RABBITS COMMON DISORDERS I: GASTROINTESTINAL AND DENTAL DISEASE

Christoph Mans, Dr. med, vet., MBA, Dipl. ACZM

University of Wisconsin-Madison, School of Veterinary Medicine
2015 Linden Drive, Madison, WI 53706, USA
christoph.mans@wisc.edu

INTRODUCTION

Rabbits are the most popular small companion mammal and are frequently seen by veterinarians for evaluation. Rabbits are strict herbivorous hindgut fermenters with elodont (continuously growing) dentition. The prevalence of specific diseases as well as their diagnostics and treatment are substantially different from other small mammals as well as dogs and cats. New information about the diagnostics and treatment of rabbit diseases is continuously published. Therefore, this session aims to review clinically important updates in rabbit medicine and surgery.

THE VALUE OF BLOOD BIOCHEMISTRY EVALUATION

Blood biochemistry evaluation is one of the most important diagnostic tests in anorexic and critically ill rabbits, besides diagnostic imaging. Rabbits are frequently presented for evaluation of sudden onset anorexia and lethargy. Possible underlying causes include stress, and underlying disease process or pain. It can be challenging to identify the correct underlying cause in rabbits, and this may result in the misdiagnosis of potentially life-threatening conditions, such as GI obstructions or liver lobe torsions. Blood biochemistry offers a simple and cost-effective way to rule out important underlying diseases in a short period. In most clinics, these tests can be performed in-house and allow the veterinarian to provide the best possible treatment options for rabbit patients. It is important to perform blood biochemistries in-house since timely results are critically important to ensure the best possible outcomes for rabbit patients.

SMALL INTESTINAL OBSTRUCTION AND GASTRIC DILATATION

Small intestinal obstruction is a common emergency presentation in rabbits and can be easily misdiagnosed as “GI stasis”. Incorrect diagnosis can have fatal consequences, and therefore ruling out a small intestinal obstruction should be performed in any rabbit, that presents with a history of sudden decrease in appetite, reduced fecal output, and lethargy. Small intestinal obstructions are caused by small, compressed hair pellets in the majority of cases. These hair pellets can obstruct any part of the small intestine and pyloric obstruction has not been reported. Other causes for small intestinal obstruction include neoplasia, serosal adhesions, or abscesses. Large intestinal obstructions are uncommon in rabbits.[1]

Small intestinal obstruction is a painful condition and leads to distension of the stomach. Gastric dilatation can become severe as the disease progresses, leading to compression of the diaphragm and caudal vena cava. Rabbits with small intestinal obstruction and secondary gastric dilatation usually are quieter, have stopped eating suddenly, and are reluctant to move. Abdominal palpation usually reveals a distended tympanic stomach in the left cranial abdomen. Distended tympanic small intestinal loops are less commonly palpable. The animal is usually hypothermic (< 99 F (37.2F)) and its ears are cold to touch.

Diagnostics should always include DV and lateral abdominal radiographs, which will show an enlarged stomach with fluid and gas retention. Tympanic small intestinal loops are not always visible, and usually, the cecum contains decreased amounts of gas. Blood glucose should always be checked and will be high (> 350 mg/dL (19 mmol/L)) in animals with small intestinal obstruction.

Aggressive medical treatment is successful in about 90% of the cases and the obstructing hair pellets will move into the large intestine in these cases, without the need for surgical intervention. Case selection is critical to achieve a positive outcome. If the animal is stable, aggressive intravenous fluid therapy and pain management is necessary. Intravenous lidocaine constant rate infusion (CRI) is recommended (75-100 ug/kg/min) after a 2 mg/kg IV loading dose. In addition, buprenorphine (0.03 mg/kg IV or SC) can be administered. Treatment without the use of lidocaine CRI has been associated with poorer outcomes, with 90% of rabbits surviving following with lidocaine CRI vs. 56% of cases that did not receive lidocaine.[3] Meloxicam should not be administered in rabbits with small intestinal obstruction and gastric dilatation due to the impaired perfusion of many organs (e.g. kidneys, stomach). Once the obstruction is resolved, which can take up to 12-14 hours, the rabbit's attitude, body temperature, and blood glucose rapidly normalize, and this can be used to monitor response to treatment as well. Rabbits that do not respond to aggressive medical therapy or are in such critical condition upon presentation should be considered for surgical exploration of the abdomen or euthanasia. The survival rate for rabbits undergoing surgical treatment is ~ 50%. Post-surgical ileus is a common complication. Rabbits with suspected GI obstruction should not receive any oral medications or be syringe-fed. The use of prokinetic drugs (e.g. metoclopramide, cisapride) is contraindicated in rabbits with suspected GI obstruction and have been shown to have no significant effect on GI motility. Decompression of the stomach may be attempted in severe cases; however, deep sedation or anesthesia is usually required, and compression may not be successful, due to the presence of food material and hair in the stomach, which obstructs the stomach tube. The author does not recommend percutaneous gastric decompression.

LIVER LOBE TORSION

The diagnosis of liver lobe torsions in pet rabbits has drastically increased in the past 15 years, most likely due to better awareness of this condition amongst veterinarians and the use of the correct diagnostics to detect this condition in rabbits. The underlying cause for liver lobe torsion in rabbits is unknown, but laxity or congenital absence of hepatic supporting ligaments has been suggested to lead to liver lobe torsion. To date, no risk factors have been identified.

Liver lobe torsions can be easily missed, due to the unspecific clinical signs and the inability to detect this condition on abdominal radiographs. Rabbits will present with lethargy, anorexia or hyporexia, and reduced fecal output. Physical examination may reveal no abnormalities and abdominal palpation is usually normal. Abdominal radiographs are usually consistent with mild GI stasis. Plasma biochemistry will in most cases reveal moderately to severely increased ALT, due to the hepatic cell damage. The remainder of the chemistry profile is usually within normal limits, but GGT, TBIL, and AST may be increased. In more chronic cases (e.g. animals that had clinical signs for 3-5 days) ALT may be within reference intervals or only be mildly elevated. The CBC is usually within normal limits, but the PCV can be reduced if the animal is bleeding from the torsion site and a hemoabdomen is present. While the biochemistry abnormalities are suggestive of acute hepatic injury, only Doppler ultrasound (or contrast-enhanced computed tomography) can reliably diagnose liver lobe torsion. Lack of blood flow in the affected lobe, which is most commonly the caudate lobe, will confirm the diagnosis. Treatment options include surgical removal of the torsed lobe or medical management. In a recent retrospective study, no

significant difference in survival rate (61%) was found between medical and surgical options. However, hospital capacity and facilities as well as clinicians involved likely significantly affect the outcome. The author recommends surgical removal of the torsed liver lobe in most cases. The prognosis is good unless a large amount of hemorrhage occurs during surgical removal, in which case a blood transfusion should be considered. Rabbits will recover well following surgical treatment. A paracostal approach to the caudate liver lobe has recently been reported and this approach may allow for easier access and less post-surgical pain in rabbits.
Medical management of liver lobe torsions in rabbits has been reported and consists of supportive care (fluid therapy, nutritional support). The survival rate of medically treated rabbits ranges between 50-61% and treatment may be prolonged. The PCV/TP should be repeatedly checked in cases that undergo medical treatment, to rule out ongoing bleeding into the abdomen.

APPENDICITIS

Rabbits possess a distinct vermiform appendix at the apex of the cecum. Recently increasing reports of appendicitis in pet rabbits have been published. Historically reports of disorders affecting the appendix in rabbits were largely limited to lymphoma, due to the presence of lymphoid tissue and the role of the appendix in b-cell production and being part of the gut-associated lymphoid tissue (together with the Peyer patches, ileocecal plaque, and the sacculus rotundus). In a recent retrospective study, decreased appetite and hyperthermia or hypothermia were the most common abnormal physical exam findings in rabbits with confirmed appendicitis. Abdominal ultrasound or computed tomography was suggestive of appendicitis in most cases. Medical treatment was not effective for this condition. Surgical removal of the diseased appendix is recommended and reported survival rates are ~ 50%.

DENTAL DISEASE

Dental disease is one of the most common disorders diagnosed in rabbits. Rabbits have continuously growing (elodont) incisor and cheek teeth teeth. The continuously growing teeth have no anatomical crown (aradicular) and instead a very large crown (hyposodont), which is divided into the “clinical crown” portion visible above the gingival margin, and the so called “reserve crown” below the gum line.

The dental formula of rabbits is 2I 0C 3P 3M / 1I 0C 2P 3M. The author prefers to call the premolar and molar teeth “cheek teeth (CT)”. Rabbits therefore have 6 cheek teeth (CT1-6) in each maxillary quadrant and 5 cheek teeth (CT1-5) in each mandibular quadrant.

There is no single etiology of dental disease in rabbits, but instead, a variety of underlying causes may lead or contribute to the development of dental disease. Congenital disease is usually diagnosed early in life, while acquired dental disease can be caused by trauma, infection, or nutritional disorders. Historically feeding a diet predominately consisting of grass hay has been proposed to prevent the development of dental disease, due to the high fiber content and the required increased attrition to ingest such a diet. However, besides the high fiber content, the high Ca:P ratio in hay may play an equally important role in the prevention of dental disease. An inappropriate Ca:P ratio has been shown to induce dental. Therefore, feeding grains, sugar-containing treats, or other dietary items high in phosphorus is not recommended.

Clinical signs associated with dental disease include selective food intake, refusal to eat hay, weight loss, hypersalivation, reduced fur quality, ocular discharge (due to nasolacrimal duct obstruction due to apical cheek teeth elongation), unilateral exophthalmos (due to retrobulbar odontogenic abscessation) or facial swellings (due to odontogenic abscesses). Physical examination should pay attention to facial asymmetry, and the appearance of the incisor teeth.

Examination of the cheek teeth to rule out dental disease is not recommended in conscious rabbits, since the information gained may be misleading. Dental disease and associated intraoral pain can never be ruled out in a conscious patient. A complete intraoral examination can only be performed under general anesthesia, just like in cats or dogs. To aid in the visualization of the teeth specialized dental tools such as the mouth gag, inserted between the incisor teeth to open the mouth from top to bottom, and cheek dilators that have spatulated wings that open the mouth from side to side with a spring action should be used.

The use of a rigid endoscope or video-otoscope is highly recommended for intraoral examination under general anesthesia. Endoscopy (stomatoscopy) provides focal illumination, and magnification, and allows for documentation of normal and abnormal findings, which will aid in client education and medical record keeping. Using an endoscope for intraoral exams will reduce the risk of missing intraoral disease.

Skull radiographs, preferably 5 views that evaluate lateral, dorsoventral, rostrocaudal, and right and left lateral oblique projections, to assess the teeth and jaw bones more critically. If available a CT scan of the head is preferred to skull radiographs, since it allows for detailed evaluation of the teeth and surrounding bone without the summation effects seen on skull radiographs. In addition, a complete evaluation of the retrobulbar space, middle ears, and nasal cavities is possible and provides valuable information.

All intraoral dental treatments should be performed under general anesthesia. Performing intraoral procedures in awake animals is not acceptable, ineffective, and carries a high risk of iatrogenic trauma. Treatment of coronal overgrowth as well as dental spurs should never be performed using so-called “molar clippers” or rasps but are still sold as tools for the treatment of dental disease in rabbits. The clippers will result in sharp edges and carry the risk of inducing vertical fractures of the teeth. The dental rasps are highly inefficient and carry the risk of inducing soft tissue trauma. Instead, for adjustment of coronal height and occlusal surfaces, a low-speed hand-piece straight nose cone (1:1) attachment should be used in combination with a diamond bur tip and a soft-tissue protector. A

It is important to communicate to pet owners that coronal height adjustments or removal of spurs will require repeated anesthesia and treatment and therefore a substantial financial commitment of the client is required. It is important, however, to not perform dental treatments on a set schedule, but rather to monitor for changes in behavior or food intake, to avoid unnecessary anesthesia and dental treatments.

Extraction of incisors is routinely performed in rabbits, mainly for the treatment of mandibular prognathism. The procedure is well tolerated, and rabbits do well without incisors. Extraction of cheek teeth should be avoided, unless teeth are severely infected, fractured, or non-viable. Pack the extraction site with Doxirobe™ gel to avoid impaction with food.

ODONTOGENIC ABSCESSES

Odontogenic infections (infections originating from the teeth and surrounding structures) are commonly diagnosed and most commonly occur in the form of periapical abscesses (“tooth root” abscesses) in rabbits. Periapical abscesses can be associated with the incisor teeth or cheek teeth and may be palpable or visible as facial swellings. Retrobulbar abscessation in rabbits is common and usually present as unilateral exophthalmos.

For diagnostic work-up of periapical abscesses diagnostic imaging in the form of skull radiographs or preferably CT should be performed in all cases. Failure to identify the source and extent of the odontogenic infection will result in a higher chance of treatment failure. A complete intraoral examination under general anesthesia and sample collection for bacterial cultures (aerobic and anaerobic) as well as cytology is necessary to completely evaluate patients with periapical abscesses. It should be considered that strict or facultative anaerobic bacteria, such as Bacteroides, Prevotella, Fusobacterium, and Actinomyces species, play an important role in odontogenic infections. Therefore, if empirical antibiotic treatment is initiated pending bacterial culture results, appropriate antibiotics, which are effective against anaerobic bacteria, should always be prescribed. Most odontogenic infections are mixed aerobic-anaerobic infections, and aerobic bacteria such as Streptococcus, E.coli or Pseudomonas are also frequently isolated concurrently.

Different therapeutic techniques have been recommended in the literature for the treatment of periapical abscesses in rabbits. It should be considered that most of the recommended techniques have not been evaluated in randomized clinical trials to determine their efficacy and risk of reoccurrence or treatment failure. It should also be considered that the severity of the infection usually correlates with prognosis and the patient’s systemic health status and immune system will influence the prognosis. Regardless of the technique used, clients should be thoroughly educated about the prognosis, risks of treatment failure and reoccurrence of infection, the associated usually substantial costs of therapy, and side effects. Therapeutic techniques reported include complete surgical excision of the abscess and removal of the involved diseased teeth and bone followed by either placement of antibiotic-impregnated beads or marsupialization of the surgical site to allow for continued drainage and open wound management. An alternative technique described in the literature, which has also been evaluated in the form of two retrospective studies, involves lancing of the abscess and packing with antibiotic-impregnated gauze, followed by surgical closure of the wound and replacement of the gauze strips every 7 days until resolution of infection. Retrobulbar abscesses in rabbits can be successfully treated without the need for enucleation, by removal of the involved maxillary cheek teeth to allow for drainage followed by systemic antibiotic therapy or via an extraoral approach. Regardless of the surgical technique used for the treatment of periapical abscesses the author strongly recommends systemic appropriate antibiotic therapy, which is effective against anaerobic bacteria, such as metronidazole, or azithromycin, in addition to treatment against aerobic bacteria if isolated. Enrofloxacin and trimethoprim-sulfa drugs are not effective against most anaerobic bacteria. Supportive care and pain management are important measures in the post-surgical period.