Tilt in Rabbits

ROUNDTABLE
page 3

Avian Blood Transfusions

FROM THE LITERATURE
page 5

Cutaneous Mycobacteriosis in a Moluccan Cockatoo

CASE REPORT
page 7

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Paramyxovirus and Inclusion Body Disease of Snakes

continues from page 1

snake mites, and the evaluation of multiple clinical assays (CBC and serum biochemical profiles) are essential.

References

1. Raiti P: Regurgitation in snakes. *Proc Assoc Rept Amphib Vet Kansas City, Mo*, 1999, p 125.
2. Schumacher J, Jacobson ER, Homer BL, et al: Inclusion body disease of snakes. *J Zoo Wildl Med* 25:511-524, 1994.
3. Jacobson ER: An update on inclusion body disease of boid snakes. *Proc Assoc Rept Amphib Vet Houston*, 1997, p 165.
4. Schumacher J: Viral diseases, in Mader DR (ed): *Reptile Medicine and Surgery*. Philadelphia, WB Saunders, 1996, pp 224-234.

PRACTICE

TIP

Shawn Messonnier, DVM

Counting White Blood Cells

Veterinarians often request hematologic results for exotic pets. A recent research project¹ was undertaken to determine whether there were any differences between the methods used to determine white blood cell (WBC) counts for avian and reptilian blood. The three methods evaluated included WBC Estimate, Unopette (Becton Dickinson, Franklin Lanes, NJ), and the Cell Dyne machine (Abbott Laboratories, Abbott Park, Ill). With the Unopette method, WBCs are counted in diluted blood placed in a hemacytometer. With the Estimate method, the number of WBCs per 40 times the objective from at least 5 fields are counted on a blood smear stained with Wright's stain. The average number of WBCs is then multiplied by 1000 to give an estimated count. The Cell Dyne 3500 machine uses a laser beam and measures light scattered by the cells to give total and differential counts.

There was no clinically significant difference between cell counts performed by the Estimate or Unopette methods. However, the Cell Dyne machine produced a significantly higher total WBC count than did the other two methods. Based on these findings, the Estimate or Unopette methods are recommended.

Reference

1. *Antech Newsletter* July 1999, p 1.

Availability of Back Issues

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ROUNDTABLE

Head Tilt in Rabbits

Q. How common is head tilt in rabbits?

Dr Suedmeyer: We have seen several rabbits with this problem; it appears to be a common condition.

Dr Johnson-Delaney: We see it in batches, but if we averaged the year, we see at least 1 case per month.

Dr Campbell: Head tilt, or torticollis (aka, wryneck), is a common disorder of rabbits that represents approximately 20% of the rabbit cases seen in our practice.

Q. What are the causes of head tilt in rabbits?

Dr Suedmeyer: Causes include otitis media and severe cases of otitis externa that have progressed to otitis media, usually caused by the ear mites *Psoroptes cuniculi*. We have seen a number of traumatically induced cases, several *Pasteurella multocida* infections, and a few suspected ascarid migrations (*Baylisascaris* species). In addition, *Streptococcus* and *Listeria* infections have been reported in the literature.

Dr Johnson-Delaney: Head tilt may be caused by listeriosis,

encephalitozoonosis (from *Encephalitozoon cuniculi*), *Baylisascaris procyonis* migration, local pasteurellosis/abscess of neck or jaw, trauma to the head (not common), and otitis media or interna (caused by various bacteria, including but not limited to *Pasteurella* species; has been a sequella to a severe mite infection and self-trauma). The cases we have seen, *E. cuniculi* infection and otitis from bacterial infection, are the most common etiologies.

Dr Campbell: This condition represents a vestibular dysfunction that is caused by either a central nervous system lesion (cerebellum or medulla) or peripheral nervous system lesion (inner ear). Central lesions commonly occur with head trauma or encephalitozoonosis. Cerebral nematodiasis caused by a *Baylisascaris* infestation can occur in rabbits exposed to raccoons and skunks. A suppurative otitis interna (often caused by *Pasteurella multocida*) extending from the eustachian tube or middle ear is a common peripheral lesion that results in a head tilt.

Q. What tests are used to diagnose the causes of head tilt?

Dr Suedmeyer: I perform a thorough physical and cranial nerve examination, including ear swabs, and in most cases, radiographs of the bulla tympana to detect otitis media.

Dr Johnson-Delaney: I do a complete physical examination, otic and oral. Radiographs of the head and neck may be useful, particularly if there is otitis or abscessation. Serologic tests are available for both *E. cuniculi* and *Pasteurella* species (Sound Diagnostics, Shoreline, Wash; submit paired sera). I have found these useful. There is no test for *Baylisascaris* species, although a cerebrospinal fluid tap and cytology may indicate a case of encephalitis. In my area, pet rabbits that are allowed to graze in the backyard are at risk for *Baylisascaris* infection, because we have a large number of infected, urban raccoons. It is usually conclusively diagnosed at necropsy. In otitis and abscesses, a bacterial culture and antibiotic sensitivity are helpful.

Dr Campbell: A physical examination and radiographic evaluation of the head may detect otitis externa, ear mites, and skull fractures. Horizontal nystagmus with the slow phase toward the side of the lesion is more commonly associated with inner ear disease. Radiographic assessment of the tympanic bulla is helpful in detecting the degree of involvement of otitis media and interna. Vertical nystagmus is more commonly associated with a central vestibular lesion. A positive encephalitozoon titer may suggest encephalitozoonosis.

Q. How is head tilt treated?

Dr Suedmeyer: Ivermectin is routinely used for ear mites, although we have used a number of products for *P. cuniculi*,

WHAT'S YOUR DIAGNOSIS ???

Guinea Pig with Polyuria/Polydipsia

Shawn Messonnier, DVM

A 2-year-old intact male guinea pig (*Cavia porcellus*) weighing 1090 g was seen for lethargy, polydipsia, polyuria, and abdominal staining with urine. Physical examination revealed a bright and alert pet with a mildly unthrifty condition. The animal's diet consisted of commercial pellets and various vegetables and fruits. Urinalysis showed struvite-like crystalluria and glucosuria (2000 mg/dL). The blood glucose level was 316 mg/dL.

Questions

1. What is your diagnosis?
2. How would you take a blood sample?
3. How would you treat the patient?

continues on page 5

continues on page 4

Head Tilt in Rabbits

continues from page 3

including mild povidone-iodine (Betadine, Purdue Frederick) solutions and commercial acaricide products specific for lagomorphs. Several treatments are necessary, because the products do not kill eggs. Systemic antibiotics, supportive care (nasopharyngeal feeding tubes), and corticosteroids may be indicated, depending on the underlying cause. *P. multocida* otitis media infections appear to be the predominant infectious agent encountered. If the rabbit is maintained on straw or hay, we may also apply a bland ophthalmic ointment to help prevent corneal damage on the down eye. If radiographs demonstrate accumulated debris in the bulla tympana, a bulla osteotomy may be indicated to clean the accumulated debris and to instill antibiotic solutions.

Dr Johnson-Delaney: For bacterial infections, even before the culture is back, I use enrofloxacin, 5 to 10 mg/kg every 12 hours intramuscularly, switching to oral administration if the culture and sensitivity supports continued use. Treatment may be prolonged (1 month or more). *E. cuniculi* head tilt signs may be transient, and palliative treatment and supportive care may get the rabbit through the process. Some rabbits learn to eat, drink, and groom with head tilt. Palliative treatment may include use of a non-steroidal anti-inflammatory drug (NSAID) such as flunixin, antibiotics to cover a possible bacterial encephalitis, and nursing care. The encephalitis caused by *Baylisascaris* is progressive. Palliative treatment and supportive care to make the rabbit comfortable may be all that can be done.

Dr Campbell: Treatment is

directed toward the etiology of the head tilt. Head trauma in rabbits is treated in the same manner as that for dogs and cats. Treatment for *E. cuniculi* or *Baylisascaris* infections is usually unsuccessful. The vestibular signs may be treated symptomatically using meclizine (12.5 mg PO daily). Otitis interna is treated with antibiotics (usually directed toward *P. multocida*) such as chloramphenicol (30-50 mg/kg IM bid) and/or enrofloxacin (5-10 mg/kg BID, IM or PO). A bulla osteotomy may be required in the treatment of cases unresponsive to antibiotic treatment and with radiographic evidence of involvement of the tympanic bulla.

Q. Describe supportive care for the rabbit that is unstable, unable to eat or drink, etc.

Dr Suedmeyer: Placement of a nasoesophageal feeding tube (using premature infant feeding tubes) is a simple procedure by which nutritional support can be administered until a diagnosis and therapeutic plan can be instituted. Elizabethian collars should be placed to keep the rabbit from removing the tube. These are generally well tolerated by ill rabbits. Blended rabbit pellets or baby cereals mixed with water are good initial diets. In addition, administration of subcutaneous or intravenous fluid therapy (lactated Ringer's solution) at 50 mL/kg per day will maintain hydration in mild to moderately ill rabbits. In severely ill rabbits, 50 mL/kg bid may be needed. Since the rabbit isn't recovering B-complex vitamins from the nocturnal stools, supplementation of these vitamins should be instituted.

Dr Johnson-Delaney: I use fluid therapy to maintain hydration. I usually use isotonic solutions (my favorite is half-strength lactated Ringer's with 2.5% dex-

trose) with Wydase (Wyeth-Ayerst), given subcutaneously at 50 to 75 mL/kg every 24 hours, and hay, regular pellets—often these must be held for the rabbit to eat. If the rabbit is anorectic, I may administer parenteral vitamin B complex and force-feed a gruel mixture (ground-up pellets, lactobacilli, and an electrolyte solution). Metoclopramide or cisapride is sometimes useful in getting the gastrointestinal tract mobile if the rabbit has not been eating well before it is brought in. (Always check the teeth and make sure a malocclusion situation isn't compounding the problem.) Occasionally, a nasogastric or pharyngeal feeding tube needs to be used or placed. I usually administer some form of analgesic initially, such as butorphanol, because I believe that ear infections and encephalitis can certainly cause pain or headache; many of the rabbits will just start eating after the analgesic. I also use NSAIDs (flunixin) rather than a corticosteroid for inflammation because there is probably an infectious component. Antibiotics are chosen according to what type of bacteria is involved. I have never seen or treated listeriosis.

Dr Campbell: Supportive care for an anorectic rabbit includes either hand-feeding a rabbit pellet gruel using a catheter-tip syringe or a liquid diet delivered through a nasogastric tube.

Q. How would you treat the rabbit if the owner cannot afford diagnostic tests?

Dr Suedmeyer: Euthanasia would have to be discussed. In the case of ear mites, simple observation followed by appropriate acaricides can be instituted relatively inexpensively.

Dr Johnson-Delaney: If the

continues on page 5

FROM THE LITERATURE

Avian Blood Transfusions

Shawn Messonnier, DVM

This study examined the survival of labeled red blood cells (RBCs) after single and multiple transfusions in compatible cross-matched birds. Twenty cockatiels were divided into four groups. The first group was a control group (autologous transfusion) and received their own blood. The second group received blood from another cockatiel. The third received blood from a blue-fronted Amazon parrot (heterologous transfusion from a bird in the same taxonomic family). Yet another group received blood from a pigeon (heterologous transfusion from a bird in a different taxonomic family). Results showed that the RBC half-life was significantly longer in the autologous and homologous groups (range, 10.5-16.8 days) than in the heterologous groups (range, 0.1-2.6 days) after all three transfusions. Heterologous transfusions may not be efficacious.

Degernes L, Crosier M, Harrison L, et al: Autologous, homologous, and heterologous red blood cell transfusions in cockatiels (*Nymphicus hollandicus*). *J Avian Med Surg* 13:2-9, 1999.

Editor's Note: Blood transfusions are not commonly needed in avian practice. This may be because of either the low incidence of diseases causing anemia or the tolerance of the avian species to handle even severe anemias. Although this study did not show any harm when transfusing blood from unrelated species, when transfusions are needed, this study suggests that ideally the blood should be taken from a bird of the same taxonomic species (cockatiel to cockatiel, etc) to ensure longer RBC survival.

Guinea Pig with Polyuria/Polydipsia

continues from page 3

Answers

1. The diagnosis was diabetes mellitus.
2. Blood can be obtained from the cephalic vein, saphenous vein, jugular vein, or cranial vena cava. I find it easiest to obtain blood from the cranial vena cava in guinea pigs that are anesthetized with isoflurane administered by face mask.
3. Treatment was performed with insulin. In this patient, 0.1 IU of

ultralente insulin was given subcutaneously each day, and fruits were eliminated from the animal's diet to decrease its sugar consumption. Continued testing dictated the need to increase insulin up to 0.6 IU/d because of persistent glucosuria. However, the patient became agitated with the injections. At this time, insulin injections were stopped and treatment with an oral hypoglycemic agent (DiaBeta, Hoechst, Somerville, NJ) was started at 0.3 mg/d. Persistent glucosuria continued, and the dosage was increased to 0.3 mg every 12 hours. After 5 weeks of

treatment with this dosage, the blood glucose level remained stable at approximately 204 mg/dL 6 hours after administration of the pill. This dosage was continued until the guinea pig was euthanized, 2 years and 9 months after the initial diagnosis. A renal tubular cyst with mineralized renal tubules was seen on necropsy and histopathology.

Reference

1. Adapted from McNulty E: Polydipsia, polyuria, and glucosuria in a male guinea pig (*Cavia porcellus*). *Lab Anim* 28:19-20, 1999.

Head Tilt in Rabbits

continues from page 4

owner cannot afford even the radiographs, you have to explain that you can't be certain what you are treating, and I really push for at least this test. CBC/chemistries and serology are useful, but I have managed many cases without those and had successful outcomes. A culture for *Pasteurella* may not always be rewarding, depending on the laboratory used, experience with *Pasteurella*, etc. Certainly, if there is an obvious abscess/otitis with exu-

date, or if you can see exudate deep in the ear, and your first choice of antibiotics doesn't seem to be working and the condition is worsening, you should push for a culture if one was not run at the beginning. If the owner can't afford a culture, sometimes a Gram's stain of aspirated exudate can help with a diagnosis or prognosis. Unfortunately, if the diagnosis is a *Baylisascaris* infection, all the tests and treatments will just be a process of elimination, and the disease will progress. I would still try to treat the rab-

bit symptomatically: go with a presumptive diagnosis of encephalitis, possibly bacterial or protozoal, use NSAIDs, fluids, analgesics, antibiotics, and nutritional support.

Dr Campbell: Empirical treatment for head tilt in a rabbit would be directed toward the treatment of a *Pasteurella* otitis by using antibiotics that cross the blood-brain barrier, such as chloramphenicol and enrofloxacin.

Client Teaching Guide

Potbellied Pig

CARE SHEET

Michael A. Dutton, DVM, Dipl ABVP—Companion Animal Practice

Respiratory Diseases in Potbellied Pigs

The pet pig is prone to a variety of respiratory diseases; some are a result of the unique anatomy of the potbellied pig, some are secondary to infectious diseases caused by bacteria and viruses. The following is a short list of causes of chronic respiratory diseases in the potbellied pig.

- ✓ **Atrophic Rhinitis:** Atrophic rhinitis is a highly contagious bacterial infection of the lining of the nasal cavity. The bacteria that can be involved are numerous; the most common are *Bordetella bronchiseptica*, *Hemophilus*, and *Pasteurella multocida*. The bacteria cause a permanent destruction of the anatomy of the nasal cavity. This impairment can lead to a lifelong problem with respiratory ailments. Although this type of infection is hard to cure because of the possibly large amount of destruction, bacterial cultures and antibiotic sensitivity testing can help keep the bacterial infection under control.
- ✓ **Pneumonia:** Pneumonia in pigs can be common. It is a result of bacterial, viral, and environmental factors. In piglets, pneumonia is usually life threatening. Piglets who do survive may end up with damaged lungs that will predispose them to chronic respiratory disease. The symptoms of acute respiratory distress are obvious. For an adult pig with pneumonia, x-rays, bacterial cultures, and a complete physical examination will aid in the diagnosis. Treatment is supportive in nature. For bacterial pneumonia, appropriate antibiotics are required. Environmental factors such as dust, cigarette smoke, and overall air pollution must be minimized.
- ✓ **Ciliary Dyskinesia:** The trachea and bronchi are lined with microscopic hairs called *cilia*. These cilia gently move in rhythm and propel foreign material (dust, bacteria, mucus) up to the throat, where they are swallowed. This is an important aspect of the disease-fighting system of the respiratory tract. In some pigs, however, the cilia do not move in rhythm, and no effective movement of foreign material occurs. This is called *dyskinesia*. The excess of matter in the trachea and bronchi causes repeated inflammations and infections in the respiratory system. A specialized biopsy will make the diagnosis. There is no treatment.
- ✓ **Anatomic Abnormalities:** Potbellied pigs come with their own varied anatomy problems. Their snouts are already distorted, allowing infections to occur more easily. The trachea in the pigs may also be twisted and distorted, allowing for pools of mucus and bacteria to form; this can lead to recurring infections.
- ✓ **Important Points:** Prompt attention to respiratory problems will maximize therapeutic benefits. Good environmental control of dust, cigarette smoke, and other pollutants is essential to the respiratory health of your pets.

CASE REPORT

Cutaneous Mycobacteriosis in a Moluccan Cockatoo

Amy Beth Worell, DVM, Diplomate ABVP-Avian

A 12-year-old female egg-laying pet Moluccan cockatoo (*Cacatua moluccensis*) was presented for lumps on her body of at least a month's duration. The owner expressed that the pet seemed to be clinically well, otherwise. The results of a physical examination showed the bird to be quite thin (684 g) with multiple subcutaneous white nodules on her body. The nodules were located in the right and left mandibular areas, in the right and left mid-patagial areas, and on the dorsum of the neck. Nodular size ranged from 1 to 4 cm in length. Full body radiographs were taken; they resembled normal radiographs, except for an indistinct nodular lesion in the left caudal thoracic air sac. The results of a fecal parasite examination were negative for intestinal parasites. The blood work included a CBC, serum chemistries, a protein electrophoresis, and the psittacosis elementary body agglutination (EBA), and tests for bile acid and amylase levels. The owner elected to put off the therapy until the diagnostic tests were back. Nodular diseases including neoplasia and avian tuberculosis were considered.

The lab work demonstrated a white blood cell count (WBC) of 38,000 (normal, 5000-11,000)¹, a hematocrit level of 39% (normal, 40%-55%), moderate to heavily degranulating heterophils, a lactate dehydrogenase (LDH) level of 1340 IU/L (normal, 225-650), and a bile acid level of 99.6 $\mu\text{mol/L}$ (normal, 0-71). The protein electrophoresis showed changes reflective of an acute inflammatory process and was suggestive of an infection.² The psittacosis EBA was negative.³ It was decided to place the pet on antibiotics for 2 weeks, then recheck the avian panel. The bird

was given piperacillin (Pipracil; 200 mg/mL) at the dose of 50 mg/kg of body weight. The owner wanted to get the pet stronger before considering the surgical removal of any nodules. He elected not to have cytology performed on one of the nodules.

The bird was brought in 5 weeks later with a body weight of 666 g. The owner commented that the bird was quiet at home and was no longer vocalizing. A physical examination revealed an extremely thin bird with nodules similar in size to those previously observed. Additional nodules were noted transcending along the dorsal neck, extending from the right mandibular area towards the right shoulder. Radiographic tests were repeated, and an enlarged-mass density was demonstrated in the left caudal thoracic air sac, caudal to the distal border of the left lung. A complete avian panel and the protein electrophoresis were resubmitted. The owner declined any additional therapy at this time.

The lab work demonstrated a WBC count of 19,000 and an LDH level of 2048, with the remainder of the values within normal limits. The protein electrophoresis was essentially unchanged from the previous submission. The owner thought that the nodules were causing the bird some discomfort and wished to have them removed.

At this point, the owner elected to hospitalize the bird with supportive care of antibiotics and tube feeding, with the goal of strengthening the pet for surgical removal of several of the nodules for biopsy.

The bird remained in the hospital for 1 week. At the end of the week, the bird was anesthetized with isoflurane and oxygen. A 6-inch continuous incision was made,

extending from the right mandibular lymph node area along the dorsal neck-line to the right shoulder. Numerous multiple nodules were excised. The



nodule in the right mandibular area was extremely invasive into the right mandibular muscles, and it was not possible to completely excise this nodular growth. Visibly, the abnormal tissue was suggestive of an aggressive neoplasia. Tissue samples were submitted for histopathology.⁴

The histopathological results demonstrated numerous acid-fast organisms compatible with avian tuberculosis. The bird was started on oral treatment consisting of medications for tuberculosis, as is recommended in the literature,⁵ at the owner's request. After multiple passages and many months' time, the extremely fastidious organism *Mycobacterium simiae* was cultured and identified. This species of *Mycobacterium* frequents nonhuman primates. Unfortunately, the pet had died at home about 3 weeks after the surgery. A post-mortem examination was not allowed or performed. Multiple suggestions for tuberculosis testing of household members were made, but the test was not performed.

References

1. Avian and Exotic Animal Clinical Pathology Laboratory, Redondo Beach, Calif.
2. University of Miami School of Medicine, Fla.
3. Texas Medical Diagnostic Laboratory, College Station.
4. Zoo/Pathology Service, West Sacramento, Calif.
5. Van Der Hayden: *Proc Assoc Avian Vet Reno, Nev, 1994, p53.*



Editor's Note: We appreciate readers submitting questions for *Exotic Pet Practice*. There are times, however, when we don't have a backlog of questions waiting to be answered. In these instances, we'd like to share with you some questions that will help you review important information. For those of you studying for board examinations, these questions may be helpful. They are taken from Pratt PW: *Review Questions and Answers for Veterinary Boards: Ancillary Topics*, ed 2. St Louis, Mosby, 1998.

You are presented with a New Zealand white rabbit for neutering. Which anesthetic should not be used with this rabbit?

- A. a combination of ketamine, xylazine, and acepromazine**
- B. a combination of tiletamine and zolazepam**
- C. halothane**
- D. isoflurane**
- E. enflurane**

(A.) A combination of tiletamine and zolazepam (Telazol) should not be used in rabbits because it may be nephrotoxic. Sedation (with acepromazine, butorphanol, or xylazine) followed by isoflurane anesthesia or, alternatively, just the isoflurane anesthesia, are popular ways to anesthetize rabbits for short surgical procedures.

Readers: We welcome your questions, practice tips, and case reports. Please submit any materials to Susan Sibiski, 526 Cole Ln, Baltimore, MD 21220; ssibiski@home.com.

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