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THE COLLAPSED RABBIT

Bairbre O’Malley, MVB, CertVR, MRCVS

Associate Lecturer Exotic Species
School of Veterinary Medicine, Dublin, Ireland

Introduction
Rabbits differ from cats and dogs in that being prey species they have a strong preservation reflex and do not show overt signs of illness or pain. Consequently they often present to veterinary practices with advanced illness. Common causes of collapse are prolonged anorexia, gastrointestinal stasis, respiratory distress, urinary obstruction, trauma and heat stress.

History
A full history should include the duration of illness, appetite, drinking and quantity and quantity of motions. Obtain a detailed diet history and ascertain if there has been any dietary change or inappropriate feeding behaviour like carpet or lead paint ingestion.

Clinical examination
Observe the rabbit first before handling. If the patient is critically ill or tachypnoeic and may be stressed by your examination consider preoxygenation first or even sedation with midazolam and butorphanol. Next observe the patients mentation and demeanour. Is it alert with a twitching nose or lying hunched up, dull and lethargic? Auscultate the heart and chest and check the pulse (femoral or auricular artery in large eared rabbits). As rabbits are obligate nose breathers chest auscultation will normally sound harsh due to referred upper tract sounds from the nasal turbinates. The mucous membrane colour should be pink and the capillary refill time should be less than 2 secs.

Check the perineal region for any sign of urine scalding or faecal soiling. Lastly check the oral cavity looking for any fractured incisors, gingival bleeding or molar spurs indicative of dental problems.

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<th>Normal values</th>
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<td>Heart rate</td>
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<td>Resp. rate</td>
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<td>Temp</td>
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Table 1: Normal Values in the rabbit
Is the rabbit in shock?

Unlike dogs, rabbits in shock decompensate rapidly (3) so they usually present with advanced clinical signs ie. dull mentation, pale mucous membranes, CRT < 2 secs, weak thready pulses, bradycardia, hypothermia (T <36.1 C), cold extremities and reduced urine output. Rewarming and fluid therapy are vital once these perfusion abnormalities occur. The temperature must be brought back up to a safe margin of 37 C - this can be achieved over 1-2 hrs with warm intravenous fluids and either heat pads, hot water bottles, or forced warm air blanket. (2)

Is the rabbit dehydrated?

Rabbits have quite elastic skin so although skin tenting and dry mucous membranes give some guidelines the best indicator of rabbit dehydration is to palpate the abdomen. Is it soft and pliable (normal), hard or doughy (gastrointestinal stasis - treat for moderate to severe dehydration) or tympanitic (gastric bloat – treat for shock!). Intravenous fluids can be given via the marginal ear vein, cephalic or lateral saphenous. If the rabbit has very collapsed veins the intraosseous route is useful. A spinal (20 gauges, 1.5 inch) needle can be aseptically inserted into the proximal tibia or femur under light anaesthetic or using local anaesthetic on the skin and periosteum

How much and what type?

As large volumes of crystalloids can cause pulmonary oedema in the rabbit the best treatment for hypovolemic shock is a combination of crystalloid and colloids along with aggressive warming over 1-2 hours. The patient is first given 3ml /kg 7.5% Hypertonic saline as a slow bolus over 10 minutes followed by a similar bolus of 3ml /kg Hetastarch. Once stabilised the patient continue with crystalloids at maintenance 3-4ml/kg/hr. (2,3)

Venupuncture

Blood can be drawn from the marginal ear vein, the central ear artery, jugular vein or lateral saphenous vein. Always get a minimum database of PCV, TP and blood glucose before starting fluid therapy. Electrolytes, biochemistry and haematology should also be taken if possible.

Diagnostic tests

For all collapsed rabbits radiography of the abdomen and chest are recommended once the patient is stable. Skull radiographs may be taken if dental disease is suspected. Ultrasound is also useful to evaluate liver, pancreas, bladder, uterus and heart. Urine can be collected via cystocentesis or catheterisation.

Is the rabbit in pain?

Never underestimate pain in rabbits as untreated pain leads to decreased gastrointestinal motility and ileus which it painful in itself. Signs of pain include anxious expression, reluctance to move, tachypnoea, sudden aggression and a hunched posture. Rabbits with visceral pain will often teeth grind and either lie hunched or stretched out. The best analgesics for visceral pain are opioids like Buprenorphine and Butorphanol. Nsaids like Meloxicam and Carprofen can also be used provided there is no dehydration or renal compromise.(2)

Cardiopulmonary resuscitation (CPR)

The main problem with CPR is that rabbits can be difficult to intubate if there is apnoea as the procedure often relies on hearing breath sounds. In an emergency do not waste time trying to intubate (1) but instead place
a tight fitting mask over the nose and mouth and give 100% oxygen by IPPV (be careful however of causing gastric bloat). Alternatively perform a tracheotomy. Then perform chest compressions of 80-100 times per minute and provide circulatory support.(3)

**Nutritional support**

Once the fluid and electrolyte levels are corrected early feeding is vital to avoid gastrointestinal slowing, ileus and hepatic lipidosis. Rabbits are hind gut fermenters so enteral feeding requires high insoluble fibre (at least 13% fibre) to stimulate gastrointestinal motility. Commercial enteral high fibre products like Oxbow Critical care for herbivores are available and can be given at a rate to 15ml/kg q6-8hrs.

There are two methods of feeding sick rabbits – naso-gastric tube or syringe feeding. Syringe feeding allows higher quantities of insoluble fibre but must be given slowly and gently to avoid aspiration of food. Naso-gastric tube feeding is useful for very weak and dehydrated patients but the main disadvantage is that the small diameter of the tube prevents adequate insoluble fibre.

The patient should also be tempted to eat by providing the rabbit’s familiar food, leafy fresh greens and lots of good quality hay.

**Common Rabbit emergencies**

**Anorexia**

The loss of appetite is a very common presenting sign and any rabbit anorexic more than 2-3 days must be treated aggressively as it rapidly leads to a downward spiral of gastrointestinal stasis, dehydration and hypovolaemic shock. Rabbits with dental disease commonly show pseudoanorexia ie. unable to eat because they can’t chew their food due to oral pain.

**Dental problems**

Incisor malocclusion or painful molars spurs obstruct normal eating and lead to debilitation and secondary GIT stasis. Clinical signs include reduced appetite, hypersalivation, unkempt coat, weight loss and changes in stool quantity due to lack of chewing. Rabbits will often become polydipsic and show preferences for food like pellets and lettuce which require less mastication.

Treat with analgesia, fluids and assisted feeding. When the patient is stable perform skull radiography and dental surgery under anaesthetic.

**Gastrointestinal problems**

Anorexia causes gastrointestinal stasis but conversely gut stasis leads to pain and anorexia. The main causes of primary gut stasis are inappropriate diet (lack of insoluble fibre) and stress. Secondary gut stasis can occur with dental problems, surgery or any systemic illness.

Clinical signs include reduced appetite, abdominal pain on palpation, reduction or absence of stools, teeth grinding, hunched posture or stretching out. Abdominal palpation is very valuable. The normal stomach contains hair and fluid ingesta and should feel soft and pliable. If the rabbit has gastric stasis the gut becomes rapidly dehydrated so a firm, desiccated mass is palpable in the cranial abdomen.
Prokinetics like cisapride, metoclopramide and ranitidine can be given if no obstruction is suspected. Fluid therapy is essential – intravenous or subcutaneous. Give oral fluids and assisted feeds if not eating along with opioid analgesia. Offer grass, hay and tasty vegetables.

**The acute abdomen**

Rabbits presenting with a tympanitic abdomen are a true emergency. There will be severe bloat, abdominal pain and usually hypovolaemic shock. It is usually caused by pyloric obstruction – often house rabbits on low fibre diets chewing on household items like carpet, towel etc. A conscious radiograph may show a stomach or caecum grossly dilated with fluid or gas. Ideally the stomach can be decompressed by passing a wide bore orogastric tube but often the ingesta is too thick to aspirate and unblock. Surgery to remove the obstruction may then be required when the patient has been treated for shock and stabilised.(2)

**Uterine disorders**

Entire female rabbits can present as anorexic or collapsed with haematuria. The most common cause is uterine adenocarcinoma but pyometra, uterine torsion and multiple endometrial aneurysms can also occur.

Clinical signs are anorexia, haematuria (often large blood clots), mammary gland cysts and severe anaemia and /or shock. A mass is often palpable in the caudal abdomen but will need radiography and ultrasound to confirm. Treat with fluid therapy and ovariohysterectomy when stabilised.

**Urolithiasis**

This can present as either renal, urethral or urethral calculi or a build up of calcium based sand (‘sludge’) in the bladder. Clinical signs will vary depending on location of the problem and range from dysuria, haematuria, thick pasty urine, urine retention, hunched posture, anorexic and tenesmus. Diagnosis is via radiography, urine analysis and culture, biochemistry to check renal function

**Treatment:**

*Fluid therapy, antibiotics (based on C&S), analgesics, manual expression of bladder 2-4 times daily to express bladder sludge. Midazolam to relax the urethral sphincter muscles and catheterisation to help flush out the bladder. Surgery may be necessary to remove urethral calculi once the patient is stable.*

**Respiratory distress**

Respiratory infection is usually bacterial (Pasturella, Borditella) and can be just upper respiratory tract (‘snuffles’) or a more serious pneumonia. As rabbit are obligate nose breathers even mild nasal obstruction may lead to severe dyspnoea. Other causes of respiratory distress include pulmonary abscesses, cardiomyopathy and neoplasia (thyoma, lymphoma or metastatic lung disease)

Clinical signs include anorexia, dyspnoea, cyanosis, inactivity and weight loss, unkempt coat, GIT stasis. Auscultation may reveal either increased crackles or wheezes or absent lung sounds in the case of a pulmonary abscess. A heart murmur can be heard if cardiac. Open mouth breathing is a poor prognostic sign.

If the rabbit is dyspnoeic check the nares are patent and place immediately in an oxygen cage or keep an oxygen supply to hand. Give antibiotics (Enrofloxacin, potentiated sulphas, penicillin), nebulise with
bronchodilators and acetylcysteine (mucolytics), fluid therapy and assisted feeding

**Neurological**

Rabbits commonly present with posterior paralysis, head tilt and torticollis. Seizures are less common but could occur with lead poisoning or hypoglycaemia in baby rabbits.

**Posterior paresis / paralysis**

The commonest causes are trauma or the protozoan parasite Encephalitozoan cuniculi. Fracture of the L6-7 vertebrae commonly occurs if a rabbit is dropped or jumps suddenly in fright. Treatment should be analgesics, gut protectants and supportive care.

**Head tilt (vestibular disease)**

Head tilt and torticollis is a common presenting condition in the rabbit. Common causes are otitis media (Pasturella multocida) or E. cuniculi causing inflammatory granuloma in the brain.

Diagnosis: Radiography of the tympanic bulla may show increased opacification if Pasturella, Serology and PCR for E. cuniculi, CT/ MRI scan useful if available

Treatment: Enrofloxacin or penicillin, Meclizine for nausea, fluid therapy and assisted feeding if the patient has been unable to eat or drink due either nausea or incoordination. Short acting steroids may help for E. cuniculi but can be immunosuppressive if Otitis media is present.

**Heat stress**

Rabbits are very sensitive to heat stroke and usually present in hot weather where shade, water or ventilation has been lacking. Precipitating factors include obesity, cardiovascular disease and thick hair coat.

Clinical signs: Weakness, ataxia, dehydration, disorientation and seizuring. Body temperature >41C

Treatment: Cool with intravenous fluids and wrap in wet towel, treat for shock, dehydration and provide oxygen. Stop cooling when temperature drops to 39.5C to avoid hypothermia. Monitory all parameters and renal function

**References:**

2. Lichtenberger M, Fluid Resuscitation and nutritional support in rabbits with gastric stasis or GIT obstruction Exotic DVM Volume 12, Issue 4, p13-17