

BEECROFT news

VETERINARY SPECIALIST & REFERRAL HOSPITAL

★ March 2023 ★

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goodbye
tiger,
hello
rabbit



BEECROFT

ANIMAL SPECIALIST & EMERGENCY HOSPITAL

DEDICATED TO ANIMALS

Happy new year!

From mobile surgery to a specialist-owned referral hospital and 24-hour emergency services, we thank our referring vets for their support.



Dear Colleagues,

The last two years may have been challenging for most of us with high demand for veterinary services, global staff shortages, coupled with rising equipment and rental costs. At Beecroft, it has been a tumultuous ride setting up a hospital with many obstacles along the way. We would never have made it to this point without your support and trust – we value our ongoing working relationship. Your feedback continues to help us support you and your clients better. We hope to continue reaching out to you personally throughout 2023.

We were pleased to see expansion of our internal medicine department in 2022. We now have four veterinarians dedicated to the exclusive practice of medicine including IM specialist Dr Anne-Claire Duchaussoy, and IM veterinarians Dr Lesley Teo, Dr Laura Lee, and Dr Romilly Ainsley.

A priority at Beecroft for 2023 will be outpatient imaging. We have refined the process of outpatient CTs and will bring you more details on the installation of our high field MRI this year. We have been able to decrease CT costs while improving availability. The online referral form has been updated and our goal is to make the process more transparent and easier to navigate.

We also hope to provide periodic updates in the form of newsletters like this one and we wish you, your family, your practice and clients/patients a healthy and successful 2023.

Thank you once again for your support thus far. We hope to continue working with you.

Warmest regards,
Dr Patrick Maguire
BVSC Hons 1, DACVS-SA
Beecroft Co-Founder
Small Animal Surgical Specialist



INTERVERTEBRAL DISC DISEASE (IVDD)



By Dr Foo Ce Xi, BVetMed(RVC)

IVDD is a spinal cord condition involving disc degeneration resulting in disc herniation. Compression of the spinal cord can result in pain and/or neurological deficits.

IVDD can be classified into 3 different types:

1. Hansen type I: Chondroid degeneration with calcification of the nucleus pulposus and weakening of the dorsal annulus fibrosus. This results in extrusion of the abnormal nucleus pulposus into the vertebrae canal leading to spinal cord damage. Type I is commonly seen in younger (~2-6 years old) small breed dogs; especially chondrodystrophic breeds (i.e. dachshund and French bulldogs). Type 1 is usually characterised by acute onset.
2. Hansen type II: Fibroid degeneration with progressive thickening of the dorsal annulus fibrosus which protrudes into the vertebral canal. Type II IVDD is more common in older (5 years old and older) non-chondrodystrophic, larger breed dogs. Symptoms may be chronic, and the client may report slow progression of clinical signs.
3. Type III: It is a low-volume-high-velocity form of herniation into the vertebrae canal that is typically non-compressive. Type III extrusion is more commonly seen in older chondrodystrophic dogs but can also be seen in any dog.

Dogs presented with IVDD will exhibit different clinical signs depending on the location of the lesion and the grade of the disease.

The clinical signs can range from spinal pain for grade 1 IVDD to loss of limb function and deep pain sensation for grade 5 IVDD. Details of the clinical signs and physical examination are listed in tables 1 and 2.

In general, dogs presented with clinical signs of IVDD should receive workup even if the grade of neurological impairment is low. Clinical examination and history alone cannot distinguish IVDD from other causes of spinal pathology. Computerised tomography with or without myelogram or magnetic resonance imaging can help confirm a diagnosis and, if indicated, aid in surgical planning. The decision to take a patient to surgery is not based on the extent of compression alone and will typically involve the severity of neurological impairment or pain, clinical history, and other general patient considerations. Although a recent review paper by Natasha J. Olby et al. (2020) did not show that duration from onset of non-ambulatory status to surgical decompression affects overall outcome of recovery, earlier surgical intervention was shown to speed up recovery duration. Hence, it is still advisable to get dogs with suspected spinal disease to be investigated as soon as possible.

Spinal Cord Segments	Proprioception (CPs/GPs)		Withdrawal Reflex		Patella reflex	Cutaneous Trunci reflex	Cranial Nerves (CNs)	Bladder Function
	Front limbs	Hind limbs	Front limbs	Hind limbs				
C1- C5	Absent or reduced (bilateral or ipsilateral to side of lesion)	Absent or reduced (bilateral or ipsilateral to side of lesion)	Present with normal to increased tone and reflexes	Present with normal to increased tone and reflexes	Present with normal to increased tone and reflexes	Present bilaterally	- Horner's syndrome bilateral or ipsilateral to lesion - Respiratory difficulties in more severe lesions	- Upper motor neuron bladder dysfunction (turgid, distended bladder that's difficult to express)
C6- T2	Absent or reduced (bilateral or ipsilateral to side of lesion)	Absent or reduced (bilateral or ipsilateral to side of lesion)	Absent or reduced	Present with normal to increased tone and reflexes	Present with normal to increase tone and reflexes	Absent or reduced bilaterally or ipsilateral to the lesion	- Horner's syndrome bilateral or ipsilateral to lesion - Respiratory difficulties in more severe lesions	- Upper motor neuron bladder dysfunction (turgid, distended bladder that's difficult to express)
T3- L3	Present	Absent or reduced (bilateral or ipsilateral to side of lesion)	Present with normal tone and reflexes	Present with normal to increased tone and reflexes	Present with normal to increased tone and reflexes	Absent or reduced bilaterally or ipsilateral to the lesion	No CNs deficits	- Upper motor neuron bladder dysfunction (turgid, distended bladder that's difficult to express)
L4- S2	Present	Absent or reduced (bilateral or ipsilateral to side of lesion)	Present with normal tone and reflexes	Absent or reduced	Absent or reduced	Present bilaterally	No CNs deficits	- Lower motor neuron bladder dysfunction (flaccid, distended bladder that's easy to express, dribbling of urine)

Table 1. Clinical signs and physical examination findings on dogs with IVDD affecting different spinal segments

Grades:	Presentation:	Percentage of recovery without surgery:	Percentage of recovery with surgery:
1	Spinal pain only, still ambulatory, no proprioceptive deficits or ataxia	70-100% (Levine et al. 2007; Davies and Sharp 1985; Hayashi et al. 2007)	~95% (Aikawa et al 2012)
2	Proprioceptive deficits, paretic and ataxia, still ambulatory	55-100% (Levine et al. 2007; Davies and Sharp 1985; Hayashi et al. 2007)	~95% (Aikawa et al 2012)
3a	Proprioceptive deficits, paretic and ataxic, unable to ambulate without support, motor function still present on affected limbs, able to bear weight on affected limbs with support	~79% (21-98%) (Langerhuus and Miles 2017)	90-96%, mean time to ambulation ~10 days (Langerhuus and Miles 2017)
3b	Proprioceptive deficits, paretic and ataxic, unable to ambulate without support, reduced motor function on affected limbs, unable to bear weight on affected limbs with support		
4a	Unable to ambulate even with support and no motor function on affected limbs	~62% (48-74%) (Langerhuus and Miles 2017)	88-96%, mean time to ambulation ~15 days (Langerhuus and Miles 2017)
4b	Unable to ambulate even with support and no motor function on affected limbs, no superficial pain sensation in toes of affected legs		
5	Absent proprioception, non-ambulatory and absent of deep pain sensation	~10% (3-28%) (Langerhuus and Miles 2017)	53-68%, mean time to ambulation ~58 days, full recovery may take months (~9months) (Langerhuus and Miles 2017)

Table 2. Grade 1-5 IVDD and prognosis with surgical and non surgical management

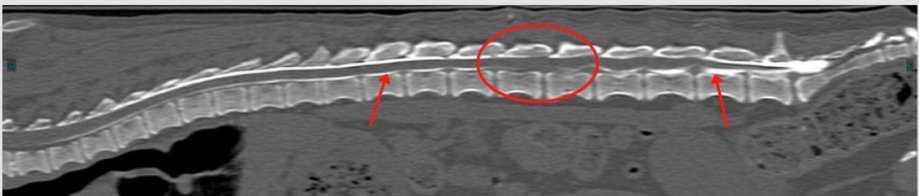


Figure 1.

Figure 1. shows a sagittal view of a CT image of the thoracolumbar spine after myelogram. The red arrows indicate radiopaque contrast passing through the subarachnoid space and the circled region shows the area of disc extrusion where there is a lack of contrast in the subarachnoid space at that region.

Figure 2. shows a transverse view of a CT image of the thoracolumbar spine after myelogram. The red arrow indicates the calcified disc material extruding into the spinal canal and causing compression of the spinal cord.

Figure 3. shows a sagittal view of a CT image of the cervical spine without contrast. The red arrow indicates the area of calcified disc material extruding into the spinal canal.

Figure 4. shows a transverse view of a CT image of the cervical spine without contrast. The red arrow indicates the area of calcified disc material extruding into the spinal canal.

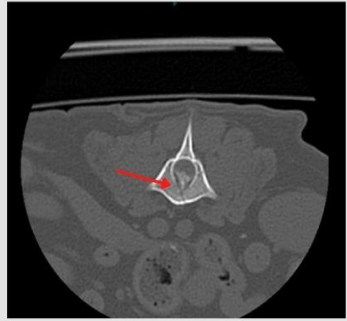


Figure 2.

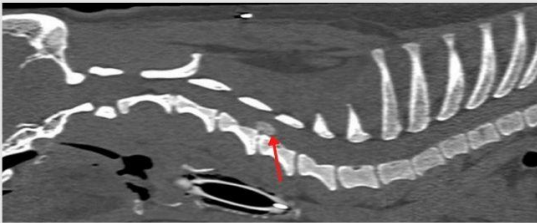


Figure 3.

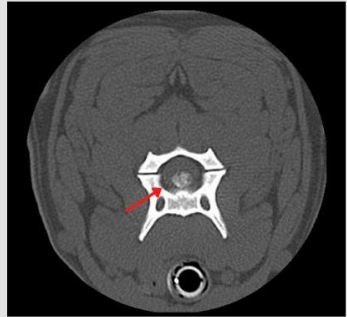


Figure 4.

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GASTROINTESTINAL DISEASE IN RABBITS



By Dr Athena Qianying Lim, BSc, BVMS (Murdoch)



Gastrointestinal (GI) disease comprises a complex of clinical signs and pathological disorders affecting the digestive tract of a rabbit. Some of these disorders includes GI hypomotility, dysbiosis, neoplasia, viral and parasitic, liver lobe torsion and aflatoxicosis. The common risk factors of GI disorders are low fibre diet, high carbohydrate or fat diet, stressful events, underlying disease, pain, decreased water intake and medications such as prolonged use of antibiotics causing dysbiosis.

GI ileus or stasis is a syndrome of reduced or absent GI motility, a common issue in companion pet rabbits. Rabbits are usually presented with hyporexia or anorexia, reduced or absent fecal output, lethargy and exhibit painful behaviours (teeth grinding, hunched position, isolated or less social, digging or scratching), and collapse can be seen in severe cases due to hypovolemic shock. GI ileus can be further categorised into non-obstructive and obstructive ileus, which clinical signs can appear similar. Hair ball/trichobezoar are common causes responsible for most of the obstructive cases but other causes include adhesions, strictures, impacted dry ingesta, intussusception, neoplasia, foreign body, and extraluminal compression (latter is rare) are reported too.

Abdominal palpation during physical examination is crucial in differentiating if ileus is suggestive of an obstruction such as gastric size, gastric content and if gas is present.

Diagnostics

Initial diagnostics tests including blood work (complete blood count/PCV with TP, blood glucose biochemistry) and radiographs are recommended.

Abdominal radiographs can assist to categorise GI hypomotility disorders into non-obstructive versus obstructive ileus (bloat/tympany). In a healthy rabbit, the gastric content on radiograph usually has a heterogenous soft tissue opacity with distribution of fine gas pockets. A small layer of gas around the ingesta might be seen as well (Figure 1 & 2).



Figure 1. Healthy rabbit abdominal radiograph lateral view



Figure 2. Healthy rabbit abdominal radiograph ventrolateral view.

In non-obstructive ileus, a moderate to marked distended ingesta-filled stomach is present. There may be signs of a small bowel dilation and/or gas pocket/cap in the gastric fundus (Figure 3 & 4). Cecal tympany or impaction may also be diagnosed on radiographs.

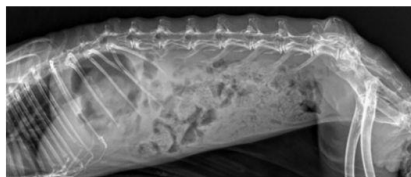


Figure 3. Rabbit with GI stasis abdominal radiograph lateral view. Gas pocket/cap seen in gastric fundus.



Figure 4. Rabbit with GI stasis abdominal radiograph ventrolateral view. Gas pocket/cap seen in gastric fundus.

In cases of GI obstruction, severe enlargement of the gastric and intestinal dilation is seen. The gastric is filled with fluid and may have a prominent gas pocket/cap which gives a "fried-egg" appearance. Measurements of the gastric axis may be performed to assist in differentiating ileus from obstructive cases. In cases of intestinal obstruction, the summed length and width of stomach is greater or equal to the length of the 1st lumbar vertebrae to the coxofemoral joint.

The gastric length and height were measured at 90° angles to each other, with length parallel to the 13th thoracic vertebra and height perpendicular (Figures 5 & 6). Another criteria that is suggestive of intestinal obstruction is where the caudal aspect of the gastric wall extends beyond 2nd lumbar vertebrae².

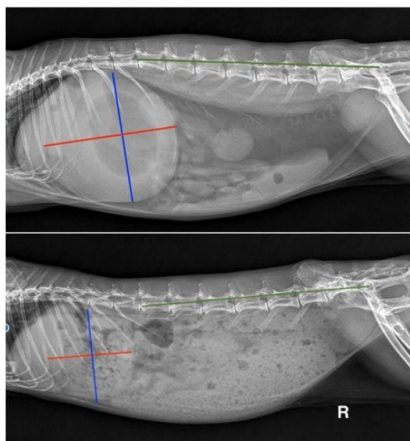


Figure 5 (top) & 6 (bottom). Comparison of bloated rabbit versus healthy rabbit. Summed length of gastric length (blue line) and width (red line) at 90° perpendicular to each other, is greater or equal to length between the cranial aspect of 1st lumbar vertebrae (L1) and coxofemoral joint (green line) in bloated rabbit. Source Denbenham et al., 2019

Complete blood count and biochemistry profile in a GI stasis rabbit is generally unremarkable other than indication of dehydration. On the other hand, azotemia and sometimes renal failure can be seen in acute obstruction. Blood glucose (BG) can be useful as a prognostic indicator and highly suggestive of obstruction. A recent study shows the comparison of a mean BG of 444.6mg/dl or 24.7mmol/l in rabbits with confirmed intestinal obstruction, and a mean BG of 153mg/dl or 8.5mmol/l in rabbits diagnosed with GI stasis. Severe hyperglycemia of >360mg/dl or >20mmol/l in conjunction with severe hyponatremia of <129 mEq/l carry a poor prognosis.

It is paramount to check liver enzymes on the biochemistry profile and recommend additional imaging, such as abdominal ultrasound if necessary, to rule out liver torsion. This disease is overrepresented in lop-eared rabbits which is a common breed in Singapore.

	Non-obstructive / GI stasis	Obstructive
Abdominal palpation	Moderate to large, doughy, dry solid content in stomach may be palpated. Variable amount of gas in small intestine and cecum.	Large, firm, fluid-filled, tympanic stomach
Gut sounds	Reduced to none	None
Clinical presentation	Bright/quiet, mild lethargy, may exhibit painful behaviour: teeth grinding, scratching/digging	Hunched position, teeth grinding, tachypnea, tachycardia, collapse secondary to hypovolemic shock, hyperthermia
Common clinical parameters	Evidence of dehydration Moderate to large, distended stomach filled with ingesta +/- gas cap in stomach +/- small intestinal dilation	Severe hyperglycemia >300mg/dl; hyponatremia Poor prognosis if hyperglycemia >560mg/dl, severe hyponatremia <129mEq/l Azotemia, sometimes renal failure; severely distended stomach, fluid +/- gas cap in stomach "fried egg" appearance +/- small intestinal dilation

Table 1. Summarised table to differentiate obstructive versus non-obstructive GI cases

Treatment

The fundamental approach in treating GI disorder includes rehydration, pain relief and supportive care. Depending on the hydration status of the patient, fluid therapy may vary from subcutaneous fluids to intravenous fluids. Pain relief includes the use of opioids such as buprenorphine or methadone and/or use of maropitant citrate to help with visceral pain. Other analgesia options also include lidocaine continuous rate infusion (CRI). The grimace pain scale, which assesses facial pain in rabbits, can be beneficial in determining if multi-modal analgesia approach is required.

The use of intestinal prokinetics, such as metoclopramide and cisapride, can be beneficial. In initial stages of a dehydrated patient with moderate to severe ileus, parental administration is preferred, followed by oral route administration.

Other treatments, such as use of lubricants (e.g., petroleum laxatives, mineral oil, hair ball paste), may aid with ileus. However, it is important to monitor stool consistency as soft stools or diarrhea may be observed.

In cases of severe GI hypomotility, hypovolemic shock can develop quickly. Fluid resuscitation can be done effectively by intravenous (IV) route. Initial shock fluid bolus can be given using isotonic crystalloid fluids and/or colloids e.g., hypertonic saline or hetastarch.

Aggressive fluid therapy at 2-3 times maintenance rate is often required, and the patient should always be reassessed for signs of fluid overloading during fluid therapy.

Decompression of the gastric using an orogastric or nasogastric tube should be attempted to reduce gastric size if extreme gastric tympany with water or gas is present. Sedation and/or general anaesthesia is required. Prognosis is grave when fluid collected is odorous, dark brown or black as this highly indicates stomach necrosis. One should take note *never* to perform percutaneous trocharization of the stomach due to the risk of stomach rupture and peritonitis.



A study in rabbits with gastric bloat indicated 89% of the cases were treated successfully with medical treatment with a mean treatment course of 3 days hence making medical treatment favourable⁷. However surgical intervention may be warranted if gastric decompression is unsuccessful.

Antibiotics such as metronidazole or penicillin G can be used in cases of dysbiosis, especially in *Clostridium* species overgrowth leading to development of enterotoxaemia.

Other forms of supportive care such as assisted feeding with critical care should be offered to anorexic or hyporexic patients to assist with peristaltic movements and to prevent development of hepatic lipidosis. However, if severe gastric dilation is present, it is important to reduce feeding volume/frequency and reassess the patient for obstruction.

The treatment for GI stasis should be continued until patient is no longer anorexic and passes stools. Rabbits should be offered a normal diet of hay, vegetables and restricted amount of pellets during the convalescent period.

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BEECROFT'S Veterinarians' Continuing Education (CE) Luncheon

Mark your calendar for 23rd April on Sunday for our next CE Luncheon!

We were honoured to have shared an afternoon with our vet partners at our first CE luncheon in November 2022. Education and training is one of the cornerstones of Beecroft's core values. We aim to stay abreast with the latest knowledge and innovations of veterinary medicine and we are thankful for the opportunity to share these with our fellow veterinary colleagues.

Please join us on 23rd April 2023 for our annual CE Luncheon. It is a Sunday, and we are happy to have you and your immediate family over for a bit of work, some play, and amazing food! The lecture hall is reserved for fellow vets during the presentations but there'll be time and space to socialise with loved ones afterwards. Details may be found on the back of this newsletter.

See you soon.



Dr Rina Maguire
BVSc Hons 1, Diplomate ABVP ECM
Beecroft Co-Founder
Exotic Companion Mammal Specialist



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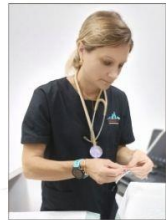
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UPDATES & announcements



INTERNAL MEDICINE DEPARTMENT

The internal medicine department is open for referrals six days a week. Our medicine specialist Dr Anne-Claire Duchaussoy, together with our team of IM veterinarians, Dr Lesley Teo, Dr Laura Lee and Dr Romilly Ainsley, focuses on slowing the progress of complex medical conditions, alleviating pain and helping the pets on their road to recovery. Our clinical services encompass a variety of treatments for both inpatient and outpatient care, including diagnostics such as ultrasound, CT, bronchoscopy, gastroscopy, and interventional radiology.



BEECROFT'S VETERINARIANS' CE LUNCHEON 2023

Our complimentary Continuing Education (CE) Luncheon will be held on 23rd April 2023, Sunday from 11.00am (for registration) to 3.00pm. Based on your feedback, we have specially tailored the topics to bring you more value. The luncheon will see halal-certified food with vegetarian and non-vegetarian dishes. Block your dates for a networking opportunity and RSVP to save a seat via the QR code. For more information and updates, join our Facebook event page via this link: <https://fb.me/e/546rMMh3j>



RSVP
Google form



OUTPATIENT IMAGING SERVICES

Outpatient imaging now operates three days a week. Referral form with file uploading for full patient history is available online. Fasting to be advised (typically 12 hours for dogs and cats). For pricing information, please contact Assistant Director for People and Organisation Dr Eric Yeoh at eric.yeoh@beecroft.com.sg



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