BUNNY BITS
Rabbits are different from other mammals in several respects. First, they have thin, fragile skin that tears easily when clipped. Thus, rabbit hair should be plucked, rather than clipped, over venipuncture sites to avoid tearing skin. Care also should be taken when using heat lamps and heating pads because their thin skin makes them susceptible to rapid overheating and burns.

Second, rabbit veins are thin-walled. Hematomas form easily following venipuncture. Rabbits also are prey species. They have a strong flight response and are extremely sensitive to the effects of catecholamines. Rabbits’ heart rate, respiratory rate, and temperature increase quickly with fear. Thus, they should be housed separately from loud, aggressive dogs to minimize stress.

Third, rabbits are heavily muscled. Muscle makes up about 50% of their body weight, while their skeleton accounts for only 7 to 8% of their body weight (versus 12 to 13% in cats). Rabbits have very strong hind legs and can easily fracture vertebrae (especially at L7) if they kick against a hard surface. Therefore, a rabbit’s hind end must always be supported during handling.

Fourth, rabbits have continuously growing, open-rooted (hyposodont) teeth. They have four upper incisors (two large incisors plus two small peg teeth) and two lower incisors. Incisors grow 2 to 3 mm per week. The cheek teeth are the molars and premolars. Incisor and molar malocclusion are common in rabbits.

Fifth, rabbits are herbivores. Adult, nonbreeding rabbits require a high-fiber, low-calcium containing pelleted diet (approximately ½ cup per 5 lbs body weight per day) plus ad-lib timothy hay. Free-choice feeding of pellets in adults can lead to obesity and diarrhea from carbohydrate overload. Lactating does and growing juveniles require higher amounts of calcium and can be fed alfalfa-based pellets and alfalfa hay ad lib.

Sixth, rabbits have large abdominal cavities containing voluminous gastrointestinal (GI) tracts accounting for 10 to 20% of their body weight. They have a well-developed gastric pylorus and cardia and are unable to vomit. Their duodenum exits the stomach at an acute angle, and their small intestine is short. The cecum, the site of bacterial fermentation of ingesta, is large. Gastric distention and compression commonly result when they have excessive GI gas or hair or if they have hepatomegaly pushing on the GI tract. The cecum, the site of bacterial fermentation of ingesta, is large. Cecal fermentation products are expelled through the colon for ingestion as cecotropes (night feces) during coprophagy.

Seventh, rabbits have a very small thorax relative to the abdomen. They are also obligate nasal breathers.
ORAL EXAMINATION

Oral examination is an essential part of physical examination. The rabbit should be restrained in a towel rolled up under your arm or held by an assistant. The mandible and maxilla should be palpated for symmetry, swellings, and bony irregularities. The lips should be retracted to reveal the incisors and gingiva. The cheek teeth and buccal surfaces should be seen. An illuminated human nasal speculum with a bivalved opening is ideal for visualizing the cheek teeth. An otoendoscope, otoscope with a large cone attached, or stainless-steel bird oral speculum placed in the interdigital region and illuminated with a light source also may be used.

SEDATION

Sedation may be required to examine fractious or stressed rabbits for oral examination or for radiography. Commonly, injectable drugs are used for short-term sedation. Combinations of ketamine (5–15 mg/kg IM, SC) plus midazolam (1 mg/kg IM, SC) or ketamine (5–15 mg/kg IM, SC) plus medetomidine (150 µg/kg IM, SC) are used. For long-term sedation, isoflurane or sevoflurane via facemask or endotracheal intubation can be employed.

Endotracheal intubation is difficult in rabbits because the glottis sits caudally deep in the oral cavity. The rabbit should be in sternal recumbency with its head and neck extended to prevent kinking of the trachea. There are two techniques for intubation. The blind technique involves grasping the rabbit’s head behind the ears with your fingers under the mandible. Pass the tube into the space between the incisors and the first premolar, and advance it over the tongue base toward the glottis. Hyperextend the neck, and listen for respiratory noise in the tube. If you hear gurgling, it’s likely the tube is in the esophagus. Withdraw the tube, and try again. Remember, however, that repeated attempts at intubation may lead to laryngeal edema, hemorrhage, and death.

The second method of intubation involves direct visualization of the glottis. The rabbit is placed in dorsal recumbency with its mouth held open with gauze strips around the upper and lower incisors. The tongue is pulled up and laterally, and the head and neck are hyperextended. The epiglottis is displaced ventral to the soft palate with the blade of a pediatric laryngoscope, and the tube is passed down the glottis. A small gauge catheter or rigid endoscope may be used as a stylet over which the tube is passed.

VENIPUNCTURE

Venipuncture to obtain small blood volumes may be performed on the lateral saphenous vein. This vein courses medially to laterally across the mid-tibia. The rabbit is restrained in lateral recumbency, and the vein is held off proximal to the hock. The cephalic vein also can be used to obtain small blood volumes and to place intravenous catheters. However, this vein may be hard to see in small rabbits with short legs. With both the lateral saphenous and the cephalic veins, a 25-gauge needle attached to a tuberculin or insulin syringe (depending on rabbit size) is used. The jugular vein is used to obtain larger blood volumes in calm or sedated rabbits. The rabbit is restrained in sternal recumbency, like a cat, with its head held up, its neck extended, and its legs pulled down. The dewlap is pushed ventrally as the jugular furrow is held off. A 25- to 22-gauge needle attached to a tuberculin or 3-ml syringe (depending on rabbit size) is used.

CYSTOCENTESIS

Cystocentesis is performed in rabbits, as in cats, to obtain a sterile urine sample with the animal in lateral recumbency and its head and legs restrained. Urine is withdrawn with a 25-gauge needle attached to a 3- to 6-ml syringe. The procedure must be stopped immediately if the rabbit struggles so as not to lacerate the bladder or fracture the rabbit’s back.

CATHETERIZATION

Intravenous catheterization is performed in rabbits in cases of severe azotemia, shock, and critical illness. Catheters (25- to 20-gauge, depending on rabbit size) are commonly placed in the cephalic or lateral saphenous veins. The vein is prepped steriley first, and the catheter is taped in. Standard through-the-needle jugular catheters may also be placed; however, they are difficult to maintain with large dewlaps and generally require sedation or anesthesia for placement. Regardless of catheter site, fluids are administered at maintenance rate of 100 ml/kg/day through an infusion pump or buretrol. An e-collar is fitted if the rabbit tries to chew the fluid line.

Intraosseous catheters are used in cases of severe dehydration with peripheral vein collapse. The rabbit is sedated, and the fur over the greater trochanter of the femur or the tibial crest is clipped. The area is prepped steriley, and an 18- to 23-gauge 1” to 1.5” spinal needle is placed into the medullary cavity. The catheter is flushed with sterile, heparinized saline, a t-connector is attached, and the catheter is taped to the leg. Antibiotic ointment and a light wrap are applied, and an e-collar is fitted if the rabbit tries to chew the catheter or the line.

INJECTIONS

Subcutaneous injections are commonly given in the loose skin over the dorsal neck or in the flank area cranial to the hips. Intramuscular injections are administered in the epaxial muscles lateral to the spine. Intramuscular injections should not be given in the hind legs due to potential sciatic nerve damage.

ORAL MEDICATIONS

Pill administration in rabbits is very difficult. Rabbits are much more tolerant of oral compounded liquid suspensions. Wrap the rabbit in a towel, and hold it under your arm. Administer medications slowly so as not to cause aspiration. Remember that rabbits are herbivores that rely on bacterial fermentation of ingesta. They are intolerant of several classes of antibiotics.
(penicillins, macrolides, cephalosporins) when these are administered orally. With these medications, they often develop gastrointestinal bacterial dysbiosis, overgrowth of clostridial bacteria, and subsequent gastrointestinal stasis. When left untreated, gastrointestinal stasis can be fatal. Antibiotics that are safe to use in rabbits include trimethoprim-sulfa (30 mg/kg PO, SC q 12h), enrofloxacin (5–15 mg/kg PO, SC, IM q 12h), ciprofloxacin (10–20 mg/kg PO q 12h), chloramphenicol (50 mg/kg PO q 8–12h), and metronidazole (20 mg/kg PO q 12h).

SYRINGE FEEDING
Anorexic rabbits should be syringe fed with large-bore, catheter-tipped syringes. Critical Care for Herbivores® (Oxbow Pet Products, Murdock, NE), vegetable baby food, or liquid dietary supplements for people can be administered. Small, frequent feedings are best and are tailored to rabbit size.

NASOGASTRIC INTUBATION
Nasogastric feeding tubes may be placed in rabbits intolerant of syringe feeding. An open-ended, 3.5- to 5-French red rubber feeding tube or non-cuffed silicone endotracheal tube (Global Veterinary Products Inc., New Buffalo, MI) may be premeasured and marked with the distance between the rabbit’s nose and stomach. Lidocaine gel or proparacaine is applied around the naris, the tube is inserted into the ventral nasal meatus, and it is directed caudodorsally. Once in place, the tube is secured with glue or butterfly tape to both the nose and to the top of the head between the ears. An e-collar is fitted, and tube placement is checked with a lateral radiograph.

OROGASTRIC INTUBATION
Orogastric intubation is used in rare instances to temporarily relieve severe gastric distention from gastrointestinal obstruction. An oral speculum with a central opening (ie, a large-bore syringe case open at both ends) is placed in the mouth just behind the incisors. A lubricated red rubber feeding tube is premeasured and marked with the distance from mouth to last rib on the left side. The tube should be larger than the diameter of the trachea so as not to accidentally intubate the trachea. The tube is passed through the speculum in to the stomach. If resistance is met while passing the tube, to should not be forced or the esophagus could rupture.

LACRIMAL DUCT CANNULATION
Lacrimal duct cannulation is essential in treating bacterial conjunctivitis in rabbits. This process flushes purulent debris and mucus from the lacrimal puncta and duct. This process may need to be repeated daily before the administration of topical eye medications as infection clears. Proparacaine is administered topically to the eye, and the single punctum is located half way between the margin of the lower eyelid and the nictitans near the medial canthus. A 24-gauge intravenous catheter preflushed with sterile saline is inserted into the punctum, and saline is flushed through until drainage appears from the corresponding naris. Chronic inflammation or infection can lead to permanent obstruction.

CEREBROSPINAL FLUID TAP
Cerebrospinal fluid tap in rabbits, as in other animals, requires general anesthesia. The rabbit is restrained in lateral recumbency with its head flexed down toward its chest. The area from the occipital protuberance to the third cervical vertebra, laterally out past the atlas margins, is shaved and prepped sterilely. A 22-gauge 1.5” to 3.5” spinal needle is inserted midway between the cranial margins of the wings of the atlas and the occipital protuberance. The needle is directed toward the rabbit’s nose and passed through the dura and arachnoid membranes to collect cerebrospinal fluid from the cisterna magna.

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