Feature Article

‘Don’t give up on the old guys’

Excision of large abdominal masses in four mature dogs: a short case series
Mister Pickles was there from the start. I remember that he’d sneak in and bite our toes when we were asleep.

At 8 years old we noticed he started getting sick.

We lost him 2 days before Liana’s 11th birthday, and I never even knew there was such a thing as cat AIDS.

Australia has one of the highest rates of Feline Immunodeficiency Virus (FIV) infection in the world, yet most cat owners still don’t know about FIV or feline AIDS. Likewise, very few know that an annual vaccination can help protect their pet against FIV infection.

**Awareness is a real problem.** Please advise your clients that a preventative option is available.
I hope that some of the articles in this C&T will stimulate our readers to branch out into more diverse fields. The third perspective has been provided by Andrea Harvey, who is one of our fellow DE tutors and another extremely energetic and enthusiastic supporter of the CVE. Andrea is a feline specialist and energetic Aine Seavers and her co-editor Stephen Page, who is a prolific author and is invited to speak all around the world, are also enthusiastic supporters of the CVE. Andrea Harvey is a feline specialist and is invited to speak all around the world, and is an enthusiastic supporter of the CVE. Andrea Harvey is a feline specialist and is invited to speak all around the world, and is an enthusiastic supporter of the CVE.

Once again I would like to encourage new authors to submit articles for the C&T, particularly those in rural and large animal medicine. The first is a short Perspective on small animal behaviour, written by Dr Adele Lloyd, Dr Catherine Tiplady, Dr Greg Cronin, Dr Laura Brockley, Dr Andrew Mayston, Dr Jordan and Glenn Browning. Steve also had some catching up to do in first year, because the subjects he chose for the HSC were not ideal preparation for doing the RCS program. But Steve was good at playing catch up. It was no doubt a struggle, making good at playing catch up. It was no doubt a struggle, making.

Steve came from a working class background. His father ran a factory whilst his mum ran the household. Unfortunately, his Dad, a smoker, died of cancer this week before Steve attempted the Higher School Certificate. As a consequence, Steve's preparations for the 1978 HSC were seriously disrupted and principally consisted of reading Dickens 'Great Expectations' during Stuvar. Never the less, Steve hreezed into the 'vet School' at the bottom of the hill at University Sydney. First year was a culture shock for Steve, as he wasn't used to mixing with 'posh' kids from the affluent North shore suburbs and the privileged high schools in the city and the bash. Steve took me to where he really never got the vibe of his classmates at University. The last topic was the first report of this syndrome, and published unusually widely and well for the resident. Steve wrote interesting papers about treatment of immune-mediated haemolytic anaemia using dexamethasone, heparin, and the seminal paper about haemolytic uraemic syndrome. The last topic was the first report of this syndrome, and published unusually widely and well for the resident. Steve wrote interesting papers about treatment of immune-mediated haemolytic anaemia using dexamethasone, heparin, and the seminal paper about haemolytic uraemic syndrome. The last topic was the first report of this syndrome, and published unusually widely and well for the resident. Steve wrote interesting papers about treatment of immune-mediated haemolytic anaemia using dexamethasone, heparin, and the seminal paper about haemolytic uraemic syndrome. The last topic was the first report of this syndrome, and published unusually widely and well for the resident. Steve wrote interesting papers about treatment of immune-mediated haemolytic anaemia using dexamethasone, heparin, and the seminal paper about haemolytic uraemic syndrome.

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26th July – Sepsis for the Cancer Patient with Maureen Cooper and Laura Brockley

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5th June – 7 Steps to Attaining Financial Independence with Kevin Smith
3rd July – Managing Cash and Stock Flow with Anne Lenicemi and Paolo Lenicemi
Register now: www.cve.edu.au/webinars

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Hugh White BVSc MVSc MACVSc
Director
Feline Medicine & Surgery Proc No. 397

13-17th Feb 2012
Gary Norsworthy, Jane Sykes, Heide Klippel, Linda J. Vogelnest, Paul Canfield, Genoveva Allen, CR Houttet, Richard Mah, Mark Billson & Sarina Zaki

Venue: Table of Contents

Call (02) 9351 7979.

Different people do CPD in different ways. Steve has a knack of bringing together complex and challenging material, distilling the key concepts, and presenting them in a clear, incisive manner. This means he will often tackle challenging topics, and make them accessible to a general audience. He is not only an informative speaker, but an inspirational speaker, and there is no doubt many of the next generation of clinicians will have been strongly influenced by Steve's talks and lectures, either at UI or the University of Melbourne, or through the wider veterinary community. His most recent challenge is to Chair the Australian Infectious Diseases Advisory Panel.

Steve left Melbourne University at the end of 2009, and now works in private referral practice at Advanced VetCare. Whilst this has greatly benefitted the Melbourne veterinary profession, it is a tremendous blow for the University of Melbourne which has lost one of the most knowledgeable and reactive academics in veterinary science. His most recent challenge is to Chair the Australian Infectious Diseases Advisory Panel.

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Disease investigation

C&T No. 5225

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Sudden death

On the 28th of May, a farmer contacted Berri Vet Clinic after discovering about 40 dead ewe hoggets in his paddock. Berri Vets notified Jeremy Rogers as they were unable to perform an investigation.

Mob History

The mob consisted of about 300 11-month-old ewe hoggets in reasonable condition. The hoggets were brought into the yards on Monday 24th May to be shorn. Due to heavy rains on the Monday night the sheep were held in yards with hay and hydroponic sprouted barley until the Wednesday so they could dry out prior to shearing. After shearing on the Thursday, they were backlined with Exstinosad and returned to a paddock with a reasonable amount of green pick. The hoggets were up-to-date with vaccinations, having received a 3-in-1 vaccination at date with vaccinations, having received a 3-in-1 vaccination at

Paddock conditions

The hoggets had previously been on Lucerne with access to hay and the sprouted fodder.

Clinical symptoms

The owner reported some hoggets had been scouring since the Monday afternoon. On 28th of May we advised the owner to:

• Minimise stress by not driving the sheep
• Reduce feed intake by removing the sprouted grain and feeding hay
• Minimise stress by not driving the sheep

Further advice was to provide hay to sheep that had been deprived of food for 24 hours or more and released into areas where the plant is found in abundance (Everist et al). In South Australia most reported cases of soursob poisoning of sheep occur between December and May (Kessell).

Results

The first results available were serum biochemistry that showed hypocalcaemia and high levels of potassium and phosphate, indicating renal disease. These changes are not characteristic of enterotoxaemia, but this condition remained a possibility.

Further results, communicated verbally and later confirmed, indicated nephrosis, with oxalate crystals seen in renal tubules.

A final diagnosis of oxalate toxicity was made on 4th June 2010.

Discussion

Oxalate toxicity in sheep may arise from a number of sources, but the most common of these is Soursob (Oxalis pes-caprae), pigweed (Portulaca spp) or Sorrel (R. acetosella).

Of the species of plants associated with oxalate poisoning, soursob is the most common, as other species are less palatable, and less abundant. Most acute cases occur in sheep deprived of food for 24 hours or more and released into areas where the plant is found in abundance (Everist et al). In South Australia most reported cases of soursob poisoning of sheep occur between December and May (Kessell).

After discussing the results with the owner, it was discovered that as the sheep were driven back to the paddock after shearing they had eaten soursob on the side of the road. There were no soursobs visible in the paddock where the sheep were grazing, or the shearing shed yards!

Advice to Owner

On 28th of May we advised the owner to:

• Reduce feed intake by removing the sprouted grain and feeding hay
• Minimise stress by not driving the sheep

The owner restricted the grain intake to the hoggets lambs. A further 10 hoggets died after our visit; however, these were the ones we had seen recumbent on our visit. The owner has not reported any further losses.

Later advice was to provide hay to sheep that had been kept off food for shearing, and to not allow roadside grazing when moving sheep along roadways.

Amelia Bartlett
Animal Health Officer
PIRSA Biosecurity – Animal Health, Murray Bridge

Jeremy Rogers
Senior Veterinary Officer
PIRSA Biosecurity – Animal Health, Wagga Wagga

References

Kessell, Alan. Globalis Veterinary Pathologist (pers comm.) now at Charles Sturt University, Wagga Wagga.

Poisonous Plants of Australia, Selwyn L. Everist 1974

Figure 1. Soursob (Oxalis pes-caprae).

Figure 2. Enlarged pale, kidneys.

Figure 3. Very fine white streaks in kidney.
Amphibians

C&T No. 5226

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Be Aware of:-
• Reactions to skin or eye irritation from their secretions (some toxic).
• Potential (but rare) zoonotic transmission from frogs to humans or the reverse.
• Potential disease transmission when relocated and when in hospital – do not house frogs together.
• Delicate skin – keep handling to a minimum.
• Ectothermic – body temperature is influenced by their surroundings.
• Escape artists – they can get skin abrasions from attempting to escape.

Handling
• Always wear moistened disposable gloves when handling frogs or toads (preferably powder free).
• Smaller/active species can be placed in a rinsed, chemical free container or snap lock bag to assist with your assessment or when taking radiographs.
• Wet paper towel can also assist when handling.

Housing the sick or injured amphibian
• Preferred enclosure temperature = 26°C.
• Small plastic container (avoid any containers that may have been washed in chemicals) with secure and vented lid. Cling Wrap® is used to stop skin damage from rubbing when trying to escape.

Assessment under gaseous anaesthetic
• Place mask over the entire frog or place in an anaesthetic box at 5% induction. Breathing holding will inhibit this procedure and will vary induction time, which can take up to 5 – 10 minutes before the frog is able to be intubated.
• Maintain on Isoflurane at 1.5 – 2% with an oxygen flow rate of 1 L/min. An alternative method with a rapid onset of anaesthesia due to a higher concentration of Isoflurane, is to use an induction chamber (Figure 6) with soaked swabs (3 cotton wool balls soaked in Isoflurane). It is imperative that there is no direct contact; this can be achieved with a sealed container that has 2 chambers with air holes in between. The frog is placed in the top chamber and is removed when an adequate plane of anaesthesia is achieved and the frog can be intubated.

Intubation
• Uncuffed endotracheal tube or catheter tip.
• Insert into the glottis located on the tongue (no local anaesthetic used). Avoid or limit the use of tape when tying in to reduce damage to the skin.

Recovery
• Snap an ambu bag when on oxygen therapy and slowly dizzlo warm fluid solution (4 part Hartmann’s Solution / 1 part 5% glucose) over its body to aid in recovery.

Emergency diet
• Amphibians can go days with no food if hydrated (or being given fluids); this is not the case if severely emaciated.
• A few appropriately sized LIVE insects like crickets, wood cockroaches, mealworms can be offered in the enclosure and replaced daily.
• If, after several days, the frog does not eat the supply of food offered you will need to try and hand feed using a pair of tweezers and moving the live insect diagonally around near its face (this can take up to 10 minutes). Still offer a few live insects after this process as it may self feed after stimulating its appetite.
• If weak and emaciated after hydrating, you will need to force feed using a spoon or credit card to open the mouth; Careful attention must be taken not to damage this sensitive area.

Natural diet
• Live insects; Larger frogs will eat small mice, lizards and snakes.
• Both nocturnal and diurnal species.

Figure 1. Cupping technique – restrain the frog by enclosing it into your grasp without squeezing.

Figure 2. Thigh hold technique – grasp just above the knee joint.

Figure 3. A large (non toxic, native) leaf provides a ‘hide’

Figure 4. Cling Wrap® assists to prevent skin damage during escape attempt; make a few small holes for air.

Figure 5. Green Tree Frog post recovery

Figure 6. Frog induction chamber used at the Currimundi Wildlife Sanctuary Hospital.

Fluid Therapy (absorption preferred route)
• Mix 4 part Hartmann’s Solution / 1 part 5% glucose and soak for 20 minutes 1 – 2 times daily until rehydrated.

Preferred routes
• Absorption
• Subcutaneous – administered over the mid region
• Intramuscular – administered in the upper leg region
• Intravenous – under the tongue or mid line ventral vein (very difficult in small species)

Euthanasia methods
Injection of sodium pentobarbitone can be administered either by intravenous, intracardiac or intracoelomic routes.
• Intravenous, intracardiac or intracoelomic routes.

Authors’ views are not necessarily those of the CVE

Recent progress on the issue of pet food safety in Australia

C&T No. 5227

Linda Fleeman is an international expert on canine diabetes and has published numerous papers on the clinical management of diabetes in dogs and cats. Linda has now left university practice to establish Animal Diabetes Australia, a clinical service specifically for diabetic dogs and cats at the Boronia Veterinary Clinic in Melbourne.

An Australian Standard for the Manufacturing and Marketing of Pet Food

There has been substantial progress over the last 2 years on the issue of pet food safety in Australia. An Australian Standard for the Manufacturing and Marketing of Pet Food has been implemented. It is intended to protect against potential hazards to dog and cat health that might be associated with pet food. The Australian Standard applies to production of manufactured pet foods sold in Australia. It covers production of pet food from sourcing of ingredients to storage, processing and heat treatments, packing, labelling, and storage of products. It also includes instructions for the uniform application of information provided on labels.

This represents an important advance for the pet food industry in Australia. Compliance with the Standard is voluntary, as is typical for most pet food regulation in the world. Members of the Pet Food Industry Association of Australia (PFIAA) may now receive accreditation that certifies compliance with the Australian Standard for the Manufacturing and Marketing of Pet Food. This is achieved by a process of third party audit.

Importantly, the Australian Standard for the Manufacturing and Marketing of Pet Food addresses the issue of sulphite preservatives in pet food, which have repeatedly been shown to cause thiamine deficiency in Australian pets. All pet foods and Marketing of Pet Food addresses the issue of sulphite preservatives in pet food, which have repeatedly been shown to cause thiamine deficiency in Australian pets. All pet foods

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Importantly, the Australian Standard for the Manufacturing and Marketing of Pet Food addresses the issue of sulphite preservatives in pet food, which have repeatedly been shown to cause thiamine deficiency in Australian pets. All pet foods including treats that comply with the Australian Standard must have sufficient thiamine according to AAFCO Official Publication guidelines. This means that sulphite preservatives are unlikely to be included in the products, but if they are used, their presence must be noted on the label and the manufacturer will be required to demonstrate that there is sufficient thiamine for the shelf-life of the product.
‘Pet meat’ is excluded from the Australian Standard for the Manufacturing and Marketing of Pet Food

The definition of ‘Pet Food’ in the Australian Standard is, ‘Food for dogs or cats including all types of dry, semi-moist, retorted, pasteurised and other food manufactured for consumption by domesticated dogs or cats but excluding pet meat’. ‘Pet meat’ is raw or unprocessed meat and comprises a substantial proportion of the pet food market in Australia. There are historical reasons for the distinction between ‘pet food’ and ‘pet meat’ in Australia which have resulted in different regulation for each.

The current regulation of the pet meat industry does not adequately protect dogs and cats consuming pet meat products from adverse health events such as thiamine deficiency caused by consumption of sulphite preservatives. There is currently no industry body representing pet meat producers and there is no requirement for improved education of, and communication with, pet meat producers about the dangers of using sulphite preservatives in pet meat. These issues could be addressed by improved regulation of the pet meat industry and one solution is that pet meat producers be encouraged to become members of the PFIAA.

Pet Food Adverse Event System of Tracking (PetFAST) is here

An efficient and effective system for reporting pet food related adverse events is in place as well overdue. Pet-food related disease has been occurring for a long time in Australia and the number of documented cases has been increasing in recent times, both in this country and overseas. Significant numbers of dogs and cats can be affected by these diseases. Pets may also act as sentinel populations for identification of infections toxic to humans as individual foods tend to comprise a greater proportion of the diets of dogs and cats than is typical for human diets.

PetFAST is a new veterinary reporting system to track all suspected pet food adverse event cases in Australia, and to identify possible patterns that might point to the cause. PetFAST is a joint initiative of the Australian Veterinary Association (AVA) and the Pet Food Industry Association of Australia (PFIAA). Access to the reporting system is restricted to veterinarians and so pet owners are advised to consult with their veterinarian if they suspect that their pet has been adversely affected by pet food. Importantly, reports of adverse events relating to pet meat as well as pet food and treats will be monitored.

PetFAST can be accessed via the AVA website: www.ava.com.au/petfast. It is not necessary to be an AVA member to lodge a report.

Veterinarians report details of suspected adverse events associated with pet food or treats for dogs and cats, while the AVA and the PFIAA monitor these reports for similarities that may indicate a large scale. If 3 or more similar incidents are received, a joint committee of the AVA and PFIAA will meet promptly to discuss what action should be taken. For those with an interest in epidemiology, here is some scientific information on PetFAST:

PetFAST is a surveillance system to allow more rapid identification of outbreaks of adverse events in Australian dogs or cats where there is reasonable suspicion of a pet food, treat, or pet meat product contributing to the cause. It therefore aims to provide an alert system that will minimise future cases occurring.

PetFAST is an ideal mechanism for detection of novel, serious, clinical conditions that have a high incidence. An important limitation of this system is that there is a high rate of false negatives is expected because not all adverse events will be reported. It is therefore not designed to monitor the incidence or prevalence of adverse events in a population and so cannot provide proof of whether or not adverse events are occurring. It is also not designed to demonstrate causality.

Checklist for veterinarians dealing with an adverse event relating to pet food

1. Contact the manufacturer
   - Record the date, time, and contact person and details of diagnosis
   - It can be useful to confirm details of the conversation by email

2. Collect a detailed diet history
   - In as much detail as possible, record all foods that the dog or cat ate for at least 1 week prior to the adverse event
   - Include all treats, supplements, and human food in addition to pet food
   - Record all possible access to other food and water sources.
   - For example, cats with access to outdoors may hunt or obtain food from neighbours. Dogs will frequently eat food intended for other household pets.
   - Pets may consume various foods fed in the house with this product
   - Total number of animals in the house showing clinical signs
   - Were there any other changes at the same time that could be the cause of the pet’s problem?

3. Document product consumption
   - Dates product or products were fed
   - Consumption and palatability history
   - Time of onset of clinical signs
   - Date of opening or first use of bag? e.g. Was the bag left open for some time?
   - If this is the first time the pet tried the product, did the owner do a gradual transition over a period of time (gastric upsets can result if the pet changes suddenly from one diet to another)

4. Document product name, type of product, and manufacturing information
   - Retain all packaging
   - Identify date labelling – use by, best before or packing dates
   - Retain purchase receipts
   - How was the product stored? Original bag, container, other?
   - Where was the product stored? Garage, kitchen, damp environment?
   - Did the owner notice any problems or differences (e.g. different smell, look, mould etc) when opening the bag?

5. Maintain detailed medical records of affected animals
   - Clearly a clinical course, diagnostic tests, treatments, and outcome
   - Maintain a unique identification number for each patient
   - Obtain written client authorisation prior to release of medical information
   - When possible, retain serum and urine samples for further testing

6. Submit all deceased animals for necropsy or collect appropriate samples
   - When possible, retain serum and tissue samples for further testing
   - Store tissue samples in formalin as well as in a freezer
   - Consult with personnel at the diagnostic laboratory for required quantity of tissues, tissue preparation, storage conditions, and submission of samples

7. Notify clients of potential exposure to contaminated foods or product recalls
   - Recommend that clients discontinue feeding the food they suspect is associated with the adverse event

8. Obtain and retain food samples for analysis
   - Retain 4 cans, 1 kg of dry food or 1 kg fresh food when possible
   - Store at room temperature in airtight bags or freeze if product is fresh

9. If food samples are submitted to a diagnostic laboratory or to the manufacturer for analysis, retain a minimum of 50% of above quantity as a sample. In case follow-up analysis is required

W.IN.E.R.

Essay on urinary Kuching (‘cat’ in Malay) cases

Kuching is a small city (population slightly more than 0.5 million) in East Malaysia. Kuching means ‘cat’ in the Malay language and we are all cat lovers here. Everywhere in Kuching, you will see cat statues, cat pictures etc. Unfortunately, for all their ‘revered status’, cats in Kuching do not generally have a very ‘high-class’ lifestyle as we are still in the tropics. Unlike Hong Kong where many people (and their cats) live in apartments, most people in Kuching live on landed properties. Even if it’s a small house, there will be some sort of small garden attached to it. Most cats here are indoor-outdoor cats, free-roaming and generally galvanizing around the neighbourhood, returning home to sleep and eat.

Quite a few people also keep more cats than they can actually afford to. About 60% of our cats are not vaccinated and do not get regular veterinary care which is why we have a high incidence of preventable infectious disease here. It is not uncommon to see a basket of 4 to 5 cats presented to our clinic at the same time by the same owner with feline viral upper respiratory disease, feline parovirus, sarcoptic mange, notoedric mange, dermatophytosis etc. The weather in Kuching is hot and humid. It is one of the wettest places in the world (average annual rainfall of 4200mm). There are only 2 seasons here; the wet-seasoning season and the dry season. During the wet season, there’s hardly any case of urinary tract disease; presumably the cats are getting plenty of rainwater to drink everybody. In the middle of the year (for about 3 months) when we have the dry season, that is when we will get our ‘outbreak’ of obstructed cats. It is not uncommon to get several cases a week; in fact, once we had 3 cases in 1 day. Most cats tend to drink on diets of fish (bred or boiled) and rice with some combination of commercial food (mostly dry food). Dry food is preferred by owners here because it is generally more palatable to the cats, easier to keep and more affordable than canned foods.

Most of the urethral obstruction we see here is caused by urethral plug with struvite crystals embedded in it. Actually, I have never seen a case with calculi before even with the female cats. As for bacterial cystitis, I must admit that it is mostly a presumptive diagnosis...
Intravenous lipid therapy for the treatment of toxicities

C&T No. 5229
Traci McAlaees
Tutor of CVE’s Emergency Medicine IE course with Sandra Forsyth
www.cve.edu.au/deemergencymedicine

Lipids are used as a component of parenteral nutrition in humans and animals. In studies in bipivacaine toxicity in the late 1980s, anaesthesiologists researchers from the US noted that rats receiving lipid infusions required a far larger dose to induce asystole than controls. This observation triggered several animal studies on the use of lipids in the treatment of lipophilic toxins such as local anaesthetics, verapamil and propafenol.

How does ILE work in the treatment of toxicities?

The mechanism of action of IV lipids in the treatment of fat-soluble toxins is not fully understood. The 2 that are most likely to be important in the treatment of small animal toxicities are:

- The IV lipid acts as a ‘lipid sink’ into which lipophilic agents are drawn, reducing the availability of the toxin to distribute across the blood brain barrier, into nerves etc.

- The IV lipid contains free fatty acids which are the preferred substrate of cardiac myocytes. Drugs that have cardiovascular effects interfere with fatty acid transport in the myocyte so providing IV fatty acids may augment cardiac muscle function by increasing mitochondrial ATP production.

Recommendations in human medicine are that intravenous lipid emulsion (ILE) therapy be used for overdose with lipophilic cardiotoxic drugs although that has recently been expanded to include ‘judicious use’ in lipophilic drugs that are not cardiotoxic such as cyclic antidepressants.

How is ILE being used in veterinary medicine for the treatment of toxicities?

There are published reports in the veterinary literature on the clinical use of ILE for the treatment of toxicities: moxidectin toxicity in a puppy and lidocaine overdose in a cat.1 Accidental reports on ILE to treat various toxicities including Baclofen (a GABA agonist), permethrin, avermectin parasiticides and calcium channel blockers are increasing on sites such as the VN message boards. Two talks on this topic were given at the 2011 International Veterinary Emergency and Critical Care Symposium (VECCS). A review of the use of IV lipids in small animal toxicities has also recently been published.2 A multi-centre, randomised controlled trial on the treatment of cats with pertrimethoxyn is currently underway in Australia.3 Animal Accident and Emergency is one of the practices around the country actively involved in recruiting cases for this study. Interestingly, a report published on the use of ILE to treat ivermectin toxicosis in 3 dogs homozgyous for the ABOG-1-1a gene mutation (previously known as the MDR, multi-drug resistant gene) did not show any shortening of the effect of the toxicity or improvement in clinical signs.4 It is possible that in these dogs, the gene mutation allows such a high level of ivermectin to accumulate in brain tissue that the lipid sink effect is ineffective in lowering the brain level to below the clinical threshold.

What risks are there?

Adverse effects to ILE therapy are usually associated with long-term use or use in critically ill patients. Reports of reactions to ILE therapy for toxicities in animals are rare and anecdotal but could include fluid overload (extra caution is warranted in cats), hypersensitivity reactions, pancreatitis and lipaemia.

How do I administer ILE?

Most studies and case reports use Intralipid 20% (Baxter) and dose recommendations are based on this formulation. Intralipid is readily available from wholesalers and has a shelf life of up to 2 years. A 500mL bottle (single patient use) wholesales for around $50 at the time of writing.

Two dose recommendations are commonly cited for the treatment of animal toxicities:

- 1.5 mL/kg over 5–15 minutes then 0.25 mL/kg/min (+ 15 mL/kg/hr) for 1–2 hours. Repeat in 6 hours if clinically indicated and the serum is not lipaemic.

- 1.5mL/kg/hour for up to an hour – stop if clinical signs resolve sooner. Repeat in 6 hours if clinically indicated and the serum is not lipaemic.5 This is the dose regime we use at my clinic.

Should I use ILE in my patients?

Currently, I think ILE therapy is indicated in the treatment of lipophilic drug overdoses or toxicities when standard decontamination and supportive care therapies have not resulted in an improvement in the clinical status of the animal.

I definitely recommend that you discuss treatment options with the owner. You need to explain to them that this is off-label use, detail the potential risks associated with treatment and let them know that while ILE therapy is not yet proven to work, we think it probably does.

I think the potential for ILE therapy to shorten hospital stays in cats treated for permethrin toxicity could be life-saving. In my experience, many of these cats are euthanased due to costs of ongoing hospital treatment, so shortening stays by 24 – 48 hours may be the difference between life and a financially-driven euthanasia decision.

Lipophilic toxicities seen in small animal practice include:
- Local anaesthetics
- Permethrin
- Moxidectin, ivermectin
- Antidepressants
- Antihistamines
- Analgesics
- Dopamine agonists

In general, any topical treatment or medication that crosses the blood brain barrier will be fat soluble or lipophilic.

References

2. Calhoun-Eliott F, Bechtel E, O’Brien T. Intravenous lipid emulsion in a cat with a multi-drug resistant (previously known as the MDR, multi-drug resistant gene) did not show any shortening of the effect of the toxicity or improvement in clinical signs.
3. Animal Accident and Emergency is one of the practices around the country actively involved in recruiting cases for this study.
4. A comprehensive yet practical and concise guide for the small animal practitioner. The book is readily available in a hard copy version, or you can purchase the electronic version.
5. Dr R Peacock, Murdoch University

Nasal hyperkeratosis treatment regime

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Hyperkeratosis a daily presentation in Ireland in the Kerry blue dog - if you get them early then regular Vaselinke keeps the frowning down. Move to Lactacine or Karoxil if Vaselinke does not hold the nose or the patient is presented in a later stage. If erythema and pain present – use Panalog.

The frowning can be so severe in Kerry Blues that you have to trim them with a blade. The Labradors here I have seen have shown mild frowning so we started the Vaselinke – they have not re-presented – might not mean anything but I have heard nothing, not even a request for the history. Avoid plastic bowls, toys and footballs etc or anything that can be held in the mouth and shaken and which abrades this area.

The fronding can be so severe in Kerry Blues that you have to trim them with a blade. The Labradors here I have seen have shown mild frowning so we started the Vaselinke – they have not re-presented – might not mean anything but I have heard nothing, not even a request for the history. Avoid plastic bowls, toys and footballs etc or anything that can be held in the mouth and shaken and which abrades this area.

A Practical Guide to Basic Bone Plating

A comprehensive yet practical and concise guide for the veterinary embarking on plate and screw fixation for fracture management. For the beginner, there is useful information on equipment and its application as well as pre-operative planning. For the experienced, this DVD shows how and why this technique requires adherence to stringent guidelines to achieve success. Superior quality images have been selected to complement the instructions. Produced March 2011 by Simon Howland and Wing Tip Wong. (Duration: 54 mins) Go to www.vetbookshop.com to read the Product Guide and obtain price details.
Canine separation-related distress disorder

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Note: I am currently undertaking a Masters research project on the genetic basis of canine SRD. If you know of any cases of SRD affected or control Labs or Golden Retrievers who would be interested, please pass on my contact details.

Figure 1. I miss my owner!

Dogs affected by separation-related distress disorder (SRD) show signs of distress in the absence of a significant family member. This is usually an owner but occasionally may be a canine companion. These signs usually begin within 5-30 minutes of departure but some dogs recognise departure cues such as owner dressing in work clothes. The absence may be actual or virtual, with some dogs showing distress when they are prevented access to the owner (e.g. kept outside while the owner is inside the house). SRD is a broad term encompassing separation anxiety and includes cases where behaviour is more suggestive of phobias, panic attacks and even frustration. SRD is a very common behavioural condition seen in our pet dogs, but unfortunately one that can severely impact the bond between dog and owner.

Diagnosis

The most common signs seen with SRD are vocalisation, destructive behaviour (especially direct and indirect, and as a logical extrapolation, hyposthenuria and isosthenuria, whilst over-distension of the urinary bladder particularly can be useful in teaching relaxation. Other cues such as relaxing aromas, security blankets, owner’s clothes etc can become associated with relaxation. Dog-appeasing behaviour can also contribute to assist in reducing anxiety in some dogs. This also seems to be the treatment with the lowest owner compliance.

D. Counter-conditioning is very important – teaching the dog to relax on command. Initially this is done in the presence of the owner and gradually generalised to the owner’s absence. Massage in particular can be useful in teaching relaxation. Other cues such as relaxing aromas, security blankets, owner’s clothes etc can become associated with relaxation. Dog-appeasing behaviour can also contribute to assist in reducing anxiety. Care must be taken to ensure these cues don’t just become departure cues.

E. Systematic desensitisation of owner’s absence is the next stage, starting by exposing your dog to the sights, sounds and smells of departure cues can reduce pre-departure anxiety. For example, desensitising dogs to their owners picking up keys or dressing for work, can be useful. These departure cues should be avoided for genuine departures in the meantime. It is a treatment that has to be monitored carefully as the reduction in predictability can increase anxiety in some dogs. This also seems to be the treatment with the lowest owner compliance.

F. To minimise the impact of the owner’s presence, departures and arrivals should remain fairly low key.

G. Another pet will occasionally provide enough companionship to keep the distressed dog quiet, but certainly not always. By all means, owners can acquire another pet if they want another pet but don’t do it simply to solve the behaviour problem.

H. Confining the dog in a crate can limit its destructive behaviour. However, doing this to an animal that is already behaving quite badly is probably not advisable. In any case, confining the dog is only a partial solution and can exacerbate  Other pets have injured themselves attempting to

Treatment:

The best success rates have been achieved with a combination of behaviour modification and pharmacological treatment. Referral to a vet experienced in treating behaviour cases is always an option that should be considered.

Below are the most common treatments of separation distress:

A. The first priority is to avoid punishment. Punishment will never be effective because it is occurring much later than any destructive behaviour and it may exacerbate anxiety. The use of electric anti-barking collars is also not recommended for this reason. Owner education is vital, helping owners to understand that their dog is not behaving out of spite.

B. Leaving the television or radio on or use of a dog sitter or dog minding services may help some dogs. This is more useful for the dogs that are distressed by being left alone, rather than the absence of a particular person.

C. In some cases, reducing the effectiveness and reliability of departure cues can reduce pre-departure anxiety. For example, dependable departure cues that are picked up within a few seconds or dressing for work, can be useful. These departure cues should be avoided for genuine departures in the meantime. It is a treatment that has to be monitored carefully as the reduction in predictability can increase anxiety in some dogs. This also seems to be the treatment with the lowest owner compliance.

D. Counter-conditioning is very important – teaching the dog to relax on command. Initially this is done in the presence of the owner and gradually generalised to the owner’s absence. Massage in particular can be useful in teaching relaxation. Other cues such as relaxing aromas, security blankets, owner’s clothes etc can become associated with relaxation. Dog-appeasing behaviour can also contribute to assist in reducing anxiety. Care must be taken to ensure these cues don’t just become departure cues.

E. Systematic desensitisation of owner’s absence is the next stage, starting by exposing your dog to the sights, sounds and smells of departure.
Nutritional secondary hyperparathyroidism

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We thought this condition only occurred in textbooks…

Clinical case:

‘Pip’, DSH F (E) presented at the age of 6 months with a history of being less willing to walk and play over the previous 3 days. The owner reported the kitten may have fallen from a high area about 8 weeks prior to visit. The kitten was still eating well. However, the owner noted that she was straining to pass stools.

Clinical examination revealed the kitten was hunched and sensitive around the caudal spine, and full extension of the hips produced pain as a result of calicivirus. The kitten was admitted for further investigation and was given buprenorphine.

At 6 weeks after diagnosis the owner reported the kitten was making good progress in weight. The kitten was able to move around normally and was not at all hissy – A good start to 2012!

Nutritional Secondary Hyperparathyroidism (NSH) discussion

NSH is a disease that is caused by feeding a calcium deficient diet containing excess phosphate. Juvenile growing animals tend to be susceptible to this disease due to their minimal calcium reserves and increased demand for bone growth.

Calcium is an essential requirement for the body system, and affects several bodily functions, including the effects on the cardiac system, nervous system and bone formation. In instances of chronic calcium deficient dietary intake, compensation occurs by mechanisms involving the parathyroid hormone (PTH). These affects include increasing the efficacy of intestinal absorption, decreasing renal excretion and mobilising a major calcium storage in the body via bone resorption.

Regulation of intestinal resorption via Vitamin D.

PTH causes a conversion of 25-hydroxy-Vitamin D in the proximal tubules of the kidneys to its active form 1,25-dihydroxycholecalciferol. This hormone affects the intestinal epithelial wall by increasing the production of a calcium-binding protein (calbindin).

Activation of calcium transport between extracellular fluid and bone.

There are 2 phases involved with bone resorption activated by PTH. One is the fast phase, which occurs within minutes and increases progressively for several hours, where mainly osteoclasts and some osteoblasts are activated. Next is the slow phase, which requires a longer period of time, from weeks to months, to achieve full development. However, this phase plays a major role in contributing to the effects of NSH and decrease in bone density. At this stage, not only is there absorption of calcium and phosphate ions from the bone, but also proliferation of osteoclasts and osteoclastic resorption of the bone itself.

Food analysis – nutritional content/breakdown of minced meat

Two essential components to ensure adequate skeletal development are the absolute calcium content as well as the calcium: phosphorus ratio available in the diet provided.

Spinal lordosis and kyphosis, narrowing of pelvic canal, vertebral fractures have not resulted in permanent spinal damage and irreversible neurological symptoms, or narrowed pelvis resulting in chronic constipation.

Serum PTH concentration normalises within 3 days once balanced diet provides sufficient calcium for adequate serum ionised calcium levels.

KEY POINTS

NSH can occur in kittens fed a diet deficient in Calcium containing excess phosphate, with an abnormal Ca: P ratio e.g. all-meat diet

Diagnostics and findings

• CBC and biochem

  o Hypocalcaemia, Hyperphosphataemia (normal in growing juveniles, Elevated ALP normal in growing juveniles)

  o Serum PTH levels

  o marked elevation

  o Serum 1,25 (OH) vitamin D3

  o elevated

  o Radiographs of affected limbs and spine

  o Severe generalised osteopaenia, thinning of cortices

  o Area of relative-increased radiodensity adjacent to the growth plate

  o Pathological fracture +/- early malformed calluses - i.e. bridging fracture, compressional spiral fracture

  o Spinal lordosis and kyphosis, narrowing of pelvic canal, curving of scapulae

Treatment:

• Diet Correction – feed normal well-balanced kitten food

• Strict cage rest and pain relief

Prognosis:

Most have rapid clinical recovery – provided compressional vertebral fractures have not resulted in permanent spinal damage and irreversible neurological symptoms, or narrowed pelvis resulting in chronic constipation.

Serum PTH concentration normalises within 3 days once balanced diet provides sufficient calcium for adequate serum ionised calcium levels.

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References:

Behaviour Proc No. 390

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1. The major 2011 Behaviour conference kick-started the CVE’s events for 2011.
2. Gabrielle Carter, Gaille Perry, Schubert, Kersti Seksel, Tomsa, and Natalie Watson presented a wide range of fascinating talks.

‘Don’t give up on the old guys’

Excision of large abdominal masses in four mature dogs: a short case series

James Thompson graduated from the University of Sydney in 1992, then worked in England and Wales, Scone (NSW) and North Shore Veterinary Hospital at Crows Nest. He completed his Membership of the Australian and New Zealand College of Veterinary Scientists in Surgery in 2004 and has assisted teaching surgery to vet students at the University of Sydney. In 2011, James commenced his studies for a Masters through Murdoch University. He has undertaken voluntary animal welfare work in Bali and Africa and in his spare time he enjoys cycling, surfing and wildlife photography.

The major 2011 Behaviour conference kick-started the CVE’s events for 2011.

Patient 1: Maltese Male (N) 6.3kg

The patient presented with a 24 hour history of depression and inappetence. Vital signs were unremarkable apart from hyperthermia (T 39.6˚C). The abdomen was noted to be tense; however, the significance of this was initially unclear, due to the patient’s anxious, aggressive nature. Blood was submitted for anesthetic blood testing demonstrated normal haematology and biochemistry, apart from an elevated ALP 496 (<141). An exploratory laparotomy and splenectomy was performed and histopathology revealed a myelolipoma, consisted of benign adipose tissue infiltrated with haematopoietic tissue. At the time of surgery, the patient was initially diagnosed as neoplastic.

Patient 2: Whippet X Toy Poodle Male (N) 8.5kg

The patient presented at 11½ –years-old weak and depressed and was found to be anemic, thought to be secondary to haemorrhage. Initially, the owner was reluctant to pursue a diagnosis. Fasted blood samples (PCV) at that time was 0.29, L/L, total plasma protein 98 g/L. Three months later the patient presented with hyperthermia and collapse. PCV was 8, total plasma protein 50 g/L. Blood was submitted for biochemistry, haematology and ultrasound which revealed severe anaemia, anisocytosis, polychromasia, hypocromia, and lymphopaenia. Radiology revealed a 10cm diameter cranial abdominal mass. Right and left lateral thoracic and ventrodorsal thoracic radiographic views were obtained and no evidence of metastases was found.

Patient 3: Staffordshire Bull Terrier Female (N) 23.3kg

The patient presented at 14-years-old with depression. On examination, mucous membranes were found to be pale, verging on cyanotic, and there was a weak pulse. The patient was admitted to hospital and blood was submitted for biochemistry and haematology. Changes were minimal with slight increases in ALP, ALT and triglyceride. Abdominal radiology and ultrasonography identified an 8cm diameter splenic mass. Thoracic radiography to screen for metastases was not performed due to a combination of cost concerns and the owner’s desire for mass removal irrespective of staging factors (if the mass was ultimately diagnosed as neoplastic).

Patient 4: Kelpie X Female (N) 22.3kg

The patient presented with a 24 hour history of depression and inappetence. Vital signs were unremarkable apart from hyperthermia (T 39.6˚C). The abdomen was noted to be tense; however, the significance of this was initially unclear, due to the patient’s anxious, aggressive nature. Blood was submitted for haematology and biochemistry, apart from an elevated ALP 496 (<141). An exploratory laparotomy and splenectomy was performed and histopathology revealed a myelolipoma, consisted of benign adipose tissue infiltrated with haematopoietic tissue. At the time of surgery, the patient was initially diagnosed as neoplastic.

Case management

Patient 1: Maltese

The owners declined pre-operative cytology or biopsy. Pre anaesthetic blood testing demonstrated normal haematology and biochemistry, apart from an elevated ALP 496 (<141). An exploratory laparotomy and splenectomy was performed and the lateral aspect of the right hind leg metastases was excised. The 2 tissues were submitted for histopathology. The main splenic mass, a myelolipoma, consisted of benign adipose tissue infiltrated with haematopoietic tissue.

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with hematopoietic cells. There were also 2 smaller splenic nodules which contained hyperplastic lymphoid tissue interspersed with severely congested parenchyma containing hematopoietic cells. There was no evidence of neoplasia at either splenic site. The lesion from the toe was a low-grade soft tissue sarcoma with histologic features that were suggestive of an hemangiosericytoma. Surgical margins were considered to be adequate.

Patient 2: Whippet X Toy Poodle

Intravenous fluid support was commenced with NaCl 0.9% at maintenance rates, followed by transfusion with 450mL whole blood. Warmth was supplied by use of a Vet Cocoon warmed air blanket. Following 48 hours of stabilisation, a minline laparotomy and splenectomy was performed. The spleen was submitted for histopathology and vascular thrombosis and multifocal hemaematoma was diagnosed. There was no evidence of neoplasia. The patient made an uneventful recovery over the next few weeks and remained in good health until euthanasia 18 months later due to an unrelated illness.

Patient 3: Staffordshire Bull Terrier

Minline laparotomy and splenectomy were performed and the mass submitted for histology. Histopathological demonstration of diffused marked myeloid metaplasia and moderate lymphoid hyperplasia with multifocal splenic hemorrhage, vascular thrombosis and infarction, consistent with foci of hemorrhage and infarction within a hyperdynamic spleen. There was no evidence of vascular (hemangiosarcoma or hemangiomia), histiocytic or lymphoid neoplasia.

Patient 4: Kelpie X

Minline laparotomy was performed which allowed identification of a pedunculated liver mass of 11cm diameter, which was firmly attached to the liver capsule. Haematological results for the pre-anesthetic blood sample was subsequently received which showed a borderline anaemia. The mass was submitted for histopathology which demonstrated hepatocellular carcinoma. Although all gross abnormal tissue was removed, histopathological margins were not clear; however, the mass was only considered to have moderate potential for metastasis. Further surgery and chemotherapy were declined by the owner.

All patients

Patients were premedicated prior to surgery with acepromazine (ACP), methadone and atropine (with the exception of Patient 2 in which ACP was omitted, and Patient 4 in which buprenorphine was substituted for methadone). Induction was initiated with various anaesthetic agents: Patient 1 with intravenous thiopentone at a dose of 8mg/kg slowly to effect, Patient 2 with inhalational isofluorane, Patient 3 with intravenous alfentanil (1mg/kg), and Patient 4 with intravenous propofol (2.25mg/kg). All patients were maintained with isofluorane inhalation anaesthesia. Intravenous fluid support with Hartmann’s Solution was provided at a rate of 10mL/kg during surgery, 4mL/hr after surgery, then maintenance rates overnight. Laparotomy closure was completed using Bucrylate suture (synthetic absorbable monofilament) in continuous pattern in the linea alba and subcutaneous tissues and Dafilon suture (polyamide monofilament) in cruciate pattern in skin, apart from Patient 2 in which surgical staples were used for skin closure due to concerns about hypothermia. Perioperative antibiotic prophylaxis was provided with cefazolin at a dose of 22mg/kg at induction and 4 and 8 hours postoperatively. Postoperative analgesia was provided with methadone at 0.25mg/kg 4 hourly as required and fentanyl (Duragesic) slow release topical patches applied immediately post operatively in Patients 1, 2 and 3. Patient 4 had postoperative analgesia weaned from 0.25mg/kg at evolution and buprenorphine 0.5mg/kg on one occasion 6 hours postoperatively. All patients had sutures or surgical staples removed 10 days post operatively with no significant complications at the surgical site.

Survival times

Patient 1: Maltese – 3 years (euthanased due to unrelated condition).

Patient 2: Whippet X Toy Poodle – 21 months (euthanased due to unrelated illness).

Patient 3: Staffordshire Bull Terrier – 18 months (euthanased due to unrelated illness).

Patient 4: Kelpie X – 18 months (still alive at time of publication).

Discussion

Large abdominal masses are not uncommon in mature canine patients. Initial signs of abdominal tumours are often vague and non-specific. By the time of clinical presentation, abdominal masses are often considerably larger than masses in more prominent locations. Without good communication with patient owners, the option to complete a diagnosis or surgically excise an abdominal mass may not be undertaken. Owners often assume a large tumour is a bad tumour, but many are benign, and even if neoplastic may be readily removable (Dr John Culvenor, pers comm).

Larger abdominal masses, whether neoplastic or benign, may present special problems during excision. As many are of a vascular nature, there is the potential for pre or post operative haemorrhage. Intravenous fluid support is mandatory and the possibility of a blood transfusion being required should always be considered i.e. have a blood donor or pack of blood on the premises. Even if haemorrhage is not significant, sequestration of blood in large vascular masses, or altered circulation following removal of large space occupying masses may result in hypotension and close monitoring of anaesthetic depth and blood pressure is advisable.

Decision to excise abdominal masses is often but not always of an emergency nature; particularly if haemorrhage has occurred or is considered to be a high risk or in cases when the mass effect is causing pain or is affecting organ function, for example compromising gastrointestinal function. In other cases, decision to excise should be based upon the risk to the patient of the mass, the nature of the mass, and in cases of neoplasia staging factors, the likelihood of metastatic disease and average survival times.

In the case of neoplastic masses, accurate staging allows optimal management. In general veterinary practice, owner financial factors may make this problematic but intelligent practice can still offer satisfactory management of many patients with abdominal mass which are either neoplastic or unknown in nature.

It is considered by the author that these 4 patients had successful outcomes. Whilst already mature adults at the time of abdominal mass excision, 3 patients that were subsequently euthanased had 36, 18 and 21 months of good health respectively. Three excised masses were benign, and 1 neoplastic with moderate potential for metastasis. At the time of publication, patient 4 (hepatocellular carcinoma) is alive 18 months post surgery. It was examined on May 29, 2012 and remains in excellent health.

Reference

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Two cases of cardiac disease in Golden Retrievers

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Recently I saw 2 patients with cardiac disease. Although their radiologic signs were similar and impressive i.e. the heart shadows of both cases were very large and round, the cause in each case was totally different.

Case 1

The first patient, an 8-year-old male Golden Retriever dog, came to our clinic for a second opinion. This dog had oedema of all limbs and neck, and had exhibited exercise intolerance for weeks. A chest Xray taken by the previous vet showed pleural effusion (Figure 1). The fluid was drained and the chest Xray repeated (Figure 2).

Echocardiogram showed significant amounts of pericardial and pleural effusion and significant right ventricular dilatation, with the size about 1/2 of LV in diastole. The right atrium was dynamically compressed by the pressure from the pericardial effusion. No mass was found within the pericardium space, heart base or right atrium. The systolic/diastolic motion of the left ventricle was judged to be adequate but standard measurement was not feasible due to the erratic motion (Figure 3). Abdominal ultrasound exam finding: no mass lesion found in the spleen, one small complex ‘cyst’ in the liver and both hepatic veins were congested.

Figure 2. Case 1/DV or DV chest Xray

The second chest DV view shows a round and large heart silhouette in addition to a residual pleural effusion (lateral view is not available).

Figure 3. Case 1: right parasternal short axis view

Echocardiogram showed significant amounts of pericardial and pleural effusion and significant right ventricular dilatation, with the size about 1/2 of LV in diastole. The right atrium was dynamically compressed by the pressure from the pericardial effusion. No mass was found within the pericardium space, heart base or right atrium. The systolic/diastolic motion of the left ventricle was judged to be adequate but standard measurement was not feasible due to the erratic motion (Figure 3). Abdominal ultrasound exam finding: no mass lesion found in the spleen, one small complex ‘cyst’ in the liver and both hepatic veins were congested.

Figure 1. Case 1: Lateral chest Xray before thoracocentesis

Figure 3. Case 1: right parasternal short axis view
Diagnosis: Secondary right-sided congestive heart failure and cardiac tamponade secondary to pericardial effusion of unknown cause, possibly idiopathic haemorrhagic pericardial effusion.

**Case 2**

This patient, 7-years-old and also a male Golden Retriever, had exhibited exercise intolerance with panting but no oedema of the limbs. The X-ray also showed a round and large heart silhouette (Figures 4, 5).

**Echocardiogram:** Poor contractility of the left ventricle and an enlarged left ventricular and left atrium chamber. The mitral valve seemed ‘stiff’ secondary to the stretch from the dilated chamber and there was loss of the double click motion, most likely due to the presence of atrial fibrillation (suggested by the irregular heart rhythm).

The interventricular septum and left ventricle free wall shown in the M-mode echocardiogram of the right parasternal short axis view were pretty ‘flat’ (Figure 6) with very poor contractility.

**Diagnosis:** Dilated cardiomyopathy (DCM).

DCM and pericardial effusion are 2 of the differential diagnoses when thoracic radiographs reveal an enlarged cardiac silhouette. It may be impossible to distinguish these 2 diseases by examining a thoracic radiograph; however, sonologically these 2 cases were completely different.

For most general practitioners, it is always a challenge to diagnose cardiac cases. From these 2 cases we can see that it is simple and easy to tell the difference sonographically between dilated cardiomyopathy and pericardial effusion. With more and more popular ultrasound equipment (no longer a high-end product), we should give it a try: Pick up the probe and do a simple scan with or without the expertise of a veterinary cardiologist! By doing so, we can get more information and clues about what is happening. Armed with this confidence, we can advise the owners about specific treatment rather than just telling them that their dog has ‘heart disease’. Referral to a cardiologist should be the next step if a diagnosis is not made. Other differential diagnoses are beyond the scope of this article.

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**What’s YOUR Diagnosis?**

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**What is YOUR diagnosis?**

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If you have a picture which would be suitable for the ‘What’s YOUR diagnosis?’ column, please sent it to Lis Churchward – Editor, as above.
What’s Your Diagnosis?

Angioedema is a vascular reaction involving the deep dermis, subcutaneous or submucosal tissues; where localised oedema occurs secondary to vasodilation and increased capillary permeability. Angioedema most commonly involves the face and limbs; and affected tissues reveal oedema in association with a perivascular infiltrate of T-lymphocytes, macrophages, eosinophils and mast cells. Degranulation of mast cells is responsible for tissue swelling.

Angioedema is most commonly due to an allergy, including foods, drugs and insect stings. Physical causes, such as heat, stress and exercise, can also result in angioedema. In general, most allergic reactions are not life-threatening, with oedema developing over a period of 12–36 hours and subsiding within 2–5 days. Rarely, the swelling can affect the throat or neck region and result in respiratory distress.

In Mia’s case, a minimum data base revealed no abnormalities. In-vitro specific IgE antibodies were detected to a number of allergens, including a number of grasses (Feye, Blue/June, Bermuda, Bahia), weeds (Stork), fungi (Aspergillus, Candida albicans, Fusarium), food items (yam西洋, kangaroo, lamb, tuna, rice, kelp), and Staphylococcus spp. Intradermal skin testing was not performed. Thorough inspection of the garden surrounding her enclosure revealed a number of ant nests. The ants were identified as Iridomyrmex, which is one of the largest and most frequently encountered groups of ants in Australia. They are readily identified by the pungent odour they release when they are crushed, resulting in their common name ‘piss-ants’. Though unable to definitively determine that the ants were the cause of Mia’s angioedema, removal of the ant nests and treatment with cetirizine (Zyrtec) once daily orally resulted in resolution.

Unfortunately, there is a paucity of literature about allergic reactions and angioedema resulting from insect venom in dogs and cats. In the human literature, stinging ants are reported to be an important cause of allergic reactions in Australia. Allergic reactions to the Jack Jumper ant are a uniquely Australian problem, although other species such as the Green Ant of Queensland, and introduced South American Fire Ant also cause occasional allergic reactions. Avoidance of precipitants and antihistamines are the mainstay of treatment. Other drugs, such as corticosteroids, are usually reserved for when antihistamines fail to prevent angioedema. Adrenaline injections may be needed to treat severe episodes resulting in tongue or throat swelling. Commercial venom extracts are available in Australia for the diagnosis and treatment of patients allergic to Honey Bees, Paper Wasps and European Wasps. However, at this time, there is no commercial venom extract available for skin testing to confirm Jack Jumper ant allergy or to use for immunotherapy (desensitisation).

Weighty issues for pet owners...

Sadly, in the 21st Century, issues around weight affect those in the animal kingdom as well, not just their owners. Andrea Harvey (well known to CVE members as one of our highly regarded DE Feline Tutors) and Samantha Taylor have written this timely booklet designed to assist owners with overweight or obese cats. For more information, or to order a soft cover or interactive eBook, please go to: www.catprofessional.com/publications_gb.html
Sclerosing encapsulating peritonitis in a Doberman

C&T No. 5238

Ingrid Martin
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“Diesel”, a 2½-year-old male Doberman, presented for vomiting and lethargy since the previous afternoon. Eighteen months ago he had surgery in New Zealand to remove a stone from his gastrointestinal tract. This surgery was uneventful and he recovered well. The owners felt he was presenting in a similar way.

Diesel was dull, had dark pink mucous membranes and capillary refill time of 3 seconds. His heart rate was 120bpm (2 weeks prior at vaccination was 76bpm) and temperature was 38.9°C. A mass was felt in his caudal abdomen. Diesel was admitted for administration of intravenous fluids and exploratory laparotomy. Preanaesthetic ‘blooms’ were unremarkable.

A midline incision was made and many adhesions had to be broken down to allow access into the abdomen. The obstruction was felt in the caudal abdomen but it had adhered to the abdominal wall. These adhesions were broken down and the loops of the small intestine exteriorized. The mass was proximal to a large mass of fibrous grass (which grows on the sand dunes) where the mass was stuck. An enterotomy was performed and the intestine itself was not inflamed (except mildly 3 ‘S’ bends of intestine that had adhered tightly back along itself. (These photos were taken from the second surgery but are indicative of the findings.)

Four days after this (8 days after the original surgery) Diesel presented again with vomiting and lethargy. An abdominal mass could be felt. Once again, we had to break-down adhesions to enter the abdominal cavity. A large mass of extremely inflamed adhered gastrointestinal loops was found. The previous enterotomy site was healing well and was not involved within the adhesions. The decision was made to remove the entire inseparable knot of small intestine (Figure 2) and an end-to-end anastamosis was performed. Approximately 1.5-2m of small intestine was removed. Once again, Diesel recovered well and went home 2 days later.

A section of intestine was sent off for histopathology. Most of the microscopic changes were noted on the serosal surface of the intestine with moderate haemorrhage and fibrovascular (granulation) tissue proliferation and light neutrophil infiltration. The subserosa was mildly oedematous with prominent vasculature.

A diagnosis of Sclerosing Encapsulating Peritonitis was made. This is a rare form of chronic peritonitis where abdominal organs may become encased in thick layers of collagenous connective tissue. There may be development of abdominal effusion, usually a modified transudate. The cause is uncertain but some reported cases of sclerosing encapsulating peritonitis mention fat necrosis, thread-like ingestion, bacterial peritonitis, or chylous effusion in their aetiology.

Sclerosing Encapsulating Peritonitis is a very rare condition in both dogs and humans, and few cases have been reported. It may be seen with no clinical signs, such as when a dog is spayed, or go on to cause problems such as asparte and intestinal obstruction. Once clinical signs have developed, there is a very poor prognosis.

Diesel did so well for a week after this surgery, although he did have diarrhoea from Short Bowel Syndrome. Unfortunately, 9 days after the second surgery, symptoms started to present again, and the decision was made to euthanase him due to the poor prognosis of the disease.

Diesel made a great recovery, eating well and was back home in 2 days. We re-checked Diesel 3 days later and he was doing very well.

Figures 1B

The mass was proximal to 3 ‘S’ bends of intestine that had adhered tightly back along itself. (These photos were taken from the second surgery but are indicative of the findings.)

Diesel recovered well and went home 2 days later.

Print readers: Go to www.cve.edu.au/ e-book to roll-over or download Nick Lloyd’s C&T No. 5205 in the e-book.

Comment on: Proliferative and necrotising otitis externa in a young cat

(C&T 5205, Mar 2012, Issue 266)

NICK LLOYD describes a case of the rare disease ‘proliferative and necrotizing otitis externa’ (Gross and others 2005, Mauldin and others 2007, Videnom and Pin, 2010) in a 3-month-old Siamese kitten with otitis externa.

The marked proliferation of ear-canal tissue and it is clear that the patient suffered considerably before the disease responded to treatment.

I saw a case of this disease in 2010 that I describe here because the clinical course was so different from that of Nick’s kitten. A 9-month-old female domestic short-hair kitten presented with multiple exudant, dark brown, crusted, dry-looking, friable lesions in both ear canals and in the proximal concave aspects of both pinnae. Gentle removal of some of this material revealed erosions or ulcers of the underlying skin – nothing like the degree of proliferation seen in Nick’s pictures. The appearance was striking and quite distinct from typical cases of feline otitis externa. Also striking was the fact that, despite the exudant material appearing to fill the area around the entrance to the ear canals bilaterally, the owners reported that the cat did not appear at all uncomfortable and there was also no indication of discomfort on examination of the ears.

Initial treatment consisted of injections of long-acting dexamethasone (Voren Suspension, Boehringer) 0.1 mg/kg SC and cefovecin (Convenix, Pfizer) 8 mg/kg SC and topical use of a suspension containing micacezole, prednisolone and polyvinyl B (Sustane, Janssen Animal Health) twice daily for 2 weeks, at which time on re-examination the lesions were reduced but still marked. One week later the cat was sedated. The proliferative, crusted plaques came off easily revealing small, discrete, well-demarcated, erythematous, eroded or ulcerated skin lesions. Wedge biopsies of 1 lesion from each ear along with some of the proliferative overlying material were sent for histopathology that demonstrated the classic histological appearance of proliferative and necrotizing otitis externa. At biopsy the kitten had been treated with metacam (Metacam, Boehringer) 0.2 mg/kg SC and amoxicillin (Diphamox LA, Pfizer) 10 mg/kg SC. Once the biopsy lesions had healed, treatment with the topical micacezole, prednisolone and polyvinyl B suspension was restarted for a further 2 weeks and on re-examination 4 weeks after biopsy the lesions were much reduced. (Figures 1 & 2) The lesions resolved completely over the following few weeks and have not recurcd.

As the cat never showed any sign of discomfort – despite the horrible appearance of his ears – and literature reports indicated that the condition typically resolves spontaneously, I could fortunately be conservative in my treatment, not needing to resort to other immune-suppressive medications such as those Nick needed to use for his case.

References


Fracture is simple and over-ridden then I achieve and hold alignment with acrylic connecting bar. This allows distraction and alignment. If the pressure sore.

The back half is removed when fracture healing is occurring. This avoids get early use. At 10-14 days the cast is split and the front half removed. I use the wire technique for compound fractures, and severely wiring comminuted fractures can be successful as long as will either be lag screwed or conservatively treated although I have found...
can be filled with litter. For a covey, you can upturn another deeper box 90˚ and slide one into the other. A bit cumbersome but way better that cat can be filled with litter. For a cover, you can upturn another deeper box.

A thought but not-to-be-done-at-the-moment as too left field even for me but; I wonder about the fact that the main neurotransmitter involved with mast cells is substance P and the latter causes bladder wall pain.

Would an injection of the anti-emetic Cerenia, which is an anti-Sub P drug, be an option for some cats that can’t access a litter tray? That might work for fetters and smaller cats and it is only $54. The clear solution might mean the cat would turn around so could keep watch so the rear and would face the rear of the box, so spray would not be an issue.

A variation on the item pictured is the condo, which is really just a long trolley box as has had a little turbo charged one ‘Bionaire Odor Grabber Litter Box’ that looks like a vacuum cleaner that extracts smell. That might work for litter trays.

If you ever have the joy of visiting a male public toilet, something to notice is that the urinal is a large tray-like structure, mostly vertical, on the wall hence enhancing the male’s ability to aim. Aim is apparently a problem in many domestic households where the ‘throne’ is understood to be the location of ubiquity. (Note to self: keep this in mind for litter tray re-design.)

Figure 2. Male cat litter box with deep high sides using an office-toy storage box.

Figure 3. Old design litter trays. The front end is too low for male or elderly arthritic cats that can’t turn around or can’t stay squatted for a large urination so the last part ends up flying out the opening onto the floor/ground.

Figure 4. A waterproof, cat-friendly flap.

Commercial litter boxes

Types of cat litter

Diatomaceous earth (also known as attapulgite clay – made from the calicofusus skeletons of diatoms in the ocean is used in pool filters AND as a natural Flea control [destabilizes flea hides].

Bentonite gets fed to cats and people for stool control and is used in road preparedness!

And then there is all the recycled paper/linen or rice husks (which cats are not keen on) plus the crystals.

The innovations site has some good picture of more modern litter boxes, recently on special for $94. There is also an American cat litter box MOD KAT LITTER BOXES.

The problem is, some of the modern Commercial litter boxes are too deep that arthritic cats would have issues getting out and in – plus the hole in the top of the lid of these boxes is quite narrow. You can remove the lid however there is not enough room for cats to turn around without bending, so it’s not wide enough and too deep. At $180, these are too expensive for many of my clients.

There is a cheaper version – Clevercat – around $35 but again the opening is too small and the litter box very deep so issues would be the cat jumping into a dark hole and landing on previous evacuations, then an unstable surface to push up to or out of.

There is a litter charged one ‘Blonella Odor Grabber Litter Box’ that looks like a vacuum cleaner that extracts smell. That might work for litter trays.

I am back to thinking the storage boxes - Fig 2 - of various heights and all for less than $30 are the best option.

www.overstock.com/Pet-Supplies/Kitty-Condo-Bench/5637158/product.html?rcmndsrc=2=52167+20 postagage

Many senior cats are euthanised because they pee on the floor. They don’t want to do it, but they do. Cat wee stinks, so the source of cat wee is removed.

One thing vets can do for the owners of a senior cat that gets into a litter tray and then passes out of it is to put a litter tray in their shower recess. If the old cat misses the tray, then it piddles in the recess and that’s really nice and clean.

I have an old Holden (1956 FE, as people are bound to ask), it has various leaks, just like an old cat. The leaks are caught in a drip tray.

If you ever have the joy of visiting a male public toilet, something to notice is that the urinal is a large tray-like structure, mostly vertical, on the wall hence enhancing the male’s ability to aim. Aim is apparently a problem in many domestic households where the ‘throne’ is understood to be the location of ubiquity. (Note to self: keep this in mind for litter tray re-design.)

Our household is the hang-out of 3 senior cats, all with varying degrees of renal problems, meaning PUR bd and arthritus to boot. To increase their long term survivability prospects I bought a few extra plastic drip trays from the auto shop and put them under the litter trays. The drip trays can be connected to suit varying litter tray sizes and shapes.

There is an added bonus for the enthusiastic cat owner in that a clean drip tray (just like a clean plastic cat carrier) can provide a meaningful voided urine sample to monitor a cat’s health. You just have to know which cats. The litter tray drip tray idea is at an egg stage. Hopefully some of the veterinary designers out there can recommend further improvements. In the meantime, while this idea is refined, it is practical advice for your senior cat clients with inappropriate urination concerns.

The second part of this C&T is to say that it took me 25 minutes from taking the photo to emailing. Only 25 minutes and imagine how many senior cats were saved and people’s lives improved.)

WINNER

Necessity is the mother of invention - applying leaking car technology to senior cats’ urination problems

C&T No. 5240

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Frank Gaschke

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(The second part of this C&T is to say that it took me 25 minutes from taking the photo to emailing. Only 25 minutes and imagine how many senior cats were saved and people’s lives improved.)
Becoming agitated at noises and dogs barking whilst at a show. She had him with the vacuum, or when mowing the lawn or using the petrol mower, reacting to the noise of the door opening. Was out. One day, I came home early and entered the puppies’ room; they were out. I first twigged to this with my first litter. At that point there was only me and the dam’s return to the litter after a toilet break) then you are simply using a fundamental principle in animal learning to make the dogs feel good about the environment they are in. The Joy in Canine j/d® diet

However, these dogs are not bored; neither are they deaf, and as a result they are very, very happy because they can hear underground the very loud rumbles of the huge 30-60cm long 6cm wide earthworms which are very active under the soil. These worms are very plentiful along the eastern seaboard, boiled up by Kookaburras and are very jolly and fattening. The holes dug by these dogs are not the shallow crater holes of boredom – these are the core cheek holes, and multiple ones – just the right size to catch your bare foot in and break your ankle. The owners often present these dogs for face rubbing or unexplained weight gain along with the hole digging. When you get the owners to watch the dog they report that the dogs stop in the yard, turn one ear to the ground and place their face on the ground, rub it against the ground and stop. Then, using their noses, they dig out a deep central tube-like hole that they carefully excavate with their front paws then push up those huge, fisherman rope-like worms.

A client returned home from 3 weeks holiday with his 2 dogs to a scene of chaos in his back yard whereas the worms were sliding up over the grass and the dogs flipping them in the air like Kong toy ropes. He was suitably convinced that I had been correct in blaming these worms earlier as the probable cause of the hole digging and as an unauthorised feeding of a trigger food source of recalcitrant food-induced skin problems.

No pill or oral medication can be seen as, in any sense, passé. Its success depends on the capture of the dogs’ attention. Reducing noise phobia by habituation is an excellent idea and should not be seen as, in any sense, passé. Its success depends on the capture of the dogs’ attention.

Desensitisation CDs help reduce noise phobia in dogs

C&T No. 5241
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Some Australian native earthworms grow to an enormous size and whilst the ‘Gippsland Giant’, Megascolecids, are 3 metres long, the ‘Unidentified Giant’ tends to monopolise the imagination and press, NSW has some impressive species of its own – the Disgaster spp in Kyogle north-eastern New South Wales, have been massaged at 1 metre long. Large worms of different species also occur in Queensland through to Tasmania. Apparently the gurgling noise that some of these dogs make in their burrows can be quite impressive. It would explain why the dogs first fill their ears to listen close to the ground.

Figure 3. Distribution of Family Acanthodrilidae (courtesy of Atlas of Australia 2012)
Most interesting is what is NOT on the sheet – but is in the BSAVA formulation. Sertraline should NOT be used with aspirin and other anticoagulants since the risk of increased bleeding case of tissue trauma may be increased, so there is a strong recommendation against using sertraline in dogs on the drug sheet left alone a raising of the risk if anticoagulants co-used.

Given that concern, what about operating on a dog on such a drug (besides your premorbid cocktail very carefully) – is increasing bleeding.

Based on the concern for increased bleeding, as if it-hunger possesses the speaker and that is what struck me if the ‘hunger’ is what we used to call ‘crises’ or ‘hunger’ – and the word that one relates it with, and in order to have more than one is a story of ‘hunger’. Or if the hunger is upon.

Thames Hospice, and it was described as having a documentation level of well established (30) and it could identify the exact flavour and brand of tinned food fed to the patient as if it-hunger possesses the speaker and that is what struck me if the ‘hunger’ is what we used to call ‘crises’ or ‘hunger’ – and the word that one relates it with, and in order to have more than one is a story of ‘hunger’. Or if the hunger is upon.

GREAT Famine of 1845 when millions died – takes on a deeper meaning as if it-hunger possesses the speaker and that is what struck me if the ‘hunger’ is what we used to call ‘crises’ or ‘hunger’ – and the word that one relates it with, and in order to have more than one is a story of ‘hunger’. Or if the hunger is upon.

The level of evidence needed to support a claim is a much higher standard than that needed to underpin a possible of the original observations is lost. The level of evidence needed to support a claim is a much higher standard than that needed to underpin a possible of the original observations is lost. The level of evidence needed to support a claim is a much higher standard than that needed to underpin a possible of the original observations is lost. The level of evidence needed to support a claim is a much higher standard than that needed to underpin a possible of the original observations is lost. The level of evidence needed to support a claim is a much higher standard than that needed to underpin a possible of the original observations is lost.
chasing has been seen since the last visit. She is still quite cautious about being handled around the run, but previously would have started jumping at her tail when handled in that area. Previously she was not prepared to jump into the car and needed her back end lifted. Now she is not bothered about getting in the car, but nevertheless she was not always willing to jump, today she had jumped in willingly of her own accord.

I have requested another visit with this dog in about 6 weeks as there are still some areas of the body I am not totally happy with. The owner is very happy with this at stage.

I know n-1, but this case is far from isolated. Many animals which are presented to me with symptoms which also might logically stimulate referral to a behaviourist, and many appear anxious. I tended to write up a lot of these, and to try and publish some case series, once I find the time as I have the data. Actually, I probably have more data related to horses than dogs, as many more veterinary problems are identified as physical in horses.

Some easy examples in horses include: gaitiness, bucking, not standing for the farrier (or anyone), head shaking, head shy, high-strung/horse, head shy, high-strung/road. In dogs: shaking/shaking, lack of confidence interacting with other dogs or humans and urination dysfunctions are some which spring to mind. Very few times the behaviour changes are only identified after treatment when the owners realise what they were, or were not, doing.

Now, I’m not for a minute saying that physical work can solve all behaviour cases – far, from it! However, it is worth considering having an animal checked with someone with appropriate training to identify these physical dysfunction issues, possibly particularly if there are refractory cases.

The perfect veterinary clinic, in my opinion, would include a behaviourist and a person skilled in manual diagnosis and therapy.

Your professional interest may be in small animals, equine or ruminants. One group or the other will come to dominate your practice and your major concerns, and it is up to you to professionally prepare for that. There are always opportunities for the community-minded veterinarian. Some are not, however, good ones. They may have parameters which are out of line with your major concerns or are not for the weak of heart. If you are to be successful, you need to carefully select your area and invest in training in the area. Some areas of practice, such as equine, require a special dedication with the hours and the travel. It is highly recommended that you do some research and planning before embarking.

The General Organoa Graphica Figure 1. Tom Hungerford pictured next to his wife, Folly, and holding his textbook Diseases of Livestock

Many years ago, a young veterinary graduate decided to take a very different path to his peers. He had a burning desire to excel rather than just succeed both professionally and materially, and he knew that was the only way he could be the best. He was determined to establish himself as a leader in his field.

His research into the causes of disease led him to discover that the key to solving problems was to understand the underlying mechanisms. He spent hundreds of hours studying the scientific literature, and it was during this time that he developed his unique approach to veterinary practice. His breakthrough came when he realised that the key to solving problems was not just understanding the science, but also being able to apply it in a practical way.

His results were astonishing. He quickly established himself as a leader in the field, and his name soon became synonymous with the highest standards of veterinary care.

Today, Tom Hungerford is a legend in his field. His dedication to his craft and his commitment to excellence have made him a role model for all veterinarians. His success has inspired generations of veterinary students, and his name is now synonymous with excellence in veterinary practice.

The best of them give you deep insights, save you years of floundering and help you make a real difference. Good mentors are usually gifted professionals in their field of expertise but, most importantly, they are passionate about sharing their knowledge and experience with others.

Your professional interest may be in small animals, dairying or equine. Mine is in small animals, particularly sheep and goats. I have a burning desire to excel rather than just succeed both professionally and materially, and I believe that is the only way I can be the best. I have spent hundreds of hours studying the scientific literature, and it was during this time that I developed my unique approach to veterinary practice. My breakthrough came when I realised that the key to solving problems was not just understanding the science, but also being able to apply it in a practical way.

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talking to him on the verandah of a motel one afternoon in a small town in WA, where I was on a business trip. I asked him if he could explain. He did, and that was the first day I got to know Mike at all. It was the first of many conversations and a life lesson.

The Early Years
In the first two years, there was no need to income, in fact, a total of about $5K, and if we were not from the income from my long-suffering and supportive wife, we would have been stoked. While I was living the dream with sheep, animals, we had a close thing on how and where we would stay.Either you can work locally, and accept that only a small percentage of your projects will be switched on and profit, funding will be available. Or you can get lost in the last clients in any district. I chose the latter but did not fully realise what the cost would be.

When we married, my wife, Jane, is a fit a husband with who would naturally be just as busy. She has the most right to the title of partner. That said, in the end, some selfishness and drive, I single-mindedly pursued my career and, to my cost, did not seek a supportive partner. If that does not happen, your marriage, family and career are potentially in jeopardy.

A lot of time in those two years was spent travelling Australia with a professional sheep classer. His name was John Coy and at that time, he had a powerful influence on the direction of Australian Merino genetics by virtue of his influence in the biggest sheep stud in the country, Artarmon, in those days. John gave me a first-class background to the industry and many contacts, ultimately it was because realising that science and qualitative genetics were needed, in fact, second. That is not to downplay from what John taught me or what we did, it was a product of his time and the industry that he settled. Sadly, he is no longer among us. It is very special to me.

I spent most of the rest of my time in a PhD research station I had there were online internet databases then, in fact, there was no internet, nor mobile phones, we had to get on to the internet to develop plans for entering a new field. Network of specialist research workers and trying to put the pieces together. I was working on my own and had the name Mike Holmes in the literature. I rang Mike and soon after we published a series of 10 to Sydney to educate the kids. I sold my ‘consulting’ business to David, who was now the MD at a subsidiary of Merck & Co, a USA based pharmaceutical company. The application was accepted and I returned to Sydney to educate the kids. I sold my ‘consulting’ business to David, who was now the MD at a subsidiary of Merck & Co, a USA based pharmaceutical company. The application was accepted and I sold my ‘consulting’ business to David, who was now the MD at a subsidiary of Merck & Co, a USA based pharmaceutical company. 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On the billable hours front, we decided that it was more efficient to have a mix of work that combined producer groups with individual clients. The advantage of producer groups was that you could get a lot of production principles and technical information across more cost effectively. If you spend a day with 15-20 producers, it paid for 10-15 days doing it on a one-on-one basis. When we formed these groups, the protocol was simple and practical:

- We would meet 2 to 3 times a year on the property of the host business for that meeting.
- Everybody brought their own smoke and lunch to minimise the imposition on the host business.
- Every business in the group was required to benchmark their business performance with us and the data was open between all groups. This required trust and confidentiality on their part, and to the best of my knowledge, that has never been broken.
- The host business was the case study for any particular masturing and the principles of the business outlined their management plan and objectives, and everyone had access to the benchmarking data. A short property tour was part of the day.
- Group members would then be asked to workshop what they had seen and heard and was apparent in the numbers, to provide constructive advice and feedback on where the meeting was at the way forward. The fact is that there is more collective wisdom in the group that combined producer groups with individual clients. The advantage of producer groups was that you could get a lot of production principles and technical information across more cost effectively. If you spend a day with 15-20 producers, it paid for 10-15 days doing it on a one-on-one basis. When we formed these groups, the protocol was simple and practical:

Remembering once suggesting to the Alice Springs group (more later) that we go to the cow to see where the hay is going, I chat to the beef producer about that group for a week. Initially, their reaction was less than enthusiastic and it took some effort to get the whole thing working. We did go and at the end of the week, both were definitions of it was.

We could not understand initially why you would want to bring us here. Most of these farms would sit inside our house padlock, but we now understand because it is regional different and the farming layman. When you were trying to achieve was to get us inside the heads of the producers who spoke to us and ask them questions and difficulties that they had was the main message. They have universal application and we have learned more in this week than we ever thought possible. Eureka!

The producer group protocol worked well from the start and continues to work. We have had the group for the last two years, having started with 14 individual clients because the process made them realise that there were productivity and profitability and will keep doing so until we arrive at the unlikely thought possible. Eureka!

For example, they had considered that two of those 14 groups formed initially on the basis of government funding. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a trip, preferably to visit the businesses of like-minded producers in the area. Range Land offices were required to benchmark their businesses annually on a tri...
In my case, I have been fortunate. In the HSA years, we recruited excellent staff who were loyal, hardworking and kept the show on the road when David and I were away. The success of HSA was as dependent on them as it was on David and me. One of the staff was a qualified accountant, Monique Medway, who largely ran our books but also became involved in the farm business benchmarking process. She always understood numbers, but, over time, developed a sixth sense for farm business performance and knew when things were not right in those specific numbers. When we sold HSA, Monique elected to set up her own business and her background supported her function professionally without her background support.

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Some Parting Words

Today, as I continue to work with successful pastoral businesses, I sometimes ask myself about the role and relevance of the traditional veterinary profession in their affairs, and always come up with the same answer. It is largely irrelevant to the future of these businesses. Stock horses are close to extinction, most working dogs have a finite value and are replaceable, and most of the major economic diseases of flocks and herds are preventable or can be managed for minimal impact. As well, many producers pregnancy test their own herds and lay operation have a significant market share where this procedure is outsourced. Feedback from veterinarians in rural practice these days suggests to me that they would be econoamic if they built their work exclusively on flocks and herds.

And yet the need for specialist involvement in commercial flocks and herds remains as strong today as it ever did, providing you are offering the right products. As well, many producers pregnancy test their own herds and lay operation have a significant market share where this procedure is outsourced. Feedback from veterinarians in rural practice these days suggests to me that they would be econoamic if they built their work exclusively on flocks and herds.

And yet the need for specialist involvement in commercial flocks and herds remains as strong today as it ever did, providing you are offering the right products. As well, many producers pregnancy test their own herds and lay operation have a significant market share where this procedure is outsourced. Feedback from veterinarians in rural practice these days suggests to me that they would be econoamic if they built their work exclusively on flocks and herds.
Flexible endoscopes are expensive and delicate pieces of equipment. The main risk of bronchoscopy is development of hypoxaemia. This can easily result in cats given the narrowness of their airways, particularly if bronchoscopy is prolonged, if there is induction of bronchospprasm, or mucus plugging of airways. Close monitoring of pulse oximetry is therefore required, and the procedure should be performed as quickly as possible whilst still being thorough. Contraindications to bronchoscopy include severe pre-existing hypoxaemia, cardiac failure, severe dyspnoea (except where likely to be resolved by the procedure e.g. foreign body retrieval), presence of a bleeding disorder, and in any patient where inadequate investigations have been performed prior to considering bronchoscopy (see introduction). The limitations of bronchoscopy are that it only allows assessment of the airways so is not useful for assessing interstitial pulmonary disease, it doesn't allow assessment of all the small bronchi so can miss focal disorders and foreign bodies that have migrated into distal bronchi, and sample collection is limited to samples for cytological assessment (BALs and cytology brushes) and extremely small biopsy samples. There are few contraindications for retrograde rhinoscopy. The main contraindications are where there have been inadequate investigations performed prior to anaesthesia and patients that are a poor anaesthetic risk. The limitations of rhinoscopy are that it only allows for assessment of the pharynx caudal to the choanae, and most often if any lesions are biopsied, the resultant haemorrhage precludes further evaluation or additional biopsies to be taken. Furthermore, endoscopic biopsies are extremely small in size, and therefore often of limited diagnostic value.

**Patient preparation**

As with all general anaesthesia, withdrawal of food for 8-12 hours prior to the procedure is required. Depending on the reason for performing endoscopy of the respiratory tract, and the clinical status of the cat, pre-oxygenation is usually advisable (Figure 1). Pre-medication prior to induction of anaesthesia is dependent on clinical status. For cats undergoing bronchoscopy, administration of terbutaline prior to the procedure is advisable in reducing the risk of inducing bronchospprasm. An IV catheter should be in place. The cat should be positioned in sternal recumbency with the head slightly elevated and the neck extended; ideally an ET tube is placed, and the bronchoscope passed through the lumen of the ET tube. A swivel tip T-adapter is attached between the ET tube and the T-piece. This contains a rubber valve at the port allowing anaesthetic gases and oxygen to continue to be delivered while the bronchoscope is passed through the ET tube (Figure 2). Induce anaesthesia with propofol, preferably maintaining on inhalational anaesthesia, which is possible if the endoscope can fit easily through the ET tube leaving enough space for movement of gases at the same time.

When the lumen of the ET tube is too narrow to accommodate the bronchoscope, a nasotracheal tube such as a dog urinary catheter can be inserted into the trachea and used for intermittent oxygen propulsion, by connecting an ET tube connector, and a T-piece with the reservoir bag removed, to enable the anaesthetist to jet propulsive oxygen down the tube by intermittently covering the end of the tube with a thumb. In this situation, anaesthesia needs to be maintained with total intravenous anaesthesia, using small increments of propofol as required. The ET tube or catheter tubing should be secured in place, and a mouth gag in place. For retrograde rhinoscopy, consideration needs to be given to reducing risk of aspiration if there are excessive secretions and/or haemorrhage. A cuffed ET tube can be used, and this article. Therefore, the use of rigid endoscopy will not be discussed further in this article.

**Respiratory tract endoscopy**

**Equipment**

For endoscopy of the respiratory tract in cats, a flexible endoscope is most useful. Due to the size of the distal tip sensors required for videobronchoscopy, videobiopsies are not widely available under 5-6mm diameter, so the endoscopes used for feline bronchoscopy and rhinoscopy are almost always fibrescopes, which have a reduced quality of image compared to videobronchoscopy, but are cheaper to buy. Bronchoscopes are simpler to use than gastroscopes, in that they have just 2 way tip deflection and suction. There is no air/water channel as there is no requirement for insufflation and irrigation with the basic technique of flexible endoscopy, how to hold the bronchoscope and use the controls correctly.

A single bronchoscope can be used in all sized cats for both bronchoscopy and retrograde rhinoscopy. A 3 – 3.7mm diameter bronchoscope is suitable for cats (e.g. Olympus OBI bronchoscopes BF-JC40 3.6mm insertion tube with a 3.3mm distal tip, and 1.2mm instrument channel, 50cm working length or BF-KP40 2.8mm insertion tube and distal tip, 1.2mm instrument channel, 60cm working length, Karl Storz bronchoscopes 60002 VL 1.3mm insertion tube, 1.9mm instrument channel, 50cm working length or 60003 VB 1.3mm insertion tube 1.2mm instrument channel, 1m working length). A rigid endoscope can potentially be used for tracheoscopy and anterograde rhinoscopy. However, performing tracheoscopy alone is of limited use in most patients, and given the small size of the nose in cats, the benefit of anterograde rhinoscopy is very limited in cats. Therefore, the use of rigid endoscopy will not be discussed further in this article.

The author prefers to collect BAL samples directly through bronchoscope, by attaching a collection tube between the bronchoscope and the suction tubing, but aspiration catheters can also be used for fluid collection either inserted through, or adjacent to, the bronchoscope. It is essential that the bronchoscope is sterilised prior to use, and that scope flushes are performed for bacterial culture, to ensure that there is no scope contamination. Cytology brushes, aspiration needles and small biopsy forceps can also be used for obtaining samples. Prior to anaesthetising the patient, ancillary equipment should also be ready (protective clothing, mouth gag, topical 2% lignocaine, aspiration catheters, EDTA and plan collection pots for BAL fluid, 2-4 x 5mL syringes containing 0.9% sterile saline for performing BAL’s, biopsy forceps, grasping forceps for foreign body retrieval, swabs/sponges for packing the pharynx in case of naso-pharyngeal haemorrhage following biopsy, equipment for tracheoconceptus in the image quality is further reduced. Videobronchoscopy overcome this problem; however, due to the size of the distal chip sensors required, videobronchoscopy are not widely available under 5-6mm diameter. Therefore, many endoscopes used in feline medicine, particularly bronchoscopies, are fibrescopes.  

Flexible endoscopes are expensive and delicate pieces of equipment. It is therefore essential that, before use, the operator is familiar with how to handle the endoscopes, and how to set up and appropriately use them, in order to avoid damaging the equipment, as well as avoiding risk to the patient through inappropriate use. It is also important to be aware of the cleaning, storage and maintenance required by flexible endoscopes to ensure that they are kept in good working order. This article assumes that the reader is familiar with the basic technique of flexible endoscopy, how to hold the endoscope and use the controls correctly.

**Uses and indications**

The most common reasons for performing bronchoscopy in cats is in the assessment of chronic lower airway disease (as indicated by chronic cough and/or episodic tachypnoea/dyspnoea, with consistent radiographic abnormalities), in the assessment of lung masses and focal or diffuse bronchial bronchokeleteral bronchial/bronchoalveolar lung patterns identified on thoracic radiographs, for collecting bronchoalveolar lavage samples, and in assessment of acute cough/dyspnoea, particularly for assessment and retrieval of tracheal or bronchial foreign bodies. Retrograde rhinoscopy is useful in the assessment of acute onset sneezing and facial discomfort, chronic nasal discharge, stertorous breathing, epistaxis and gagging/retching, and for the retrieval of naso-pharyngeal foreign bodies, and biopsy of masses.

**Limitations and contraindications**

The main risk of bronchoscopy is development of hypoxaemia. This can easily result in cats given the narrowness of their airways, particularly if bronchoscopy is prolonged, if there is induction of bronchospprasm, or mucus plugging of airways. Close monitoring of pulse oximetry is therefore required, and the procedure should be performed as quickly as possible whilst still being thorough. Contraindications to bronchoscopy include severe pre-existing hypoxaemia, cardiac failure, severe dyspnoea (except where likely to be resolved by the procedure e.g. foreign body retrieval), presence of a bleeding disorder, and in any patient where inadequate investigations have been performed prior to considering bronchoscopy (see introduction). The limitations of bronchoscopy are that it only allows assessment of the airways so is not useful for assessing interstitial pulmonary disease, it doesn't allow assessment of all the small bronchi so can miss focal disorders and foreign bodies that have migrated into distal bronchi, and sample collection is limited to samples for cytological assessment (BALs and cytology brushes) and extremely small biopsy samples. There are few contraindications for retrograde rhinoscopy. The main contraindications are where there have been inadequate investigations performed prior to anaesthesia and patients that are a poor anaesthetic risk. The limitations of rhinoscopy are that it only allows for assessment of the pharynx caudal to the choanae, and most often if any lesions are biopsied, the resultant haemorrhage precludes further evaluation or additional biopsies to be taken. Furthermore, endoscopic biopsies are extremely small in size, and therefore often of limited diagnostic value.

**Figure 2** – Patient positioning for bronchoscopy, illustrating a swivel tip T-adaptor to allow passage of the bronchoscope through the ET tube while allowing continuation of inhalational anaesthesia (courtesy of University of Bristol).
and is often recommended; however, care does need to be taken not to traumaise the trachea withuffed tubes in cats. The author prefers to use a large diameter ET tube as possible (most cats can accommodate a size 5 ET tube) uncuffed, and to pack the pharynx with swabs/sponges as required. Pasting the pharynx to prevent being able to introduce the endoscope over the edge of the soft palate, so the author starts off the procedure without packs but packs and suction to hand, which are used as soon as the endoscope is withdrawn.

Close pulse oximetry monitoring before, during and after all respiratory endoscopy is vital. ECG and end-tidal capnography monitoring is also recommended. The anaesthetist always needs to be ready to stop the procedure, intubate, ventilate and suction airway secretions if required.

Technique

General technique

As anaesthesia is being induced, the larynx should always be fully evaluated prior to intubation, for evidence of oedema, haemoptysis, irregularity, masses or trauma. Bronchoscopic and retrograde rhinoscopy are being performed, bronchoscopy should be performed first, to avoid scope contamination. The general technique for respiratory tract endoscopy is more straightforward than GI endoscopy, with steering being the main requirement, achieved by up/down tip deflection and longitudinal rotation of the insertion tube (torquing).

Respiratory endoscopy however is a much higher risk procedure, and the endoscopist needs to be skilled to cause any trauma, to ensure a thorough evaluation and sample collection, and needs to be communicating closely with the anaesthetist at all times, so that any arising concerns can be rapidly addressed.

Technique for bronchoscopy

Once the patient is adequately prepared, the bronchoscope is gently advanced down the trachea, observing the abnormalities such as erythema and irregularity of the mucosa, foreign material and excessive airway secretions. Given the wider and straight nature of the trachea, it is usually straightforward to obtain a good image to the level of the carina (Figure 3). Beyond this, the small size of the feline airways can present a lung in a lung challenge. However, it is important that the airway lumen is visualised adequately as the bronchoscope is advanced to avoid iatrogenic airway trauma. Steering is used to direct the bronchoscope into the left or right mainstem bronchus. The right main bronchus will be seen on the left side of the image. A standard method of systemic evaluation should be used for evaluating the airways on each side, with a map of the airways always borne in mind. The airways should be evaluated for collapse, massess, compression, excessive mucus, purulent secretions, haemorrhages, mucus, W-C associated bronchitis and retrograde rhinoscopy of the nares, which makes directing the retrieval device into the endoscope, which makes directing the retrieval device into the required airway challenging, and requires a skilled endoscopist.

BAL samples should be routinely collected from left and right sides, for cytology and culture. Once the lung tube to be sampled has been selected, bronchoscopic should be advanced into smaller and smaller airways until it is seated in the airway and can not be advanced any further. Fixing the tube in place, the bronchoscopic should be either directly through the endoscope channel or through an aspiration catheter, an assistant caugages the chest, and then suction is applied, either with a suction catheter or suction system. A further 5mL, bolus may be required if inadequate fluid is retrieved. The sample should be placed in an EDTA and plain collection pot. The procedure is then repeated in the opposite side, and the sample should be placed in an EDTA and plain collection pot.

Brush cytology can be useful, particularly of any mass type lesions; however, the author does not routinely perform this. The author rarely performs airway biopsies, since the small size of samples possible with a feline bronchoscope are often of limited diagnostic value, but the risk of haemorrhage and pneumothorax are significant. The author usually reserves biopsies for airway masses, for which biopsy is useful, but risk of haemorrhage on performing biopsies is considerable.

The most common airway pathology in cats is chronic airway inflammation of varying degrees and, less commonly, bronchial foreign bodies associated with secondary localised bronchopneumonia. Retrieval of bronchial foreign bodies can be difficult. The limitations in the size of the instrument channel means that retrieval devices generally need to be inserted alongside the endoscope, which makes directing the retrieval device into the required airway challenging, and requires a skilled endoscopist.

Obtaining a sample of BAL fluid from the right mainstem bronchus is essential when evaluating for foreign bodies, polyps and neoplastic masses, most commonly lymphoma (Figure 4).

Foreign bodies such as slivers of grass may be removed with endoscopic forceps; however, with the limitation in size of forceps that can be used endoscopically, it is often easier once a foreign body has been identified to remove it with grabbing forceps under direct visualisation by placing the cat in dorsal recumbency and using a spay hook or allis tissue forceps to pull the soft palate forward. Endoscopic guided biopsies can be useful for biopsying any masses identified; however, very often taking one biopsy will cause significant haemorrhage to obscure further visualisation and therefore further endoscopic guided biopsies will not be possible. When taking endoscopic biopsies, to avoid damaging the biopsy channel, it is vital that the biopsy forceps are passed through the distal tip prior to retrieval. Damage on retrieval on the biopsy channel is excruciating rhinoscopy, and the abnormalities identified, most cases will also require nasal flushes and/or blindly collected airway biopsy samples to complete the investigation.

Complications and aftercare

The main potential complications associated with bronchoscopy are haemoptysis, hyperaemia, bronchospasm, trauma and haemorrhage and pneumothorax. Most of these complications are easily avoidable through good bronchoscopic technique and careful anaesthesia and monitoring. Retrograde rhinoscopy itself is relatively low risk; however, it is imperative that the endoscopist has a high level of suspicion for excessive mucus to be secreted, and when biopsies have been taken there can be significant haemorrhage. Care needs to be taken to prevent aspiration by use of swabs to pack the pharynx and suction to ensure clear airways, and to prevent airway obstruction once the cat is extubated.

Following all respiratory endoscopy, the cat should remain intubated and allowed to breathe 100% oxygen. Any excessive secretions should be suctioned, both from within the ET tube and the back of the pharynx. If naso-pharyngeal biopsies have been taken, the pharynx should be carefully assessed for remaining haemorrhage, and any bleeding points or suctioned to ensure a clear airway at the point that the cat is ready to extubate. In cases of suspected bronchospasm, bronchodilator administration can be continued following the procedure. It is essential that cats are continued to be very closely monitored in recovery with suction equipment, ET tubes, laryngoscope and oxygen. Care needs to be taken with being able to introduce the endoscope over the edge of the soft palate, so the author always needs to be ready to keep them upstairs.

Response from Herbert Bruinenberg, Dierenkliniek Axel, Axel, The Netherlands – 2011 DE Feline Participant

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We have kittens 4-5 weeks old, 300gm, eating well, which otherwise seem to be alright, but the whole litter stays too small. The breeder apparently experiences this problem with every second litter. They are British shorthair and British longhair, temperature normal, blood is normal, no neurological problems... They stay together when they are small and sleep in a room where they were born to the rooms where the whole family stays. When they move to the new owner they start growing. We started to give some extra vitamins [Viles for cats] and I advised the breeder to keep them upstairs.

This may not seem like a big problem but it is very frustrating for the breeder.

Complications and aftercare

The main potential complications associated with bronchoscopy are haemoptysis, hyperaemia, bronchospasm, trauma and haemorrhage and pneumothorax. Most of these complications are easily avoidable through good bronchoscopic technique and careful anaesthesia and monitoring. Retrograde rhinoscopy itself is relatively low risk; however, it is imperative that the endoscopist has a high level of suspicion for excessive mucus to be secreted, and when biopsies have been taken there can be significant haemorrhage. Care needs to be taken to prevent aspiration by use of swabs to pack the pharynx and suction to ensure clear airways, and to prevent airway obstruction once the cat is extubated.

Complications and aftercare

Following all respiratory endoscopy, the cat should remain intubated and allowed to breathe 100% oxygen. Any excessive secretions should be suctioned, both from within the ET tube and the back of the pharynx. If naso-pharyngeal biopsies have been taken, the pharynx should be carefully assessed for remaining haemorrhage, and any bleeding points or suctioned to ensure a clear airway at the point that the cat is ready to extubate. In cases of suspected bronchospasm, bronchodilator administration can be continued following the procedure. It is essential that cats are continued to be very closely monitored in recovery with suction equipment, ET tubes, laryngoscope and oxygen. Care needs to be taken with being able to introduce the endoscope over the edge of the soft palate, so the author always needs to be ready to keep them upstairs.

This may not seem like a big problem but it is very frustrating for the breeder.

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Feline leprosy

While early investigations implicated Mycobacterium leprae or other potentially pathogenic mycobacteria for feline leprosy, it is now known that there are at least 4 Mycobacterium species involved. This has raised the question as to whether rodent bites are the only route of infection. Investigations are under way in Australia to characterise the epidemiological features of feline leprosy syndrome, to learn more about the ecology and possible reservoir of the causative bacterial species, as Dr Carolyn O’Brien and Dr Janet Fyfe explain.

Figure 1. A New Zealand cat with multiple cutaneous lesions caused by Mycobacterium sp. ‘Cat’ (Image courtesy Dr Anna Day, Dairy Flat Veterinary Clinic).

**References**


**CALL FOR ASSISTANCE - Request for Case Materials and Clinical Samples**

We are undertaking investigations to characterise the epidemiological features of feline infections caused by ‘non-culturable’ mycobacteria (as opposed to those infections caused by members of the M. tuberculosis complex, the M. avium/intracellulare complex or rapidly growing mycobacteria). Our investigations will include the ecology and possible environmental reservoir of these bacterial species. Although they cannot be cultured in the laboratory at this stage, molecular methods have determined that a variety of different mycobacterial species are responsible for feline infections. The exact geographical distribution of these bacteria is presently unknown; however, certain species appear to be more common in particular locations. Preliminary work performed by several of our investigators, including our research group, have thus far identified 4 Mycobacterium species causing feline leprosy syndrome:

- **Mycobacterium leprae** (the so-called ‘rat leprosy’ bacillus), which has a local, but globally distributed, endemic pattern (assumed to be Australia, New Zealand, southwestern USA and western Canada, Italy, Greece, United Kingdom and the Netherlands – although some areas have not reported genetic testing; —
- **Mycobacterium avium** (western Canada and southwestern USA)1
- **East Coast species** or **Mycobacterium sp. ‘cat’** (Queensland, New South Wales, Victoria and South Australia, and the North Island of New Zealand).2,3
- **Mycobacterium sp. ‘Tarwin’** (which has a highly focal distribution around the north, east and southeast of Melbourne, including the Mornington Peninsula and parts of South Gippsland, Victoria).1,4

Because early investigations implicated *M* leprae as the sole causative agent of feline leprosy, it was presumed that cats acquired the infection via bites obtained from infected or colonised rodents. The discovery of a range of causative agents has cast doubt on this as being the only method of transmission. Other possible routes of infection include inoculation via traumas in the skin due to trauma sustained via cat fights or other penetrating injuries (e.g. from vegetation), or via biting insects such as flies or mosquitoes. Although the disease was first described over 50 years ago, to our knowledge, investigation of possible environmental sources of these organisms has never been undertaken in any meaningful way.

The use of a specific and sensitive real-time PCR assay has enabled our research group to investigate the potential environmental source of *Mycobacterium ulcerans* (the cause of a significant and potentially disfiguring skin infection in people and animals, known internationally as Buruli ulcer).5

We hope to apply this methodology to rapidly and accurately differentiate the causative agents of feline leprosy, from fresh or formalin-fixed paraffin-embedded biopsy samples (10 x 10–20 micron slices cut with a fresh microscope slide) or Romanowsky-type stained cytology slides (e.g. Diff Quik) obtained from cats with feline leprosy syndrome confirmed to be caused by a ‘non-culturable’ mycobacterial species.

Having identified cases, we hope subsequently to obtain other epidemiological, clinical and treatment data from the attending veterinarian. Eventually, we intend to investigate a variety of environmental samples in and around endemic areas identified in the study. Practitioners or veterinary pathologists who are interested in submitting material to the study are encouraged to contact the investigators for further information.

Please contact Dr Carolyn O’Brien cob@catvet.net.au OR + 61 (0) 412 223 148

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**CONFERENCES & SEMINARS**

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**WORKSHOPS**

The following workshops will be available in 2012. Please refer to the CVE website for registration details.

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* Prior learning will be required to attend this workshop.

**TIMEONLINE COURSES**

Timeline courses are delivered wholly online, giving you the flexibility to study when and where you wish and complete your course at your own pace. Listed dates for all short courses are subject to change. Please refer to the Timeline page of the CVE website, www.cve.edu.au, for the latest updates, full programs, prices, etc.

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<td>Anne Fowler</td>
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If you have participated in a TimeOnline course or event in the previous 12 months you are eligible for a 10% discount on another TimeOnline course.

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Looking for a quick educational pick-me-up? Watch out for the CVE Webinars in 2012. One hour of education with the convenience of doing it from your own desk. Whether Veterinary Issues or Practice Management, there will be something each month to interest you. Watch for these symbols to see what is available.
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