

SPECIAL ANNIVERSARY EDITION III

Control & Therapy Series, September 2015 | Issue 280

Centre For Veterinary Education

THE CVE COMMUNITY

Celebrating
OUR VETS



CELEBRATING 50 YEARS OF SERVICE
TO THE VETERINARY PROFESSION IN 2015

Follow Tom Hungerford's 'goanna track to success'...

SEPTEMBER 2015 – ISSUE 280
Australia's Leading Veterinarian Forum

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FROM THE DIRECTOR



This third edition of our 50th anniversary C&T is sub-titled “**Celebrating our Veterinarians**”. There are articles written by volunteers who have worked overseas to help others less fortunate than we who work in Australia and similar developed nations. These are just two examples of the many ways that members of our profession provide help to communities, both here and overseas. The CVE wished to recognise and acknowledge this pro bono effort as a part of our 50th anniversary.

Organisations like **Vets Beyond Borders** and **AMRIC** rely heavily on the goodwill of the profession when colleagues donate time, skills and knowledge to help others less fortunate, both in our own society, as well overseas. There are also various professional associations which rely heavily on the goodwill and support of volunteers for the benefit of the wider profession – the AVA and its special interest groups, the ANZCVS and the Commonwealth Veterinary Association are obvious examples where relatively small groups of individuals dedicate much of their time to the benefit of the wider profession and their communities.

Exotic animal disease outbreaks have been times when members of our profession have elected to leave their own practices in order to provide emergency support and backup in times of crisis in other countries. The Foot and Mouth Disease epidemic in the UK in 2001 is just one example, where large numbers of Aussie vets travelled to the UK to support their colleagues and the farming community in a time of crisis.

Volunteering can take many forms and while many choose to use their veterinary expertise to help others, a lot of veterinarians are active in their communities providing support in other, non-veterinary ways. Whether it takes the form of participating in service clubs or active involvement in community groups and organisations, vets often can be found giving up their time to support the wider community. Spending time with and working to help others less fortunate can be very rewarding and helps to keep us grounded. Let us hope that over the next 50 years the profession continues to expand on the lead of others and to give back to the global community in new and exciting ways.

Once again this edition contains a variety of articles as well as some feedback and comments on previous articles, which has been the hallmark of C&T since its inception. You may feel that many of the articles are written by a few familiar names or that there is a bias towards feline articles, and in this you would be correct. All of our contributors volunteer their time to write the articles submitted and as is usually the case, the busy minority is often the most productive! Some of the material is sourced from our Distance Education courses where the tutors select what they see as very well prepared articles. Given that our feline medicine DE course has the largest annual enrolments as it is popular in Asia and Europe as well as Australia, we tend to have many more feline submissions. If you would prefer to see more canine, large animal or more diverse articles, please start writing!

In September, our new Clinical Neurology DE course started with strong enrolments. This course is truly international with tutors from the UK, USA and Australia. Like our feline medicine course, Clinical Neurology has RACE accreditation, which means it has been approved as CPD in the USA. The course comprises nine monthly modules with a break over Christmas. It's a very new, very fresh dynamic course rich in colour images, schematic representations and movie clips – we believe it will take the mystery out of neurology and transform the practitioner's approach to neurological cases.

Hugh White

Dr Hugh White
Director, Centre for Veterinary Education

CALENDAR

SYDNEY
Medical Imaging Conference
+ Masterclass
Monday 22 – Friday 26 February, 2016

MELBOURNE
Valentine Charlton Feline Conference
+ Masterclass
Monday 20 – Friday 24 June, 2016

BRISBANE
Emergency Conference
+ Masterclass (Masterclass TBC)
Monday 24 – Friday 28 October, 2016

PORT MACQUAIRE
Canine Internal Medicine Seminar
Sunday 11 October, 2015

MELBOURNE
EcoCPD: Small Animal Radiology
Saturday 31 October, 2015

SYDNEY
Recent Graduate Survival Seminar
Friday 20 – Saturday 21 November, 2015

SYDNEY
EcoCPD: Welfare & Ethics Symposium
Wednesday 2 December, 2015

HOBART
Clinical Pathology Seminar
Sunday 13 March, 2016

ADELAIDE
Critical Care Seminar
Sunday 1 May, 2016

CANBERRA
Clinical Pathology Seminar
Sunday 29 May, 2016

PERTH
Feline Seminar
Saturday 23 – Sunday 24 July, 2016

Check out our website for upcoming TimeOnline and PodcastPLUS topics...
www.cve.edu.au/timeonline
www.cve.edu.au/podcastplus

2015-16

October 2015

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Calendar Key

- 2016 DE Early Bird ends
- 2016 DE commences
- Major Conferences
- Seminars
- Hands-on Workshops
- TimeOnline start dates
- PodcastPLUS
- School holidays (NSW)
- CVE holiday closedown

MELBOURNE
Basic Echocardiography Workshop
Saturday 17 October, 2015

SYDNEY
Stress-Free Surgery Workshop
Saturday 17 October, 2015

SYDNEY
Back to Basics: Diagnostic Ultrasound Workshop
Friday 6 & Saturday 7 November, 2015

SYDNEY
Anesthesia Wetlab
Friday 12 February, 2016

SYDNEY
Hip & Stifle Workshop
Saturday 27 February, 2016

SYDNEY
Bone Plating Workshop
Sunday 28 February, 2016

SYDNEY
Approaches to Bones and Joints Workshop
Thursday 12 & Friday 13 May, 2016



CELEBRATING 50 YEARS OF SERVICE TO THE VETERINARY PROFESSION IN 2015

Follow Tom Hungerford's 'goanna track to success'...

The C&T is the brainchild of Dr Tom Hungerford, one of the founders of the PGF* (established in 1965) and the first Director (1968-1987), who wanted a forum for uncensored and unedited material.

'...not the academic correctitudes, not the theoretical niceties, not the super correct platitudes that have passed the panel of review... not what he/she should have done, BUT WHAT HE/SHE DID, right or wrong, the full detail, revealing the actual "blood and dung and guts" of real practice as it happened, when tired, at night, in the rain in the paddock, poor lighting, no other vet to help.'

The first C&T, contributed by Dr R M Kibble from Kurring-gai Animal Hospital, Turramurra North, NSW was on 'Infertility – Uterine Conditions' and was published on 29 April 1969. CVE Members are reminded that this and other C&Ts, Perspectives, Proceedings and veterinary publications are available to CVE members through the CVELibrary. Contact cve.enquiries@sydney.edu.au or call us at +61 2 9351 7979 if you've forgotten your Username and Password for access.

Thank you to all contributors

...and more C&T articles and Perspectives are needed

Thanks to every author who contributed articles or comments to the *Control & Therapy Series* (C&T) and to those who supplied images and visuals. Without your generosity the Series would cease to exist.

WINNERS

MAJOR PRIZE

Entitling the recipient to one year's free membership of the CVE: TRAILS, TRIBULATIONS & TRIUMPS – SETTING UP YOUR OWN PRACTICE by Moira van Dorsselaer

CVE PUBLICATION PRIZE WINNER

Entitling the recipient to a CVE proceedings of their choice: www.vetbookshop.com

BEHAVIOURAL MEDICINE DE CASE STUDY: 'WANDA' by Emma Rigby

MAX KELLY – CASE STUDY by David Hughes

*The Post Graduate Foundation in Veterinary Science of The University of Sydney (PGF) was renamed the Centre for Veterinary Education (CVE) in 2008.

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CELEBRATING OUR VETS

VOLUNTEER VET SERVICE ABROAD: MAKING A DIFFERENCE IN DEVASTATED NEPAL

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C&T NO. 5479



Figure 1. Child of Nepal.

In May 2015, Nepal was devastated by a 7.9 magnitude earthquake in which nearly 5,000 people died and many lost their homes and had limited access to food and water. Animals were also severely affected. CVE supporter Cate Sutton juggled work, family and her 2015 CVE Sonology Distance Education course to answer the call for Vet Volunteers. We invited Cate to share her experience with our members/readers and Cate's favourite image of a young child eating rice on top of the rubble of his former house says it all. 'Life goes on...'

Cate graduated from The University of Sydney in 1994. She moved to Cobram on the Murray River in 1995 to work in a mixed dairy practice for 3 years, travelled and worked in Europe for 2 years then returned to Cobram where she became a partner in the business in 2001. Cate finished a Masters in Small Animal Practice (Murdoch University) in 2010 and is currently enrolled in the CVE's Sonology DE course.

I have travelled to Nepal twice before to trek in 1992 and 2009, and fell in love with the region and its people. I had also travelled throughout India, Southeast Asia, Africa and South America but had never done any volunteer or disaster work before. It had always been my dream and I had planned to do volunteer vet work full time once I retired but this was an opportunity that I couldn't refuse.

From May 18 until June 5 of this year, I was fortunate to be supported by the Humane Society International to travel to Nepal, accompanied by another Australian vet, to help with the earthquake recovery efforts for livestock animals. We were initially sent, on 2 May, to the rural areas around Melamchi in the Sindupalchowk area, the district at the epicentre of the second earthquake. Here, we worked with the Himalayan Animal Rescue Trust (HART) as volunteer veterinarians. Later, we were engaged to provide advice to local veterinarians around the Kathmandu and Bhaktapur district working with Animal Welfare Network Nepal (AWNN), SPCA and other animal welfare organisations.

We walked for hours through the beautiful scenery of the Himalayas to remote villages where there was total devastation. Many times we were the first aid these remote villages had seen in the 5 weeks since the earthquake/s. On numerous occasions, we were asked to treat or suture human wounds and ailments as well as those of their animals. Food and clothing was scarce but there was always an offer of food or a cup of tea at the completion of treatments.

Many people had already started to rebuild and they were so grateful for any help we could provide. These people had a positivity and resilience about them which was truly amazing and inspiring. Every day there were 5 or 6 aftershocks but people went about their business as if nothing had happened.

Starting at daybreak, and working through the day and into the night, we saw a huge caseload on limited sleep. The devastation and destruction we witnessed was immense and the stories of survival and loss were unbelievable. Villages were reduced to rubble and mud. People and animals shared a tarp for relief from the stifling heat of the day (it was 30-40°C and 90% humidity).

We treated goats, pigs, an injured dog, many buffalo and cattle. The majority of the cattle and buffalo we treated were all that the owners had left in the world. Many had lost family members, crops, housing and other livestock through the destruction caused by the earthquake. The survival of these animals was paramount to their ability to produce an income and thus survive themselves.



Figure 2. Devastated Nepalese village.



Figure 3. Cate amputating a buffalo's tail.

The majority of cases were limb fractures. There were numerous head and spinal injuries and many downer cows. The limb fractures were treated with plaster and fibreglass casts, replacing the traditional herbal treatments that were being employed. Maggot infested wounds were common, life-threatening and were primarily caused by pressure sores through the animal being down for the 4 to 5 weeks post-earthquake. The owners provided prolonged management of downer cows which is not viable in developed economies due to the high cost of such intensive care. There were many cases where, after simple treatments such as casting a fractured limb and/or anti-inflammatory treatment, the animal was able to stand.

We saw significant improvements in the physical status, management and welfare of the cases following our treatments. Many cows stood again after a staggering 5 weeks of being down. There were testing times as Nepal is a country where it is illegal (culturally, religiously and legally) to euthanase cattle. Fortunately, we were provided with an endless supply of pain medications and consequently no animal was left to suffer in pain; many actually surprised us with their recoveries.

This was truly a life-changing experience for me and something I plan to do much more regularly in the future. It has rejuvenated my desire for large animal work and reinvigorated my love for this amazing career we are lucky enough to be a part of. I can honestly say it was the most professionally rewarding experience of my life and I can't wait to get back there next year to offer further assistance. The Nepalese people will rebuild their beautiful country. ■



Figure 4. Nepalese man with a recovering buffalo.

CELEBRATING OUR VETS

THE AUSTRALIAN RHINO PROJECT

Anne Fawcett

CVE Member

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C&T NO. 5480

How do you protect a threatened species in the face of poaching? The Black and White rhinoceros in Africa are under severe threat, with an insatiable market for rhino horn in China and Vietnam driving poaching.

Attempts at *in situ* conservation continue to be thwarted by poachers. As the kill rate of rhinos begins to overtake the birth rate, extinction within our lifetime is a very real possibility. It is estimated that 1 rhino is killed by poachers every 6 hours.

What if it were possible to take rhinos out of that precarious situation, provide a safe environment for them to re-establish numbers, and return them when the threat of poaching is eliminated or at least substantially diminished?

The Australian Rhino Project is a bold strategy to establish a breeding herd of rhinoceros in Australia as an insurance population in the event of extinction of rhinos in the wild in South Africa.

Founded by South African-born Ray Dearlove, the Australian Rhino Project is supported by Investec, The University of Sydney, Taronga Conservation Society and the Classic Safari Company.

The first shipment of rhinos has been identified, a herd of 6 animals, and secured in a protected location in South Africa. As a first step, The Department of Agriculture, Forestry and Fisheries (DAFF) will inspect a South African quarantine facility owned and operated by South African veterinarian Dr Charles van Niekerk.

Once this facility is certified, the animals will be darted by veterinarians, captured and quarantined for a period of approximately 3 months before being freighted on a charter flight from Johannesburg to Sydney.

During the flight they will be accompanied by at least 2 veterinarians. From Mascot, the animals will be transported to Taronga Western Plains Zoo at Dubbo, where they will be quarantined for an undetermined period.

Subsequent shipments will transport 20 animals on each flight.

'The aim is to transport 20 animals per year for 4 years with Australia having a custodial type of arrangement. Once the situation in South Africa stabilises and the poaching brought



under control, the rhinos or their progeny will be available to be returned to Africa,' Dearlove said.

Staff from the University's Faculty of Veterinary Science form the Australian Rhino Project's Scientific Advisory Committee, led by Dr Derek Spielman.

Said Ray Dearlove, 'The Faculty has been right behind us from day one; we've had support from Professor David Emery, Professor Rosanne Taylor and a wonderful team of more parasitologists, immunologists and other "ologists" than you can imagine.'

The Advisory Committee will develop and advance scientific research to improve the health, care and subsequent breeding of these remarkable animals, benefiting populations around the world.

'One of the keys to species conservation is maintaining genetic diversity,' Dearlove said. 'The other is ensuring the birth rate is not overtaken by the kill rate. The gestation period of a rhino is 16 months, but it is essentially 4 years from calving that the female is ready to breed again. If we can reduce that weaning period of approximately 4 years to 3 years without putting stress on the animal, we can have a 25% hop on this thing. But the aim is to breed animals successfully and safely.'

It is anticipated that the first group of rhinos will be in quarantined in South Africa by the end of October.

Dearlove is understandably anxious about the wait.

'Initially, we were looking at a herd of 12 to transport. Three were poached so the rest were moved to another area for safety and another 3 were poached in the past year.'

Wildlife veterinarian Derek Spielman believes that while the plan is bold, it is the only way to secure the species.

'Establishing a sustainable breeding population outside of Africa is the only way I can see to guard against their extinction,' he said. 'The level of poaching is rife. There is too much money involved and people are too poor to resist the money offered by highly organised and sophisticated international poaching teams.'

'There are rhinos out of Africa but not enough to secure both species so we need to get as many of the remaining ones out if we are going to keep the species alive for future generations.'

The ultimate aim of the project is to establish a breeding herd of rhinos as an insurance against possible extinction of these iconic animals in the wild.

For more information and to support the project visit: theaustralianrhinoproject.org ■



Photos courtesy of Julia Salnicki (M.Phil. Zool.) of The Classic Safari Company, classicsafaricompany.com.au



Read or watch in this issue's eBook version: www.cve.edu.au/candtebook



WARNING: These videos contain images which may distress some viewers

Rhino Ray's War:

smh.com.au/good-weekend/rhino-rays-war-20150626-ghwcb5

Saving Africa's Rhinos:

au.tv.yahoo.com/sunrise/video/watch/28032049/saving-africas-rhinos

Save the Orphans: youtu.be/2l8lPf5xXj0

The Australian Rhino Project 2015 Ray Simon SA trip:

youtu.be/ECDRugVNxVQ

Extended version: youtu.be/X3NfqvvyzYM



CELEBRATING OUR VETS

A DAY IN THE LIFE OF A VETS BEYOND BORDERS' VOLUNTEER IN THE HIMALAYA

Alan Sherlock

E. alansherlock@hotmail.com

C&T NO. 5481

Super-strength, appropriately named *Hit Beer* is a Sikkimese specialty. Made locally and, for some unknown reason, not permitted to be consumed outside the state, it comes with special gold foil around the top and 14% alcohol. It's not for the timid drinker, but an ideal tippie for Vets Beyond Borders' (VBB) volunteers at the end of a long day in this eastern part of the beautiful Indian Himalaya.

Victorian vet and regular VBB volunteer, Dr Alan Sherlock, sends updates when on site at the dog population control project in Sikkim where he has gone for 2-month visits for the past 6 years. This is an account of one of his typical days on the job in the hills of the Himalaya.

The regional town of Soreng in West Sikkim is about half a day's drive from the state capital Gangtok and close to the Nepal Border. It's where VBB volunteers like myself, plus staff from the Sikkim Anti-Rabies & Animal Health (SARAH) project, can sometimes be based and from where we visit a different place each day to run a mobile sterilisation clinic. Driven by robust driver Som, we never quite know where we'll end up, as he's also in charge of deciding the location according to the road conditions and other arcane considerations we can never quite work out.

It doesn't really matter anyway if the planning isn't entirely scientific, as there is always work to be done anywhere - dogs to be sterilised and vaccinated for rabies or animals treated for various problems. Be assured that back at the SARAH clinic in



Figure 2. Paravet Buchu prepares the dog with boiling water burns; the purple is probably Jensen-violet applied by the owner.



Figure 3. The second dog Dr Alan saw that day with boiling water injury was lucky that it just missed the eye.



Figure 4. The 'done' dogs recovery area with typically patient owners.



Figure 1. Dr Alan Sherlock at work in Daramdin, Sikkim.

Gangtok things are run much more strategically as a woman vet, the wonderful Dr Diki, is in charge there!

Daramdin is the equivalent of a nice little Australian country town and heading there we doubted it would have many dogs to be attended to. Reaching it, however, Som was to be proved right in his chosen location. As we arrived at the central Daramdin bazaar area where that day's 'veterinary performance' was to be given, at least 50 noisy dogs were tidily milling about with expectant owners.

My heart missed a few beats wondering how on earth we 2 vets and our vet nurse team were going to process this number of canines in a day. But paravet Buchu took over the scene with his infectious just-do-it attitude, so the rest of us just got on with it too.

Once we worked out which of the dogs needed surgery and which required only vaccination boosters and treatments, the task became easier to manage. Even so, we were still left with about 30 dogs to sterilise and it was going to be a big day.

Aside from speys and castrations, we also treated a couple of dogs brought in with serious burns from boiling water. This is not an unusual injury, as a pot over an open fire is the common cooking method in homes here. Luckily they were not the most serious I've seen and these guys would recover well.

Overall, the day went smoothly with Dr Shams doing 17 dog sterilisations to my 13, which was not a bad effort, if I may say so. Even with a break for a delicious Sikkimese lunch, we were home just after night fall to a relaxing dinner and an early night. ■

CELEBRATING OUR VETS

PHILIPPINES' APPEAL

Miguel Mervin Pajate

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 E. buristek@yahoo.com

UPDATED YOUR EQUIPMENT AND LIKE TO DONATE THE PREVIOUS MODEL...?

Or care to donate some veterinary textbooks and/or proceedings..?

CVE Member Miguel Mervin Pajate from Dubbo Veterinary Hospital, NSW, is launching an appeal to vets to donate to rural veterinary schools in the Philippines any used but still relevant veterinary texts, old anaesthesia machines (even non-working models that can still be repaired), and any old but still-functional veterinary equipment.

CALLING VETERINARY LECTURERS & SPECIALISTS

Do you have time to volunteer for a week and make a difference in the Philippines?

Unfortunately, airfares to and from the Philippines would need to be self-funded. But once you arrive in Manila, all transportation from the airport, accommodation and meals will be covered by the sponsoring institution. Also, to show their appreciation and gratitude to volunteers, the sponsoring institutions will take you on a short goodwill tour around parts of the Philippines.

If you can donate your time and money to this worthwhile cause you will be more than rewarded by the grateful thanks from eager, education-hungry young veterinary students, desperate to improve their clinical veterinary knowledge. To find out more, please contact Miguel. ■



Figure 1. Miguel Mervin Pajate

LETTER TO THE EDITOR

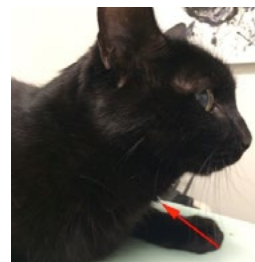
HAVE ANY READERS OBSERVED THIS SIDE EFFECT FROM TOPICAL TROPICAMIDE?

Carolyn O'Brien

Melbourne Cat Referrals
 P. (03) 9005 8270
 E. info@catvet.melbourne

Dear Editor

I examined a 10-year-old male neutered domestic shorthaired cat recently for what appeared to be an incipient cataract of the right lens of unknown origin. The cat had otherwise been in good health. To facilitate ocular examination I applied 2 drops of 0.5% tropicamide (Mydryacil, Alcon Laboratories) to the right eye, which took effect after about 15 minutes.



Approximately 30 minutes after leaving the veterinary hospital, the owner telephoned to say that she noticed that the cat had developed a 'swollen neck' and was swallowing excessively. She returned with the cat and, indeed, he had developed

bilateral, non-painful oedematous swelling of the ventrolateral cervical areas (see image). He did not appear to be distressed, nor did he display any dyspnea and the vital signs were within normal limits. The excessive swallowing efforts had stopped by the time he re-presented. The left pupil was also dilated (presumably because of systemic absorption of the drug). The cat was observed but his signs did not progress and he recovered uneventfully after a few hours.

Having not come across this type of reaction to topical tropicamide before, I undertook an investigation of the literature and came across the following publication: Willis, M., *et al.* 'Acute, transient sialoadenomegaly in two cats following topical administration of tropicamide.' *Veterinary and Comparative Ophthalmology* 1997;7:206-208. The authors of this report describe a very similar clinical presentation following the use of tropicamide, although the case I saw did not have specific appreciable enlargement of the mandibular salivary glands, despite attentive palpation of the affected areas.

I wonder if any of your readers have observed this side-effect to topical tropicamide in any of their feline patients?

Regards,

Carolyn O'Brien

LARGE ANIMAL

WHAT IS YOUR DIAGNOSIS?

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C&T NO. 5482

During December 2013, near drought conditions were encountered in the Southern Highlands of NSW. In a group of 14 horses, 2 demonstrated a markedly abnormal hindlimb gait. The worst affected horses was a 25-year-old Quarter Horse mare ('Starlet'). A 13-year-old Arabian gelding developed similar but milder signs, really only evident when he attempted to 'warn off' a rival.

Questions:

- What is your diagnosis?
- What is the aetiology of this condition?
- How would you treat this patient?



Figure 1. 'Starlet', the first horse affected, before treatment.

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LARGE ANIMAL

REPLY TO C&T NO. 5466
RESTRAINT OF HORSES IN THE
Paddock OR 'PORTABLE CRUSH'REPLY TO C&T NO. 5467
LEG WOUNDS IN HORSES

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C&T NO. 5483

C&T NO. 5466

I went through uni with Nick and want to thank him for his 2 C&Ts.

Regarding the C&T on proud flesh in chronic leg wounds, I remember back in the 70's when I was working in Scone, the old vet I was working with – Geoff Adams – who taught me all my practical horse handling skills and practical horse practice in the field told me that to get a chronic lower limb wound (like the one shown in the photo below from Nick's article) to heal, he would rather rasp off the excess proud flesh, strap it up well with Elastoplast® with no padding under it, and just leave it on.

He said they healed up by epithelial mobilisation better with pressure on the wound and the immobilisation. He wouldn't change the dressing either so they would go quite odorous.

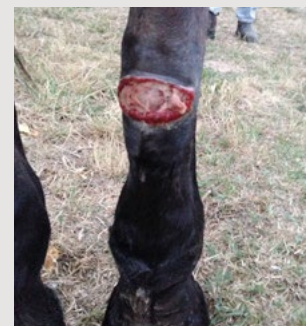


Figure 1. The wound in late November, soon after the injury, with the initial infection controlled.

But I can attest to the fact that this method worked. This method of splinting the wound would be the same idea, to immobilise the area. He thought padding and excess movement made the proud flesh worse and delayed healing.

I am, of course, now so dated on horses that this is probably not relevant today. I have no idea what the current treatment of these wounds are.

Read C&T NO. 5466 Restraint of Horses in the Paddock or 'Portable Crush' in the eBook.

C&T NO. 5466

Re Nick's hobbles: I think that this is a great idea! I was taught never to rectal a horse if there were bars behind the hind limbs, rather to work around the hind post of the race so the body was to one side (and out of kick range!), and I could still

do the rectal. I am right handed but Geoff taught me to use my left hand as he said it easier to locate the right ovary first, then move along the uterine body to the left ovary.

Back in those days we were follicle testing mares before service, and all the pregnancy diagnosis was manual.

I was also taught never to do calvings with bars behind the cow as if she suddenly laid down I would get my arm broken. This saved many broken arms back then.

One trick I was taught with calving heifers was back in my short stint in Warrnambool. Lying in mud in the rain in the middle of the night, the beef heifer on her brisket, I couldn't shift that calf. I got on the 2-way radio and a vet who had been out a year ahead of me came out. He showed me. He put a rope head collar on the heifer, tied the end to the end corner post where the race goes to the forcing yard, got her up, backed her out into the forcing yard then got her down on her side.*** Then, with a calf puller, the correct traction and the right angle towards the hocks (which is impossible when lying on the brisket) the calf was easily pulled.

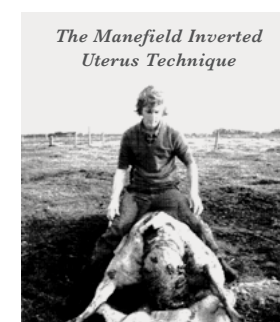


Figure 1A. The paired sidelines, with a strap going from front pastern to hind pastern on each side.

Hugh is right, no OH&S back then, we just did our jobs. From the OH&S WorkCover type lectures I attended in conferences I do not know how a large animal practice owner can ensure that when they send a young vet out to a horse or cattle job that the facilities are safe enough so they don't get hurt. Apparently the practice owner is liable if an associate is hurt in the field.

Just some thoughts from an old guy for a long time working in the relative safety of companion animal practice. ■

Read C&T NO. 5467 Leg Wounds in Horses in the eBook.



*****New CVE Members/ Readers are invited to read:**

Geoff Manefield's classic Perspective NO. 29, Uterine Prolapse in Cattle, C&T Series, Oct 1999.

LARGE ANIMAL

COMMENT ON C&T NO. 5467
LEG WOUNDS IN HORSES

Darren Feary

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 Specialist in large animal internal medicine
 Specialist in equine emergency & critical care

C&T NO. 5484



Figure 1. Darren Feary

Dr Nick Scott shares an important example of the practical management of a distal limb injury in the field when more intensive management is just not an option. Dr Scott describes the successful management of digital flexor tendon sheath injury and exuberant granulation tissue; commonly encountered conditions in practice.

Leg wounds involving tendon sheaths are emergencies, and can be life-threatening and/or career-ending if not treated early and aggressively. Systemic broad-spectrum antimicrobial therapy administered within the first 24 hours greatly improves the prognosis if synovial structure involvement is suspected or confirmed. The combination of procaine penicillin G (20 mg/kg IM BID) and gentamicin (6.6 mg/kg IV or IM SID) is a good standard first choice for at least 3-5 days. Tetanus prophylaxis, non-steroidal anti-inflammatory therapy, and wound lavage and debridement are also standard therapies at initial examination.

Additional diagnostic and treatment procedures should be explained and offered to the client. Ideally, these may include the following:

- Tendon sheath lavage to reduce bacterial contamination and reduce the development of fibrous adhesions** (this can be quite difficult in the standing, weight-bearing patient. General anaesthesia is usually preferred)
- Intrasynovial antimicrobial administration** (gentamicin sulphate 100-200mg every 24-48 hours)
- Regional limb perfusion**
- Sterile bandage and bivalved cast to immobilize the area, while still allowing access to the wound when required**

The reality is that practitioners are often faced with practical and owner financial constraints that mean the ‘gold standard’ of care is not an option. These cases require alternative, creative approaches, diligent owners, and a pinch of good luck. Dr Scott faced the challenge of a distal limb wound, tendon sheath infection, and exuberant granulation tissue formation, all significant factors preventing adequate wound healing.

On the issue of granulation tissue and bandaging; it is not really an argument of bandaging versus not bandaging, but more getting the right balance, as there are pros and cons of both approaches. The benefits of bandaging distal limb wounds (protection from contamination and further trauma, reduced oedema, pressure and immobilization, faster healing) usually outweigh the disadvantages (potential for exuberant granulation tissue formation) during the acute healing phase. It is generally recommended that fresh wounds on the distal limbs be dressed with an occlusive bandage until a healthy bed of granulation tissue develops.

The application of PVC splints in the case described by Dr Scott provided pressure and immobilization of the injured area which, combined with evidence of controlled infection, significantly lessened the exuberant granulation tissue formation and improved wound healing. Certainly, providing pressure and immobilization of wounds over high-motion areas is an important component of preventing exuberant granulation tissue formation. In this case, the location of injury and presence of synovial infection required a bandage to provide the pressure and immobilization necessary.

The risk of pressure sores and pressure-induced tendon injury is important for clients to be aware of when managing leg injuries with pressure bandages, casts, or splints in the field. These risks can be reduced by strict confinement and diligent monitoring.

There are many types of dressings and topical ointments, potions and lotions that are prescribed for the prevention and management of proud flesh. Many are effective, but some caustic and astringent agents also destroy healthy epithelial cells, causing prolonged healing and excessive scarring. Fortunately, the hundreds of years of practitioner-based evidence of the effectiveness of topically applied Manuka honey to promote wound healing, particularly in chronically infected wounds, is now supported by clinically-based scientific evidence in horses¹. As discussed by Dr Liyou (C&T NO. 4313) and Dr Koenig (comment on C&T NO. 5168), Manuka honey can be a practical and inexpensive addition to the veterinarians toolbox for wound management in horses, either on its own or under a bandage.

Sharing and reflecting on experiences and new knowledge is invaluable in our profession. It is as important to know what can be done in the field, or under challenging circumstances, as it is to know what to do under ideal conditions. ■

Reference

1. Bischofberger AS, Dart CM, Perkins NR, Kelly A, Jeffcott L, Dart AJ. The effect of short and long-term treatment of Manuka honey on second intention healing of contaminated and noncontaminated wounds on the distal aspect of the forelimbs in horses. *Veterinary Surgery* 2013;42(2):154-160.

Further Comment from Marshall:

Good to get Darien’s perspective as a younger equine vet. Her Manuka Honey comment was really interesting because I have been using this for about a year, with success, to aid chronic wound healing in dogs. Where I used to use a hydrocolloid gel like Duoderm gel to ‘draw out’ a deep granulating wound, say like an old pig tusk wound or chronic healing abscess in a cat, I now pack it with manuka after debridement. On an international clinical email group there was a thread talking about MRSA which is seen in the USA and Europe causing non-healing wounds in dogs and cats; these have been encouraged to heal with manuka honey. I occasionally get asked about a grotty horse wound which I have been telling them to dress it with manuka honey. Now I have an endorsement from an equine vet. ■

Read C&T NO. 4313a Honey in Wound Management in the eBook.

Read C&T NO. 5168 – Comment by Dr Koenig on Proud Flesh in the eBook.



THE USE OF CARPROFEN IN A LABRADOR-MIX DOG PRESENTING WITH SELF-MUTILATION OF THE TARSUS

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Compulsive behaviours are brought on by situations involving conflict or frustration, but can progress to occur without the original context, and are thought to involve the serotonin, dopamine and beta-endorphin systems. Compulsive behaviours are abnormal due to their repetitive exaggerated nature (Luescher, 2009). Self-mutilation can also have an emotional basis and is used in this way for human presentations but the phrase can be used to describe behaviour without hinting at aetiology. This case is presented as an example of self-mutilation as opposed to compulsive disorder, similar to that described by Zulch *et al.* (2012). A tentative diagnosis of pain leading to acral lick dermatitis was made here in a dog thought to be experiencing concurrent chronic pain and acute emotional conflict.

Case report

An 8 to 9-year-old male neutered Labrador/Collie mix was referred for ‘acral lick dermatitis’ over his left metatarsal region of 2 years’ duration due to prolonged self-mutilation. At the time of referral he lived with his female owner, her male partner and her 2 daughters, plus a juvenile German shepherd female and 2 middle-aged cats (a male and a female). The dog had been in the owner’s possession since puppyhood. The dog was fit and healthy. He was described as being obsessed with his ball, becoming defensively aggressive if other dogs approach his ball, but was otherwise well behaved and obedient. When his ball was not involved, he had a good relationship with the household animals and was friendly towards other dogs he met out and about. He was friendly with people and played well with them. With children he was wary and defensive of his ball. He gains attention by dropping his ball for people to kick and also produces it in social situations. His owner can touch the ball. He was given regular exercise off lead and on lead with play. He would become ‘fed up’ with the puppy at times if she was pestering him or playing roughly.

During the year of referral, the older female companion dog was euthanased in January. The case dog had grown up with this dog and they were close. The male partner arrived in the house in July and the puppy German shepherd was brought home in August. The owner reported that the dog had been licking the left metatarsal area regularly for at least 2 years prior to referral. The frequency and intensity of the licking had increased during the last year. He would lick whenever he was lying down or resting. He has made himself lame with licking in the past. His early medical history, which was not available, includes a traumatic injury to his left metatarsal area including fractures. This was dealt with at the time but records were not available. The following information was taken from his medical records. Two years prior to the consult the left metatarsal region was radiographed. There was evidence of considerable osteoarthritis and boney change involving the metatarsal joints and several metatarsal bones. The skin was noticeably thickened and infected. He was treated with a 14 day course of cephalexin at a dose of 22mg/kg twice daily (Rilexine®, Virbac Animal Health). The owners were also to use an Elizabethan buster collar on him. On revisit he was given a further 7 days of treatment. However, the soft tissue swelling had reduced. The collar was to be continued. On revisit the skin had healed well but there was still some crust present. Follow up was not continued. The dog was not seen at the clinic for 2 years following this initial investigation. The next visit was 2 months following the death of the elderly German shepherd. The dog had continued licking with renewed intensity and had created a 5-inch long wound along the left hock and foot with considerable tissue damage, local infection and swelling. He was prescribed a course of prednisone 20mg twice daily gradually reducing the dose as per standard practice. The owner was also advised to bathe the wound and apply an antibacterial cream. The dog was then referred for behavioural assessment. The owners declined further radiographs of the dog’s left metatarsal area at this time. The dog was otherwise well at clinical examination.

Diagnosis

A review of his medical history, physical exam and behavioural information did not support a diagnosis of self-mutilation as a form of compulsive disorder. It was felt that pain was a major factor in the maintenance of the behaviour. He was tentatively diagnosed with acral lick dermatitis due to chronic pain from osteoarthritis of the left metatarsal area compounded by anxiety-inducing household factors. Compulsive disorder was not completely ruled out as there were aspects of this dog’s behaviour that suggested compulsive tendencies (obsessive and focused with his ball). Attention seeking was ruled out because he could reliably attract attention by bringing his ball to his owner or anyone else. No psychoactive medication was given.

Treatment

As far as could be ascertained, this dog had never received any pain relief for his tarsal pathology. Reasons for this included his lack of a noticeable limp, continued play and exercise and no vocalisation associated with movements. He was started on a non-steroidal anti-inflammatory tablet, carprofen (Rimadyl, Zoetis Inc.), at a standard recommended dose for his body weight to be given daily and not on an ‘as needed basis’. This was to be continued indefinitely provided no adverse effects were experienced. Active manuka honey cream (Anhydrous cream 25%, Aniwell, NZ) was to be applied twice daily to the affected area to aid wound healing. The limb was to be covered with a breathable cotton sock and the buster collar was to be continued.

Behavioural interventions were minimal. The owners were to distract the dog if he was noticed licking and instead reward him with something such as a ball game or treat. They were also instructed to keep the younger dog separate for some periods of the day to allow the older dog to sleep, rest or play as he wanted without disturbance. It was suggested that each dog be given their own bed and they were to be kept separate during the night. Other management included maintaining a suitable lean body weight, continuing with his exercise and ensuring that his bed was padded and situated in a draught-free area.

Follow up

Within 2 months of the treatment, the licking had reduced and the damaged area had healed considerably. He was reported to be more playful and tolerant of the other dog. He continued to be defensive/obsessive about his ball. The owners were pleased that he was no longer causing himself damage and seemed happier. However, they have since discontinued the medication and he has reverted back to his licking. He is easier to interrupt apparently and the damage does not seem to be as severe. Following a barley grass puncture to his front foot area he also began to lick this in a similar manner. Not surprisingly the owner commented that his licking (tarsus) is worse in cold weather and at certain times. I would suspect this was connected to exercise. He is still active, enjoys his walks and plays with his ball.

Discussion

Pain is an experience unique to each individual and, as such, is difficult to quantify. Dogs possess those anatomical and physiological features needed to feel, process and respond to pain and in veterinary medicine there is an emphasis on pain prevention and management. There are several scales that can be used to assess the pain of a hospitalised patient; many of these rely on observations of behaviours. However, observers can have variable impressions of the same animal, leading to difficulties in the accurate rating of pain (Hansen, 2003). The terms used are often vague, meaning they can be misinterpreted or open to personal bias from one observer to the next.

There are no confirmed correlations between subjective assessments of pain and the corresponding physiological or behavioural indicators of pain (Hansen, 2003). To further complicate the assessment of an animal's pain, the physiological parameters that are measured to assist with a pain assessment (heart rate, respiration rate, pupil size, temperature) do not always correlate with the observed behaviour (Hansen, 2003). This dog was outwardly active and playful and did not limp constantly, suggesting that he was not in pain. However, he was also intolerant of a younger, more boisterous playmate.

The dog had radiographic changes consistent with a painful condition and was licking the external area corresponding to the internal pathology. The injury had been sustained several years prior to referral and the dog’s licking of the area had been present at a low level concurrently. With this in mind, the diagnosis of pain-induced licking was made.

Local pain is an oft-cited differential for self-mutilation (Luescher 2009) but there is little published evidence. On this basis, and with the radiographic and behavioural evidence, a therapy trial with analgesia was initiated. It was considered that this dog would be in some pain from this limb and should receive pain relief, even if the licking turned out to be compulsive in nature. The choice of a non-steroidal followed standard selection for musculoskeletal conditions resulting in inflammation and pain. Carprofen was selected for its anti-inflammatory and pain relieving properties, safety, ease of use and familiarity.

Studies have looked at possible risk factors for compulsive disorder in dogs, for example: tail chasing (Tiira *et al.* 2012), tail chasing in Bull terriers (Moon-Fanelli, *et al.* 2011), and compulsive disorder in Dobermans (Dodman *et al.* 2012). The presentation and associated concurrent factors seem to vary depending on the breed and behaviour exhibited. Attention has been directed towards a genetic susceptibility for compulsive disorder in dogs, with the CDH2 region on chromosome 7 being identified in, and linked with, Dobermans with compulsive disorder (Dodman *et al.* 2010).

There also seems to be an over-representation of large breed dogs that present with excessive licking and acral lick granuloma (Moon-Farelli, Dodman and O’Sullivan 1999, Luescher 2009). The dog in this case was a large, older male

dog and he also possessed several other factors associated with an increased likelihood of compulsive disorder such as being anxious, being middle-aged, being suddenly bereft of a conspecific and being exposed to conditions associated with stress or anxiety, with waxing and waning behaviour (Tiira *et al.* 2012).

Acral lick dermatitis has been noted as usually affecting the dorsal portion of the carpus or tarsus, which was the case with this dog. Without radiographs, a diagnosis of compulsive disorder would not have been unreasonable. It cannot be known whether he would have developed a compulsive behaviour in the absence of his obvious medical condition but neither can it be stated that compulsive disorder had nothing to do with his licking. As stated earlier, a compulsive disorder that is originally brought on by situations involving conflict or frustration will progress to occur outside of the original context. This dog suddenly experienced a change in his daily routine, leaving him without the older companion he had followed everywhere, with less access to his female owner and with more involuntary time with a young exuberant puppy from whom he could not remove himself. During that year his behaviour became acutely worse and more persistent, to the point of causing himself to become lame and causing sufficient owner distress for a referral to be made for what was previously considered manageable. This increase in the behaviour in relation to increased anxiety is consistent with a compulsive disorder.

The fact that this dog went on to make a vast improvement, not only in his licking but also his general attitude, with analgesia and minimal behavioural intervention supports, in my opinion, the diagnosis of licking due to pain.

ADVERTISEMENT

This case illustrates several important points. Namely, the importance of veterinary examination and holistic treatment approaches, the importance of medical causes of behavioural change and the unseen effect that pain can have on our pet animals. To this day I am uncertain why pain relief was not given to this dog earlier in his treatment. ■

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BEHAVIOURAL MEDICINE / DISTANCE EDUCATION



CASE STUDY: 'WANDA'

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C&T NO. 5486

Statement of the problem

Behavioural signs of anxiety, during the owner's absence.

Signalment

Wanda is a female, desexed Staffordshire bull terrier. At presentation she was 4 years, 3 months.

History

For the first 4 years of Wanda's life, she lived with her owner Duncan, Duncan's flatmate and another dog on a semi-rural property. Wanda regularly went to work with Duncan and was rarely left without the company of another person or her companion dog. In this time there were no behavioural concerns but Duncan recognised that Wanda was happiest in the company of people, especially her owner.

Four weeks prior to presentation, Duncan moved with Wanda to a rental house in suburban Melbourne, to start a new job which involved an irregular mixture of day and night shifts.

Soon after the move, Wanda escaped from the property when Duncan was at work. Despite securing the yard, Wanda went to increasingly more desperate lengths to escape. On one of Duncan's work days, Wanda was presented to the veterinary hospital in a distressed state. She had been hit by a car and was covered with superficial wounds on all 4 legs, her face and abdomen. Wanda was admitted for intravenous fluids and observation in hospital. Pain relief and antibiotics were administered and her wounds cleaned and dressed. On discharge, it was recommended that Wanda be seen for a behaviour consultation to address the reasons for escape and subsequent injuries.

At this consultation, Wanda was assessed physically. Her wounds were healing well and her pain was well managed with the NSAID carprofen and the synthetic opioid, tramadol. There were no other significant findings on her physical examination. During examination, Wanda was calm and relaxed. She independently investigated the room, responded well to simple training cues and readily accepted treats that were offered.

Duncan was working irregular shifts, taking Wanda with him whenever he was working at night, but leaving her unattended for up to 10 hours when on a day shift. Wanda had always seemed to tolerate short departures well and appeared settled after one long day shift but if Duncan leaves her for a second consecutive day, she would escape. Duncan had left Wanda inside initially but she had become destructive. Outside, she managed to destroy a gate and escape and so Duncan had tried tethering her with a harness. She managed to break free from this and was subsequently hit by the car. Duncan had not left her alone since the accident. Wanda socializes well with other dogs and people and does not appear to suffer from anxiety unless left alone for long periods.

Diagnosis

Separation anxiety.

Prognosis

Fair to good.

Treatment plan

Wanda's anxiety during long departures is of significant concern as her physical safety is at risk, her psychological health is a welfare issue and Duncan's rental property is being damaged. Fortunately, Duncan is a highly committed owner and is prepared to take time off work to address any of Wanda's needs. He is also aware that Wanda's anxiety may require long term management and may not be cured but can be improved.

Duncan was educated in the more subtle signs of separation anxiety to ensure Wanda is tolerating the shorter departures. He will enlist the help of neighbours to listen out for Wanda vocalising and will consider setting up video recording equipment so Wanda's activity can be monitored during Duncan's absence.

Wanda enjoys going for a walk and socializing with other dogs so a routine of regular exercise, twice a day at predictable times, will be started. When Duncan is out for long periods he will employ a dog walker to take Wanda out and will consider 'doggy day care' if required. Play dates with good dog friends could also be increased.

Wanda’s backyard environment can be enriched to try and keep Wanda occupied in a positive way when she is alone. Initially this enrichment is to be with Duncan at home and not associated with a departure. Her favourite treats are bones and kangaroo tails. Stuffed Kongs™, food dispensing toys and scatter feeding were also recommended and Duncan was directed to the internet to research other toys and enrichment ideas for his yard.

Wanda does not currently show signs of distress at Duncan’s departures but desensitising to the cues of departure was discussed. Teaching Wanda relaxed behaviour and starting a program of Request, Response, Reward, was also recommended – some of which Duncan was already doing. Wanda has never been 'crate trained' so information on this was given, to be considered as a safe alternative to tying Wanda up.

Wanda was fitted with an Adaptil™ collar in the consultation room to see if pheromone therapy could assist in reducing Wanda’s anxiety.

Clonazepam was prescribed for administration on the long days that Duncan needed to work and was unable to take Wanda with him. It was decided for the short term that Wanda was best left inside, when alone, for her safety.

On review six days later, Wanda had been left alone for only 1 day and there were no signs of separation anxiety. Duncan had noticed a significant change in Wanda’s behaviour after the Adaptil™ collar had been fitted and although clonazepam had been administered for Duncan’s long day away, he felt that the collar had contributed most to reducing her anxiety.

Two weeks later Duncan reported continuing positive changes to Wanda’s behaviour. A new routine with regular walks, a dog walker and lots of play dates with other dogs had been put in place. Wanda’s environment was being enriched and Duncan was continuing to use the ‘Request, Response, Reward’ program. Clonazepam had been used twice.

Four months later a behaviour review and routine vaccination were scheduled. For 2 months Wanda had continued wearing the Adaptil™ collar but no clonazepam had been given. There had been no incidents of destruction, escape or any evidence of distress after Duncan’s long days at work. Wanda and Duncan were soon to move to a new house so it was recommended to buy another Adaptil™ collar and consider the use of clonazepam until Wanda had settled into her new environment.

Discussion

Separation anxiety is a common behaviour problem in dogs that occurs during an owner’s absence. It represents at least 15% of the cases seen by veterinary behaviourists but it is likely to affect at least 14-29% of all dogs in the population. Dogs are social animals and have a natural desire to interact with their family members. They have been domesticated and selectively bred to be socially dependant and affectionate and for some dogs a hyper-attachment may form with an owner

that leads to signs of anxiety when they are separated from them.^{1, 4} The signs displayed by Wanda when separated from Duncan are typical of those dogs suffering from separation anxiety. Dogs commonly become destructive, will vocalise and attempt to escape in order to be reunited with their owners.^{1,4,6,7,8} Less overt signs of anxiety including trembling, panting, hyper-salivation, self-mutilation, anorexia and reduced activity^{1,4,7,8} may go unnoticed by owners but are important indicators that a dog is not coping well with their owner’s absence. It was recommended to Duncan that he video Wanda’s behaviour during his absence. Most signs of separation anxiety occur within the first 10 minutes of an owner departing and it is important that it is not only the most obvious and extreme signs of anxiety, such as destruction and escape, that are being monitored.^{7,6} As neighbours commonly report incessant whining, barking and howling associated with separation anxiety,⁶ enlisting Duncan’s neighbours to help monitor Wanda’s behaviour whilst he is out proved to be useful.

The causes of separation anxiety will be different in every case. There is strong evidence that genetics plays a significant role in most cases, with some breeds having a higher incidence than others and some studies suggest that male dogs are more commonly affected than females.⁸ Previous learning experiences can be a strong predictor of separation anxiety, as seen in the higher incidence of shelter dogs suffering from separation anxiety. For Wanda, the recent change in environment and sudden change in routine is a known trigger,^{4,6} especially when moving from an environment where there were more people at home and another dog for company. As this is a very recent change and Wanda’s behaviour problem has only been noticed for a few weeks the prognosis for a positive response to treatment is good. Duncan’s commitment to helping Wanda will also improve the chances of a good prognosis.⁴ Understanding what has contributed to Wanda’s behaviour and what motivates her to become destructive and escape will help when formulating a treatment plan. It is important that Duncan has realistic expectations from Wanda’s treatment and that he understands that it is very likely that lifelong changes will need to be made.

Treatment for separation anxiety is most effective when using a combination of behaviour modification, environmental modification and often, medication.

Behaviour modification starts with teaching and rewarding calm, independent behaviour and ignoring attention seeking behaviours. The Request, Response, Reward technique requires that dogs sit calmly prior to all interactions and are rewarded when they do so. Importantly, nothing negative happens when they choose not to respond and no attention is given if the dog has initiated the attention. This teaches dogs that calm behaviour is desired and gives them structure and predictability. This has been shown to reduce anxiety.^{1,4,6} Although Duncan has not noticed Wanda showing signs of anxiety when he leaves it may be useful to uncouple any cues of departures and practice rewarding calm behaviour on his

returns. Duncan should also watch for some of the more subtle signs of anxiety that Wanda may be displaying.

Studies have shown that systematic desensitisation to absences can be a very effective treatment for separation anxiety. This involves training a dog to gradually tolerate longer absences by repeatedly presenting them with short, non- anxiety eliciting absences. In practice, this can seem difficult to achieve and client compliance may be poor but, if kept simple, even when desensitisation is applied haphazardly it can lead to significant reductions in the incidence of separation anxiety.¹

Environmental modification aims towards ensuring that Wanda’s environment is safe, stimulating and a place where independence can be rewarded. Wanda is food focused so this was used in various ways to keep her occupied and act as a reward when she is alone in the backyard. It is important that food and toys are used when the owner is at home as well, especially initially, so that they are not only associated with departures.⁴

Wanda loves walking and a predictable routine of exercise can help reduce anxiety for some dogs, especially if the walk is stimulating and positive. Employing a dog walker on the long days that Duncan is not home can help keep to a predictable routine of exercise.

Keeping Wanda safely confined was a challenge initially. Crate training can be a very effective way to provide a dog with a safe place that gives comfort and security whilst reducing the risks of damage and escape. Some dogs will become more anxious when confined and may panic and injure themselves^{4,6} so it is important that it is introduced slowly and in a positive manner. Often confining to an area or room in the house using safety gates or closed doors is more achievable in the short term.

Wanda was fitted with an Adaptil™ collar as an adjunctive therapy for her separation anxiety. Adaptil™ (dog appeasing pheromone) is a synthetic pheromone, the natural form of which is secreted from the sebaceous glands between the mammary chains of the lactating bitch. Adaptil™ is detected by the vomeronasal organ and works directly on the limbic system. It can have a calming and relaxing effect on some dogs and has been shown to reduce anxiety.^{2,3,5} A study of 67 dogs being treated for separation anxiety compared the use of the TCA, clomipramine with behaviour modification and of Adaptil™ with behaviour modification and the treatments were considered to have close to equal efficacy.^{3,5} There are no reported toxicities with pheromones and no evidence of a detrimental effect on behaviour. Drug interactions and toxicities are often a concern, especially after a trauma incident. Wanda was taking tramadol for pain relief which is a synthetic opioid that stimulates μ receptors and serotonin receptors. Caution needs to be taken combining tramadol with SSRI's and TCA's due to the low risk of serotonin syndrome but there are no contraindications when using pheromones with any other medication.

Pheromones can have a very subtle affect and it is

often necessary to combine pheromonotherapy and psychopharmacology for successful behaviour outcomes.

As Wanda required an immediate solution for her separation anxiety, clonazepam was chosen for use in the short term. Clonazepam is a benzodiazepine which has anxiolytic properties. It has a longer duration of effect than diazepam or alprazolam, lasting up to 8 hours in some individuals, so it can be more useful for separation anxiety when more than 4 hours of treatment is required. Clonazepam is also less sedating than diazepam.

It was considered likely that Wanda would need to be on a SSRI medication, such as fluoxetine for long term management of her separation anxiety. In this case, however, the combination of Adaptil™ with behaviour modification and environment management has been very successful in reducing Wanda’s signs of separation anxiety. ■

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Note: Thanks to Kersti for encouraging Cath and Emma to share their DE assignments with CVE C&T Series readers.
www.cve.edu.au/de/behavioural-medicine

SMALL ANIMAL

TRIALS, TRIBULATIONS & TRIUMPHS –
SETTING UP YOUR OWN PRACTICE



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Moira pictured left
and her pre-opening
marketing signage above.

I graduated from The University of Queensland in 1998 as a mature aged student. If I had my time again I would have done an internship after graduation and continued my learning before going into practice, but like most I was keen to start earning some money! Not that when I graduated I considered money of any great consequence....

Two years after graduating I ended up in Hobart, Tasmania. I managed to land a job in a practice with a principal who was ready to retire. Another colleague and I decided to buy the practice. Having graduated 3 years prior, this was a bold move and our learning curve was steep! We remained partners for 12 years and built the business into a very successful hospital; however, circumstances changed and it meant that I no longer wanted to be a partner. I sold my share of the partnership to my colleague and his new partner.

I was faced, for the first time since graduating 14 years prior, with the issue of having to find a job. Interestingly, despite 14 years' experience as a small-animal-only clinician I was actually not that employable. I had exclusion clauses as a result of the sale of my share of the hospital and other clinics were wary of employing someone who had owned their own practice as I might be a bit 'inflexible' or 'difficult'.

So was born the idea to open my own Cat Only Veterinary Clinic in Hobart. It had always been an idea I toyed with. I graduated from University with both Dr Rhett Marshall

(The Cat Clinics Queensland) and Dr Richard Gowan (The Cat Clinic Prahran). We had remained good friends since graduation and were in regular contact; probably more me contacting them for advice than the other way round, if I am honest. Since graduating, I had often taken the opportunity to spend time at their practices whenever I could. When I spoke to them about opening my own Cat Clinic they were very supportive. Their advice was invaluable on many occasions and I am not sure I could have done it without them.

I think the days of opening a quaint and simple veterinary clinic in a little cottage-like house are gone. There are so many regulations nowadays that you have to meet which I think makes it all the more difficult. As I had bought into an established veterinary clinic, I think I was under-prepared for how difficult it was to actually open a veterinary clinic from scratch in today's increasingly professional environment.

I did not have the finances to buy premises so I needed to find one that I could lease. It took months to find a place that I thought was suitable and that didn't have a ridiculous rent. Two years down the track I question whether I should have purchased my own premises, knowing now that my clinic would be successful. Hindsight is a wonderful thing. I had the complication of an exclusion zone and I do not know if where I am located today will be my final location, so for the time being renting my building is perfect and I have not ruled out one day buying my own premises. It might be a good idea to get some financial advice regarding leasing over purchasing premises if you are seriously considering opening a practice of your own.

Eventually, I found premises in an old shopping centre in Taroona, which is a few suburbs south of the city of Hobart. There were a couple of tenants in the centre but I would become the first tenant to service the public in over 5 years.

The advantages for me were that the landlord was sitting on a white elephant that was earning him no income and there was ample parking with easy access to the shop I wanted

to lease. I clearly remember a lecturer in my final year of university asking the question 'Why do you think clients come to your practice?' Everyone answered 'loyalty, customer service, friendly staff' etc. He put up a large sign 'EASE OF PARKING'. This was, in 1998, apparently the number one reason why clients would return to your practice. For some reason this had always stuck with me and so the 50 odd car spaces available in my abandoned shopping center were a huge plus! The disadvantages, I have since realised, were that the landlord was not prepared to spend any money on his white elephant and so I had to live with some less than ideal facilities, like the centre toilets!

The other advantage was that my shop was empty so we didn't have to retrofit anything and could start from scratch. I designed my clinic myself based on Rhett's and Richard's clinics and their advice along with the ISFM Cat Friendly Accreditation Scheme guidelines that had recently been published. (See C&Ts listed at the end of this article available in the eBook.) In the early stages of development, I could not justify the cost of paying someone to design my clinic for me. I did get a few things wrong, like not enough power points or storage, but on the whole it works very well. When I showed my design to Dr Rhett Marshall he made me get rid of my office and turn the area into boarding. It was such good advice that I will be forever grateful.

I now know that I should have engaged a lawyer sooner in the leasing process of my premises. I did not realise how important it was to get the 'Heads of Agreement' right and that it would make up the framework for the formal lease. I was always mindful, in the beginning, of trying to avoid spending money on things like lawyers, in case the whole project didn't get off the ground. That was definitely an error and a lesson learnt.

In order to get planning approval, I had to have a signed 'Heads of Agreement', complete with business plan and drafted drawings of my proposed clinic. That meant I had to engage a commercial draftsman to draw up my clinic to a standard that the council would consider my proposal. I underestimated how much work was required just for them to say 'yes, we will consider your business proposal in that particular premises'. I will be honest – it is a daunting having to pay thousands of dollars with no guarantee that you will get your project off the ground. This is just the reality, though.

Dealing with council was just plain difficult. You get to speak with a different person every time, no-one will give you a straight answer and everything takes what seems like a ridiculously long time. Occasionally, I actually thought they were intentionally being obstructive. I could not understand why they would not jump at the opportunity to revitalise a shopping centre that had been almost empty for 5 years with a community desperate for it to come back to life.

Eventually, after an 8 week period, I got planning approval and we started the process of obtaining building approval. I wrongly assumed that if I got planning approval I would be 'good to go' and that building approval was just a given. Not even close...

Building approval required full construction drawings of my clinic, the engagement of building, mechanical and electrical engineers, building surveyors and, again, my commercial draftsman. If I thought money was going out before, then I was sorely mistaken. I was getting close to a \$25,000 outlay with no guarantee that they would approve my clinic.

When I had to pay \$6,000 to Southern Water for a 'heads work charge' (a charge in case work is required in the future in the area that my premises was located) I nearly gave up. Regardless of whether I got approval or not, I was expected to pay this charge prior to submission to council.

Again, after what seemed like an eternity, we finally got building approval and we were 'good to go'. Now I had to start getting quotes for everything and co-ordinate when everything happened. I was lucky my husband is a designer and very capable so he and a builder mate built my clinic. Essentially, my husband took 4 months off from his work to build the hospital. At times this was very stressful but, thankfully, we came out the other side with our marriage intact and a completed Cat Clinic!

I am very fastidious in nature and he could just not understand why I had to have particular things certain ways. On the flip side, I wasn't charged for any variances, like when they had put up the studs for the surgery and I realised it was so small you couldn't even swing a cat in it, let alone fit two adults in there. They had to pull it all down and make it bigger.



Figure 1. Our first chemotherapy case on one of the world's best cats, 'Leopold'.



Figure 2. Reception.

Apart from my husband being a designer and things having to look good, I am also very lucky he is the most amazing problem solver. If something wasn't right, he would come up with a solution. Trust me, there were a lot of hiccups along the way, like the day we discovered the existing floor contained asbestos and the flooring gentleman would not lay the vinyl over the top of it without it all being removed or the day the plumber walked off the job because my shop didn't have its own water supply and the pipes coming into the shop didn't meet council guidelines. My husband breaking his collar bone in a mountain bike accident mid-build was also a small hiccup that we didn't need. I clearly remember watching him writhe around in pain after doing a 360 on his bike, landing badly, knowing he had done something serious and wondering how he was going to finish my clinic. Editor's Comment: That's love!

Having to think of every single detail is unbelievably time consuming. I bought myself an exercise book and every website I visited, every price, every business card and every conversation I had with every supplier or contractor I wrote in my book. This was one the best things I did and it was priceless.

I spent some part of every day at the clinic when it was being built. The rest of the day was consumed with research, making lists, contacting people and getting quotes.

By this point, I had maxed out our personal borrowing capacity. It was time to get someone to lend us more money.



Figure 3. Our hospital – rarely ever this empty now.

I was fairly confident that we would be OK but these guys like to play Devil's Advocate and like to make you doubt you are making the right decision and whether you actually have it in you to make it work. They then scrutinise your personal assets and eventually give you the go ahead. It is akin to doing a deal with the Devil. For the first 12 months of repayments you are petrified that if you miss a single payment they will come and repossess your first-born child.

The veterinary equipment is probably the easy side of things to organise. You make a wish list, get quotes and then start removing what you can't afford, usually quite a lot. There is a fair bit of equipment that you cannot afford to open a cat only vet clinic without. Then there is the IT side of a veterinary clinic. Not sure about most other vets but the IT side fills me with dread. You have to pick an operating system for your veterinary records and what computers you are going to run them on. With a designer husband, the choice of computers was Apple, Apple or Apple. So then you have to pick an operating system that will reliably work on an Apple computer. Of course, you need to remember the basics like the telephone system, the fax machine, the security system and the eftpos system and they all need to work with each other.

Don't forget your corporate image which includes your website, signage, letterhead, business cards, envelopes, with compliments slips, badges, fridge magnets – the list just goes on. Again, my poor husband had to come up with all the designs.



Figure 4. Our boarding area is very popular.



Figure 5. The Clinic just days before opening.

Two years down the track, I can honestly say that opening my own Cat Only Clinic is one the best things I have ever done. The first 6 months were the most difficult and I worked for 12 months before I could even take a wage.

I thought, after 14 years of being a veterinarian, I knew a lot about cats, but I was wrong and I decided 6 months after opening that I would do the CVE Distance Education course in Feline Medicine. I cannot explain in words how good the course was for me. Invaluable! I learnt so much – more than I ever realised I could. The support from the tutors and other mentors went beyond what I was expecting and I went from practising as a sole practitioner to practising with the support of so many amazing specialists around the world whose entire focus is cats. I can honestly say that one of the reasons why I think that doing my cat clinic was one of the best things I have ever done is because I practice at a much higher level after doing the course. ■

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Creating A ‘Cat Friendly Clinic’ & Working Towards ISFM Accreditation by Andrea Harvey RCVS
Recognised Specialist in Feline Medicine European Veterinary Specialist in Internal Medicine (pg 2, Issue 273 Dec 2013)

Suggestions For Our Cat Waiting Area?
Conversations from the ISFM Forum, C&T No. 5393, Issue 275 June 2014)

How To Make A ‘Cat Friendly’ Waiting Room by Andrea Harvey (C&T No. 5427, Issue 277 Dec 2014)

SMALL ANIMAL

INVITED COMMENT COURTESY OF

Ross Tiffin

International Society for Feline Medicine

C&T NO. 5488

Tom Watson, a British Parliamentary back bencher recently commented, 'The worst thing a politician can hear on the doorstep, and I hear it all the time, is that all politicians are the same.'

That quotation got me thinking that something similar would be the worst thing a veterinary practitioner could hear. It would be a disaster if people thought that all veterinary practices are the same but, in reality, we don't do very much to dissuade the pet owning public from that thought or to shape the public's opinion of us and to identify and celebrate our differences.

To paraphrase Tom Watson, I believe that the second worst thing we could hear is that all veterinary practices are the same and there is a real risk that, if we allow consumers to think that what we offer is a commodity that can be selected just though price and convenience, a significant number of pet owners will come to see veterinary care as dispassionately as they do the functionality of walk-in medical clinics at airports and railway stations.

For me, the greatest fear is that tomorrow's generation of pet owners may be a rather smaller group than that which we see today. In the last 20 years have seen a dramatic increase in the number of people living alone in Britain and in the number of families where there is no adult present throughout the day. Social change will drive a modification in our pet owning habits and we can already see an increase in the choice of smaller dogs and in cat ownership.

We have an opportunity to shape some of the opinion which contributes to social change and pet ownership. If we collectively grasp that nettle, we stand a chance of reinforcing the bond between owners and a wide range of pets but, if we ignore it, we'll have no-one but ourselves to blame if 10 million households end up thinking that ornamental fish provide a better compromise between convenience and company than owning a cat or a dog.

This article goes a long way towards recognizing that individual preference can be reinforced and rewarded by dedicated care and attention. At ISFM, we celebrate the opening of cat-only practices around the world and applaud the energy, dedication and sheer hard work that veterinarians like Moira van Dorselaer have invested in their practices. We have no doubt that her growing client base will enthusiastically echo that sentiment. ■

SMALL ANIMAL

‘PET FRIENDLY’ PEST CONTROL NOT SO FRIENDLY

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Much has been said regarding the toxicity of Permethrin in cats, but sometimes the poorer relations such as Bifenthrin get forgotten, or relegated as less toxic. This downgrading may be confused (as in the instance of one Pest Control company recently) as being non-toxic and therefore advertised as completely pet friendly.

A VIN search on bifenthrin toxicity suggests this is indeed of much lower magnitude to permethrin (with regards to cats, dogs and rabbits), and very little is discussed with regards to its specific risk. Tests of the toxicity of synthetic pyrethroids to cats are rarely if ever undertaken (unless the product is directly applied to cats) and assumptions on toxicity are generally extrapolated from studies in dogs and other species. However, 2 recent cases seen by vets at the Hunter RSPCA Veterinary Hospitals highlight that bifenthrin has the potential to be a significant toxin, and the importance of correct guidance from the pest control companies for home owners regarding exposure to pets.

Case 1 – Rabbit

The first case was a 5-year-old male Dwarf Rabbit 'Cadbury' presented with marked generalised tremors and hyperthermia (T 41.2°C), but conscious and alert, with good muscle strength. The owners had had a pest control company visit 3 days prior to spray the house with pesticide (containing Bifenthrin, although the concentration applied is unknown), and mild clinical signs had begun 24 hours prior to presentation. Cadbury was confined away from the sprayed areas for 48 hours, although the owner reports in hindsight that there were some areas of the garden which were constantly in shade and so drying time would be expected to be quite long in this instance (this case occurred during the winter months). Treatment involved intermittent doses of diazepam and intravenous fluids, and Cadbury recovered over the next 2 days. Unfortunately, although Cadbury had appeared to make a full recovery, he passed away overnight approximately 5 days later (having appeared completely normal the previous night), reported by the owner at a follow-up phone call. It is impossible to say exactly what caused his death, although one possible differential would be the stress of disease/hospitalisation leading to gastric stasis/bacterial overgrowth.

Case 2 – Cat

The second case was a 7-year-old FN Siamese cat 'Polly'. Her owner had had a pest control company out 48 hours

prior. The pest control company advised her that their sprays were pet friendly products (again undiluted Bifenthrin-containing products, 10% w/v [also containing >50% hydrocarbon solvents]), but that the animals should avoid the sprayed areas until dry. The owner kept her cats confined for approximately 5 hours after the spray application. Polly likes to frequent the garage which was one of the areas sprayed, and approximately 36 hours later she was taken by the owner to the After Hours Emergency Clinic due to signs of severe agitation and ear twitching. Polly was transferred to the RSPCA Veterinary Hospital the next morning, and recovered over the next 48 hours with intravenous fluids and a methocarbamol infusion.

In both clinical cases there was a history of exposure to bifenthrin spray; the interval between exposure and observation of adverse signs was consistent with reports of exposure to other synthetic pyrethroids, the cluster of adverse signs were consistent with those of exposure to a synthetic pyrethroid, the response to treatment was consistent with published results of the treatment of pyrethroid intoxication. It appears reasonable to conclude that it is likely that exposure of the 2 patients to areas treated with a bifenthrin spray resulted in the adverse signs displayed in each case.

The key points here are that:

1. Although bifenthrin is thought to be of relatively low toxicity in comparison to other pyrethroids (especially in the concentrations found in pest sprays), it is clear from these cases that it may cause significant morbidity. In the case of the Cadbury the rabbit, the stress of the symptoms combined with hospital stay placed him at a high risk of developing gastric stasis – although we cannot confirm this necessarily occurred in this instance. In the case of Polly, although her clinical signs were not immediately life-threatening, they were a cause of distress requiring treatment, which, in combination with an after-hours visit and ongoing hospital care, incurred a significant cost to the owner.
2. The information in at least one of these cases given by the pest control company was misleading – the term 'pet friendly' should never be applied to these products, especially if they have not been specifically demonstrated in each pet species to be safe. Toxicities such as these described may be completely avoided with the correct instructions given to home owners by the pest companies. However, no studies to support instructions on an appropriate time between spraying and re-entry of pets are available. It is assumed that once dry the spray is harmless, though this may not be the case.
3. We, as vets, have the responsibility not only to treat the patients and advise clients appropriately, but also to contact the APVMA any time a reaction such as this is seen. In this way they can more accurately guide manufacturers of these compounds to label the products clearly, so that the most accurate information is passed on to home owner.
4. The final point is that 'drying time' of these products is variable, and in cooler weather longer drying times may be necessary (up to 3 or 4 days), and therefore restricting access to pets may be required for several days. ■



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OPEN ACCESS ARTICLE

Enteropathogen co-infection in UK cats with diarrhoea (12 Jan 2014) Jasmin K Paris*, Sheila Wills, Hans-Jörg Balzer, Darren J Shaw and Daniëlle A Gunn-Moore

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Go to: www.biomedcentral.com/1746-6148/10/13

INTERESTING LINKS

Thanks to C&T supporter and contributor Martin Whitehead for sharing this link with C&T members.

GP Graham Easton compares the diagnostic and treatment process of the veterinary surgery to that of NHS patients and asks if lessons can be learnt. www.bbc.co.uk/programmes/b061q92l

Please share interesting links for websites, articles, film clips etc to elisabeth.churchward@sydney.edu.au

SMALL ANIMAL / ISFM FORUM

14-YEAR-OLD FN DSH WITH INAPPETENCE

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Interestingly enough, I have seen 3 small intestinal hair ball obstructions in old cats in the last year that did not vomit, rather had severe gastric distention and 1 had passive reflux. None of these was vomiting.

2 were surgical and 1 I managed to massage through under anesthesia.

The case that I massaged through was a 14-year-old domestic shorthair with a history of marble size hairballs causing obstruction in the jejunum. Work-up showed a likely obstruction and palpation revealed a hard lump in the small intestine in the cranial abdomen that was sensitive to palpation.

The client was not interested in surgery, so I gave the cat a large dose of hair ball remedy paste (3mL) every 4 hours for 3 doses while re-hydrating him. When his stomach started distending and he wasn't vomiting, I decided to decompress the stomach by passing a tube under light anesthesia (isoflurane) and to see if I could get the lump to move.

I removed about 200mL of fluid from the stomach (keeping the head elevated) via red rubber tube and then found the lump on palpation. I gently massaged it and could feel it change shape slightly. After that, I was able to milk the fluid in the intestine above the blockage and provide pressure that moved the obstruction. It was pretty easy to get it to move on and once it was moving freely, I let it be. I then continued to give the cat hairball remedy (3mL TID) for 3 days along with fluids. The hairball passed about 24 hours later. The cat started eating again about 12 hours after the procedure.

He now gets a daily dose of hairball remedy and has been doing well ever since.

I think that he has general decreased motility in his gastrointestinal tract and some mild irritable bowel disease as the root cause.

This procedure is not without significant risk! If the intestine was friable or necrotic, I would have had peritonitis to deal with, but since it was the only choice other than euthanasia, I took that risk and watched him VERY carefully for any further abdominal pain or fluid accumulation.

It was quite an interesting case. ■

SMALL ANIMAL

CRITICAL THINKING TO REDUCE DIAGNOSTIC ERROR

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In human medicine it is widely acknowledged that diagnostic errors are common (Graber 2013). In the US, diagnostic error is the leading cause of medical malpractice claims and diagnostic errors are thought to cause more morbidity and mortality than either surgical mistakes or medication errors (e.g., Tehrani *et al* 2013). Very roughly, 10-15% of diagnoses are wrong and many of those incorrect diagnoses result in harm, and some in death (Graber 2013). Although similar errors must occur in veterinary medicine, they have been much less studied and quantified. Kent *et al* (2004), Vos *et al* (2005) and Dank *et al* (2012) compared ante-mortem diagnoses with post-mortem histopathological diagnoses in dogs that had died or been euthanised in veterinary teaching hospitals, and found discrepancy rates of from 15 to 40%, suggesting a high rate of ante-mortem diagnostic error.

There are many sources of diagnostic error in both human and veterinary medicine. In the human medical field, these sources of error are being studied and there is now an annual Diagnostic Error in Medicine International Conference and a large and rapidly growing literature aimed at the study and reduction of diagnostic errors. Among the most important causes of diagnostic error are flaws in clinical reasoning, including cognitive errors – systematic biases in reasoning. Such cognitive biases cause errors in many areas of human endeavour and daily life and have been much studied in fields such as economics, courtroom witness testimony and aircraft crash investigation as well as, more recently, in medicine.

If you are not familiar with these biases, many resources are available for learning about them. Easy to read texts about cognitive biases and reasoning errors in general include Sutherland's (1992) *Irrationality*, Piattelli-Palmarini's (1994) *Inevitable Illusions* and Kahneman's (2011) *Thinking Fast and Slow*. In the human medical field, the Society to Improve Diagnosis in Medicine has created this very useful Internet resource: www.improvediagnosis.site-ym.com/?ClinicalReasoning

Much less information is available specifically for the veterinary field. Gay (2006) discussed clinical reasoning and cognitive errors in the context of diagnosing herd problems in farm practice. Brennen McKenzie, the immediate past president of

the Evidence Based Veterinary Medicine Association (EBVMA), and author of the SkeptVet blog (www.skeptvet.com/Blog), recently published a commentary reviewing veterinary clinical decision-making (McKenzie 2014). The EBVMA website (ebvma.org) also has links to some useful resources. However, very few veterinary studies have yet attempted to quantify the effects of cognitive errors on diagnostic decisions. They include: Arkell *et al* (2006) demonstrated that veterinary surgeons and veterinary students graded the improvement in horses' lameness upon nerve block as greater when they knew that a nerve block had been carried out than when they did not; Lastein *et al* (2009) demonstrated that veterinary surgeons' perceptions and motivations for decision making introduced both variation and bias into data collected and used in the diagnosis and treatment of bovine metritis; Garcia & Froes (2012) classified as 'cognitive' 10 of 17 erroneous abdominal ultrasonographic diagnoses identified upon surgical exploration of the abdomen of 105 dogs and cats.

Taking steps to reduce the adverse effects of cognitive biases on diagnostic reasoning is likely to reap rewards in reduced diagnostic error rates. The first step in reducing the effects of cognitive errors in clinical reasoning is to be aware that they exist. So, get reading... ■

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MAX KELLY – CASE REPORT

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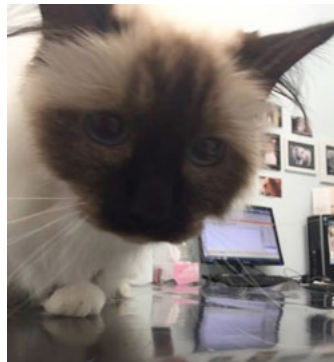


Figure 1. Max

‘Max’ was a 3.5-year-old male desexed Birman. He presented to me in early January 2015 with a 1 week history of lethargy, weight loss and inappetence, the weight loss possibly over a longer time. Seven days prior to presentation he had a strange episode of a large vomit followed by

- Enlarged mesenteric lymph nodes proximal and distal to this large mass
- Oedema/inflammation around the caecum
- No free fluid

A biopsy was taken of this mass, and a few of the smaller surrounding lymph nodes, and sent to IDEXX Laboratories for histopathology. Max’s recovery was uneventful, but he continued to be inappetent. At this point he was on buprenorphine for analgesia, mirtazapine every other day for (unsuccessful) appetite stimulation, and Clavulox®.

The histopathology results revealed ‘pyogranulomatous peritonitis’ and Feline Infectious Peritonitis (FIP) was the leading diagnostic possibility. At this point, I contacted Associate Professor Jacqui Norris for advice and assistance as I was not expecting this result!

Jacqui informed me that this area near the ileocaecal junction appears to be a hotspot for Corona virus replication and is often implicated in cases of FIP. Jacqui also generously offered a new trial drug that was being marketed in the United States for the management of dry forms of FIP. At this point Max was still in my hospital and wasting away slowly. The owners did understand the gravity of the diagnosis; however, they wanted to be 100% sure of the diagnosis and explore all avenues.

The histological sample was forwarded to Jacqui’s lab for immunohistochemistry – which confirmed the diagnosis of FIP. Whilst awaiting these results, I went to see Jacqui Norris who very kindly gave me 5 vials of ‘Polyprenyl Immunostimulant’ (PPI) (see www.vetimmune.com) – a drug that has been manufactured for use in feline herpes virus but is showing some promise in certain cases of FIP. Jacqui did describe to me how the drug worked; all of which escapes me now, but it was something to do with T-lymphocytes and the host’s immunity!* There were reports of some confirmed FIP cases living over 1 year whilst on this medication. The only known side effect for this drug was the cost. The drug needs to be imported from the United States, and the most recent importation was for a 7 week supply of the drug, including shipping, was approximately \$800. It does get relatively cheaper if you place a bulk order, but it is hard to commit to a large amount with such a serious condition.

becoming weak in the hind legs and being unable to walk for about 30 seconds. No further vomiting occurred.

On examination he was noted to be skinny (BCS 2/5), had a large amount of hard faeces in his colon, and possibly a hard mass in his mid-abdomen, about the size of a 10 cent piece, which was painful on palpation. He was admitted for a Microlax enema and observation (to see if this ‘mass’ was going to move, i.e. just poo, or remain a concern). Max passed a large amount of hard faeces, but over the next 24 hours the mass in his mid-abdomen remained the same. The following day we performed an abdominal ultrasound as Max remained inappetent and the mass remained painful. Ultrasound examination revealed a hypoechoic mass in the mid abdomen, close to and possibly involving small intestine. There was no evidence of intestinal obstruction and no free fluid in the abdomen.

Basic bloodwork (CBC, Biochem) revealed no abnormalities on CBC whatsoever, but elevated globulin (Glob 61, ref interval 31 – 52), reduced albumin (Alb 20, ref interval 25-38) and mild elevations in CK and AST (however this particular blood sample was taken 12 hours post-operatively). The rest of his blood work was completely unremarkable.

Due to the painful mass and inappetence, we decided to take Max to ex-lap. This is a summary of the findings of this not very enjoyable surgery, which were as follows:-

- Hard mass within the mesentery closely associated with the ileocaecal junction – approximately 10 cent piece sized, irregular surface, highly vascular

On the 10th of January, before receiving results from Sydney University, Max was started on PPI (5.7mLs orally 3 times per week, although initially we started him on once daily for 14 days at the recommendation of Jacqui Norris) and discharged from hospital, still inappetent.

It took approximately 3 weeks of this drug, combined with mirtazapine appetite stimulation and many trips back and forth to the clinic but, 2 months on, Max gained over 500 grams, he was eating very well, the abdominal mass was not readily palpable at this point in time and, despite the huge cost of the new drug, Max and his owners were happy. The only other addition I added was some weekly cobalamin injections as he had been inappetent for so long and was severely cachexic.

Max went well on this regime for 3 months and gained over 500 grams during this time. Unfortunately, during May 2015, Max’s general health started to wane again. He began to lose weight and his appetite became variable. I would check him weekly, and he was almost always pyrexia. He had one night where he temporarily lost function of his hind legs; however, this resolved with rest. During this time I had him on weekly vitamin B12 injections, doxycycline (5mg/kg BID) and mirtazapine (3.75mg, when needed, usually every 2 – 3 days). We also increased the PPI to once daily (up from 3 times weekly) for 2 weeks.

Unfortunately, on the 28th of May after a long battle, Max began to show severe weakness and ataxia in all 4 limbs and by the next day was laying in lateral recumbency with little interaction with his surroundings. Due to his poor prognosis

and now poor quality of life, the decision was made to put him to sleep.

A huge thank you to Jacqui for all of her help, advice and generosity with this case – we are so lucky to have such an expert in FIP and someone who genuinely cares about cases such as Max. ■

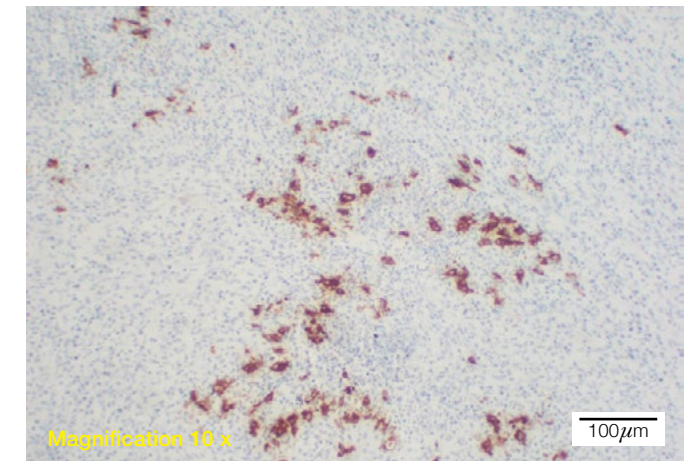


Figure 2: Brown reaction product shows FIP virus cells in the lymph node biopsy specimen (courtesy of Jacqui Norris)

***Note:** The exact mechanism by which Polyprenyl Immunostimulant is just coming to light. It is an orally absorbed drug of low toxicity. Studies by the manufacturers suggest it modulates the immune system by up-regulating TH-1 cytokine biosynthesis and stimulation of monocyte activity.

SMALL ANIMAL

COMMENT ON C&T NO. 5450 THREE CASES OF MESENTERIC TORSION IN GERMAN SHEPHERDS

(ISSUE 278, MAR 2015)

Geoff Hayres

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C&T NO. 5493

Read these articles in the eBook version:
www.cve.edu.au/candtebook

C&T NO. 3940 Very Short Bowel – Two Dogs
by Geoff Hayres

C&T NO. 4224a Follow up on C&T NO. 3940,
Very Short Bowel – Two Dogs by Geoff Hayres

SMALL ANIMAL

COMMENT COURTESY OF

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C&T NO. 5494

Great article from Heather Shortridge on mesenteric torsion.

Interesting that Heather's research revealed close to 100% mortality. I used to think that mesenteric torsion caused 100% death rate as well, until the first one I operated on survived and lived a full life. I think it is one of those conditions that people think is hopeless and virtually all are euthanased; this in itself creates a near 100% death rate. I have read reports of people correcting the torsion and leaving the dead, black intestines; these cases will always die, also causing 100% 'surgical death rate'.

I would encourage anyone who encounters one to remove ALL the black intestine and do an end-to-end anastomosis on the remaining healthy intestine. This is usually the duodenum and a small bit of terminal small intestine. The surgery is not technically difficult and doesn't take much longer than a foreign body removal. I have only operated on 1 mesenteric torsion, a spay dehiscence which lost exactly the same amount of intestine and both lived normal lives.

C&T's 3940 and 4224a describe these cases. Neither case required much aftercare and neither ended up on any long-term medication. So please, the next one you see, give it a go! Also, I would be most interested to hear of any other successful cases. ■



Figure 7: Distended gas-filled intestines of Honey at exploratory laparotomy (From C&T No. 5450)

As veterinarians, our views on many aspects of practice are shaped by our experiences, particularly in regard to rare or unusual conditions. This is highlighted in the conflicting opinions of Drs Shortridge and Hayres in regards to mesenteric torsion, with differing outcomes in the reported cases likely the result of difference in the severity of disease and in the individuals treated. That being said, whilst I have seen cases of mesenteric torsion that have been treated and gone on to live normal lives, my overall experience with this condition has been a negative one.

Mesenteric torsion is a rarely diagnosed condition most commonly reported in German Shepherd dogs. The outcome for these patients relies on early diagnosis, appropriate surgical management, intensive supportive therapy and physiological compensation. Although high rates of peri-operative mortality are reported, consideration should also be given to long-term morbidity in patients with extensive small intestinal resection. Furthermore, mesenteric torsion has been reported to occur in association with other disease processes, particularly exocrine pancreatic insufficiency in German shepherd dogs, which complicates ongoing case management.

Dogs with mesenteric torsion usually present for signs of acute abdomen and shock; however, early in the disease process more subtle signs of abdominal discomfort and mild gastrointestinal upset may be observed. Similarly, whilst typical radiographic findings of gaseous intestinal dilation have been described, this is not always immediately evident. These

factors, in addition to a low index of suspicion, can lead to delays in diagnosis and treatment, resulting in progressive intestinal ischemia and a worsening prognosis. Failure to provide early and intensive haemodynamic support for the patient will result in increases in short-term morbidity and mortality, whilst progressive intestinal necrosis and increasing area of resection will cause long-term complications.

Surgical excision of the entire section of necrotic bowel is required for successful treatment but this can also be the cause of long-term morbidity. Although physiological adaptation, involving increased absorptive capacity of the remaining intestine, has been reported to occur in animals with up to 85% of the small intestine removed, signs of short bowel syndrome occur following less extensive resection. In planning intestinal resection, it is important to consider the differing functions of the different sections of intestine as well as the overall length. Resection of significant parts of the jejunum will result in malabsorption of food, water and electrolytes, while removal of sections of ileum may cause malabsorption of cobalamin and bile acids. This can result in chronic diarrhoea, malnutrition and dehydration and may

be further complicated by bacterial overgrowth, alterations in gastrointestinal hormone secretion and deficiencies in fat-soluble vitamins. The severity of the consequences of short bowel syndrome (SBS) may be best reflected by Willard – 'SBS is best treated by preventing it'.

Regardless of the presenting condition of patients with mesenteric torsion, I would always consider these to have a guarded prognosis at best. It is far more common for the majority of the small intestine to be involved and require excision. Consideration should be given by the veterinarian in regards to providing the intensive short-term management that may be required (24-hour monitoring, blood-product transfusion, parenteral nutrition) as well as consultation with the owners regarding the potential for long-term morbidity and management. ■

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SMALL ANIMAL

IN-HOUSE HAEMATOLOGY:
IS IT DEFENSIBLE?

Sue Foster

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C&T NO. 5495

History

A 13-year-old FN Australian cattle dog treated chronically with corticosteroids for spinal disease, presented with acute abdominal pain.

The only abnormalities on the in-house haematology printout were as follows:

- HCT 35.7% (L) (37.3-61.7)
- Reticulocytes 0.1%
- MCV 60.5 fL (61.6-73.5)
- MCHC 54.1 g/dL (32.0-37.9)
- Lymphocytes $0.49 \times 10^9/L$ (1.05-5.10)
- nRBC suspected
- band neutrophils suspected

Assessment made by the veterinarian

Non regenerative anaemia

However, was the dog really anaemic?

The red cell count (RCC) and haemoglobin concentration (Hb) were both within reference range on the machine. HCT (haematocrit) is a derived value from RCC and MCV was low. The MCHC was increased. Causes of MCHC increase include: haemolysis (*in-vitro* and/or pathologic), lipaemia spherocytes and Heinz bodies. The MCHC increase in this dog was likely due to lipaemia (given the history of corticosteroid use and possible pancreatitis). Lipaemic samples are often haemolysed which can affect the MCV. Thus, this pattern of indices and probable lipaemia should have been an indication to check the HCT by doing a manual packed cell volume (PCV). It wasn't done. This dog may not have had a non-regenerative anaemia. It may not have had an anemia at all.

What about the nRBC?

Increased nRBC in the absence of a regenerative anaemia can occur with corticosteroid excess (prednisolone in this dog?), lead poisoning (which can result in abdominal pain),

bone marrow disease, and splenic conditions including haemangiosarcoma (a disease that can occur in aged Australian cattle dogs and could result in abdominal signs). A smear examination to check for nRBC was mandatory but not done. What if this case had been one of lead poisoning and the diagnosis missed?

In addition, was the white cell count accurate?

The white blood cell count on automated machines is a count of nucleated cells. If there is a significant number of nRBC, this could skew the white cell count and alter the differential white cell count for this patient? A manual differential cell count with accurate nRBC/100 WBC was mandatory to assess this but it was not done.

What about the band neutrophil count?

The neutrophil number was normal but could this have been a degenerative left shift? What was the magnitude of the left shift? Was there any toxic change (what if this dog had had a septic peritonitis from its ruptured gastric ulcer for example)? Any of these would significantly affect assessment of the patient in terms of supportive care and diagnostic investigations.

And then there was just no general information about the smear.

Was the RBC morphology normal or could there have been acanthocytes suggesting splenic neoplasia? Was there a bacteraemia in a dog immunosuppressed on corticosteroids?

All these questions, without even questioning the accuracy of the machine itself.

Has this machine been subject to independent analysis and found to be reliable? What procedures have been put in place for internal quality control? Is there any external quality assurance?

This dog, fortunately, just turned out to have a resolving pancreatitis. However, if the outcome had been different and diagnostic or treatment decisions had been erroneously based on these automated haematology results, this case may have ended up in a small claims tribunal. It is unlikely that the level of haematology skill demonstrated relative to the service offered, and probably charged, would be considered acceptable. Clients assume, or are led to believe, that in-house haematology is interchangeable with that offered in a commercial accredited laboratory and prices are often not dissimilar (sometimes higher). Specialist internists or clinical pathologists would be unlikely to defend a veterinarian not performing these basic and mandatory steps for in-house haematology assessment. The AVA policy on in-house haematology testing states that 'blood films should be made, stained and examined by a veterinarian on all primary diagnostic cases'.

The only defence at the moment for omitting a blood smear examination would be that it unfortunately seems to be commonplace in the veterinary profession. ■

INVITED REVIEW
TIMEONLINE – REPTILE
MEDICINE

TAUGHT BY DR ROBERT JOHNSON

Reptile Medicine TimeOnline will also run in February 2016
To register your interest please contact us on +61 2 9351 7979
or email cve.timeonline@sydney.edu.au



Figure 1. Children's python (*Antaresia childreni*)

This course provided a comprehensive overview of reptile medicine and surgery for anyone with an interest in learning more about these species. The majority of veterinarians treat reptile species rarely, so confidence in diagnosis and management of conditions in these species may be low.

In addition, reptile species have significantly different anatomy, physiology and behaviour to commonly seen mammalian species which can leave one feeling lost and overwhelmed when presented with an unexpected reptile patient.

The course was divided into 7 modules covering husbandry, the reptile consultation, common conditions of captive reptiles, interpretation of diagnostic tests, hospital care, critical care, anaesthesia and surgery. The notes were high quality and reinforced by an active discussion board.

Dr Johnson provided useful, timely feedback on the discussion board and encouraged class participation.

I found I was able to apply information to reptile cases immediately, with the most useful information being husbandry assessment. As most conditions in captive reptiles are husbandry related, being able to troubleshoot husbandry problems is a really important skill. We were able to practice this with husbandry troubleshooting of cases posted on the discussion board. Correcting husbandry problems improves animal welfare but may also obviate the need for use of antimicrobials, and reduce the risk of exposure of owners to zoonotic diseases.

In order to maximise my experience from this course, I offered to weigh and measure reptiles owned by friends and colleagues, and also asked clients of reptile patients to submit photographs of enclosures. This was a great way to engage in the course and really challenged me to think through all aspects of animal management in creating a treatment plan.

I feel this genuinely improved my approach to reptile cases and I would unreservedly recommend this course to veterinary students and veterinarians, even if you don't see reptiles that often. The notes provide useful tables including preferred optimal body temperatures and drug doses (including anaesthetics and analgesics, which are probably underutilised in these species) that can be referred to. ■

Anne Fawcett

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Figure 2. Juvenile pygmy bearded dragon (*Pogona henrylawsoni*)

TASSIE CAT BITTEN BY SNAKE RECOVERS IN 16 DAYS

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Figure 1. Fluffy

Sixteen days elapse with elapid envenomated fanged feline 'Fluffy'.

Fluffy, a 3-year-old male desexed DSH, presented to us with bilateral mydriasis, absent pupillary light reflexes, hind leg paresis, tachypnoea (60 bpm), sluggish proprioception

and spinal reflexes, rectal temperature of 36.5°C and heart rate of 200 bpm. There was no obvious signs of a femoral aortic thromboembolism (i.e. hind legs were warm with normal femoral pulses) so a diagnosis of snake envenomation was made. Suggestive history included that the cat lives on a farm and had been seen with snakes before. **Laboratory investigations were declined at this stage.**

He was admitted, given 1 vial of Tiger snake **antivenom** through IV fluids (after prior injection of IM dexamethasone and chlorpheniramine – **although this may be unnecessary, see Dr Trudi McAlees' CVE webinar on Elapid Snake Envenomation 2104***), **Temgesic** for pain and hospitalised for supportive care, with a guarded prognosis.

Over the following 6 days he varied in his response. His mydriasis, temperature and respiratory rate returned to normal. Episodically, Fluffy could walk around and hop into the litter tray to urinate but weakness was prominent. His appetite was present but jaw muscle weakness was causing dysphagia. The gag reflex seemed to be functioning. An attempt at passing a naso-oesophageal 5Fr **paediatric** feeding tube was abandoned as he resented application **despite local anaesthesia** and was swallowing some syringed Hills a/d®.

It was decided to send Fluffy home with syringe-feeding of his caloric and water requirements.

Two days later (**day 8**) Fluffy re-presented for weakness and inappetence. On presentation, vitals were normal but he was

laterally recumbent, weak and 5% dehydrated. He had lost 0.9 kg since initial presentation. Blood tests were supportive of snake envenomation (**myositis**) ALT 627 U/L, CK >51090 U/L, AST 991 U/L and a neutrophilic leukocytosis (WCC 24.2, Neuts 22.7).

He was placed on IV fluids (5% glucose with 0.9% NaCl and 20 mEq KCl **in one litre** added) and had an **oesophagostomy** tube placed (16Fr foley) **under general anaesthesia**. The following 6 days saw Fluffy have a slow return to normal; body weight, muscle strength and eating. Some muscle pain seemed present so oral Temgesic was **continued**. Euthanasia was considered in the first few days as his weakness did not seem to improve but encouragement from Richard Malik pushed us to continue treatment. IV fluids were removed on day 14 and on day 16 he was sent home able to walk with e-tube in place. Day 20 revealed a healthy mobile cat that no longer required a feeding tube (see photo).

A few points raised here are worthy of mention:

1. How often do snake-bitten dogs and cats experience or exhibit myalgia and how often would vets be treating this?
2. The potentially 'easier' feeding tube routes of naso-oesophageal or oesophageal can be contra-indicated if reduced gag or mega-oesophagus exists (which can both exist with snake envenomation). Which feeding tube route is best?
3. Cats seem to have a 'mercurial' response to snake envenomation and its treatment compared with dogs, in my experience. (Do cats present later perhaps?) ■

***Note:** CVE Members may log into the Resources page on our website to access all the PodcastPLUS and past CVE Webinars recordings.

SMALL ANIMAL

COMMENT COURTESY OF
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I would like to thank the CVE for inviting me to comment on Dr Mark Hynes’ C&T. I very much enjoyed Dr Hynes’ article and commend him for persisting with Fluffy’s treatment despite the ‘mercurial’ course of the cat’s illness.

Tiger snake venom contains pre- and post-synaptic neurotoxins, a procoagulant and a myotoxin. The myotoxin binds to striated muscle cells causing injury to the myofilaments. This rhabdomyolysis, or myopathy, causes muscle dysfunction and is very painful. The amount of muscle damage is related to the level of activity after envenomation. Any animal that receives a ‘sublethal dose of venom (i.e. not enough venom to cause death by paralysis) and continues to be active will develop myopathy. Respiratory muscle myopathy and weakness can lead to respiratory arrest.

Yes, cats do present later than dogs to veterinary clinics after envenomation. In part, this is due to the more secretive nature, and less supervised life-style of cats compared to dogs. I think it’s also because cats seem to receive sub-paralytic doses of snake venom more often than dogs. Their smaller body size negates the fact that they have a higher resistance to snake venom on a mg/kg basis than dogs; so, is it because they are more nimble? Overall, this means we commonly see cats with myopathy after tiger snake envenomation.

Elevated serum creatine kinase (CK) is used to diagnose myopathy. Normal CK in a cat is less than 300mMol/L at most laboratories, and I consider anything over 1000mMol/L with a suggestive history or clinical signs as diagnostic of a myopathy. With CK levels higher than 5000 mMol/L, free myoglobin and iron from muscle fiber breakdown can cause acute kidney injury unless good hydration is maintained so I treat with IV fluids and opioid analgesia.

In my experience, cats with myopathy usually regain their gag reflex within 72 hours of treatment, and mega-oesophagus is not commonly a clinically significant problem. I avoid any form of enteral nutrition in cats that do not have an intact gag reflex as they are at high risk of aspiration and sudden death. This means that some of my patients do go for several days without eating. Once their gag has returned, most cats will eat. I may place an O-tube in those that have ongoing anorexia. I am not a fan of nasal feeding tubes in cats. They are so small that only liquid food can be fed, and cats hate anything up their nose. Many cats will not eat if they have a nasal tube in place.

The recovery from myopathy can be prolonged – days or weeks.

The higher the CK level, the greater the muscle damage, so the longer the recovery time. Animals can improve rapidly after initial treatment with analgesia and IV fluids, only to deteriorate again. In some cases, CK will increase further. Reasons for this might be mobilisation of depots of unbound venom, or increased muscle movement once the animal is feeling better causing further muscle damage – even just breathing more deeply will do this. And yes, this is frustrating for owners and treating veterinarians alike.

I have not found a value for the half-life of feline CK, but the rate of decline seems fairly rapid, halving at least every 24 – 48 hours once appropriate treatment is commenced. It is important that the animal is strictly confined for at least 2 weeks post envenomation to avoid a recurrence of myopathy once muscle activity increases.

Anecdotal reports of dogs that have suffered a severe myopathy ‘never being the same again’ exist, but I don’t know if this is due to long-term muscle dysfunction, possible secondary renal injury or something else entirely. My impression is that cats recover faster than dogs once they receive appropriate treatment, and that they do not have long-term complications related to the myopathy. In fact, they are often back hunting snakes again the very next summer... ■

SMALL ANIMAL

COMMENT COURTESY OF
Steve Holloway

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C&T NO. 5498

This excellent case report highlights the different presentation of cats with snake bite to dogs. In my experience, many cats have delayed presentations and are not found with a snake so owners do not know they are bitten. They are also often not bitten multiple times. This may result in lower levels of venom entering their body. They often present with vague signs of not being able to walk, having profound weakness or difficulty rising. The delayed presentation is often associated with negative snake venom detection tests as the toxin is tissue bound or eliminated in urine prior to clinical signs becoming severe. In such cases, serial measurements of CK enzyme are invaluable in making a diagnosis. Tiger snakes carry a potent myotoxin in their venom and delayed treatment is associated with a severe myopathy that affects the red muscle fibres of the body. Exercise appears to exacerbate the myopathy and may be fatal. Good nursing care, minimal exercise and the use of intravenous fluid therapy, and feeding tubes are all part of treatment. In general, cats have a better prognosis than dogs although severe myopathy will take up to 2 weeks to resolve in some cats. ■

SMALL ANIMAL

VOMITING AND WEIGHT LOSS IN A YOUNG CAT

Anonymous

Editor’s Note: This case, with an unusual diagnosis, was sent in by a C&T supporter to share with readers on the condition that it remained anonymous.

C&T NO. 5499

Signalment: A 3 year, 9-month-old, male neutered domestic shorthair cat.

History: ‘Ned’ initially presented to another veterinarian with a history of weight loss over several weeks to months, despite good appetite. He was a mostly outdoor cat, and the owners had not observed any other signs.

Physical exam: On physical exam Ned was bright and alert and weighed 3.1kg (having lost 700g since his last visit 7 months prior, for routine vaccination). No other abnormalities were noted.

Initial Investigation: Haematology and biochemistry (Table 1) showed leukocytosis with neutrophilia, monocytosis and mild azotemia. There was borderline hypoproteinemia and low serum globulins. USG was measured as 1.033. Ned was hospitalised for 2 days and during that time he appeared very interested in food, but would only eat tiny amounts.

Initial management: Ned was given cefovecin 8mg/kg by subcutaneous injection (to treat his Convenia® deficiency?) and sent home. A revisit was scheduled for one week later. On revisit he had gained 300g of weight. The owners had been keeping him indoors and had noticed that he vomited every night. A paraffin based cat laxative was prescribed as the vomiting was thought to possibly be due to hair balls.

Differential diagnosis: No differential diagnosis list was documented at this stage. The most likely differential diagnoses for chronic vomiting (presumably he was vomiting all that time) and weight loss with the laboratory abnormalities seen, would be: inflammatory bowel disease (idiopathic inflammatory gastritis or enteritis), neoplasia (gastric or intestinal) and gastritis (lymphocytic-plasmacytic, parasitic, spiral bacteria associated, gastric ulceration). Other causes could be trichobezoars, adverse food reaction, infections (viral, bacterial and parasitic) gastric entrapment, hyperthyroidism (unlikely in such a young cat) and other non-alimentary diseases such as hepatic disease. Hypocobalaminaemia was likely to be present in this cat and contributing to the clinical signs of weight loss, inappetance and vomiting.

	Result	Ref range
RBC parameters	WNL	
WBC	23.1 x 10 ⁹ /L *	6.0 – 16.0
Neutrophils	15.2 x 10 ⁹ /L *	3.8 – 10.1
Lymphocytes	5.3 x 10 ⁹ /L	1.6 – 7.0
Monocytes	1.4 x 10 ⁹ /L *	< 0.6
Eosinophils	0.9 x 10 ⁹ /L	< 1.4
Basophils	0.2 x 10 ⁹ /L *	< 0.2
Platelets	474 x 10 ⁹ /L	200 – 700
Sodium	154 mmol/L	147 – 161
Potassium	5.1 mmol/L *	3.7 – 4.9
Chloride	120 mmol/L	100 – 125
Bicarbonate	14 mmol/L *	15 – 24
Urea	10.8 mmol/L *	3.0 – 10.0
Creatinine	200 mmol/L *	40 – 190
Glucose	5.0 mmol/L	3.9 – 8.3
Anion gap	25 mmol/L	
Bilirubin	1 umol/L	< 17
AST	44 U/L	1 – 60
ALT	46 U/L	1 – 80
GGT	< 5 U/L	< 6
ALP	39 U/L	< 81
Protein	54 g/L *	55 – 78
Albumin	32 g/L	22 – 35
Globulin	22 g/L *	33 – 43
Calcium	2.17 mmol/L	1.90 – 2.70
Phosphate	1.87 mmol/L	1.0 - 2.0
CK	340 U/L *	< 261
Cholesterol	4.0 mmol/L	2.4 – 5.2
Triglyceride	0.5 mmol/L	0.1 – 0.6

Table 1. CBC and Biochemistry Results – Visit 1

Subsequent visit: Ned presented 2 months later with a worsening of his clinical signs. According to the owner he was vomiting every day and losing more weight. He appeared ravenous at times and other times was inappetant.

Physical exam: On examination Ned weighed 3kg and appeared very thin and unkempt looking. No other abnormalities were noted.

Management: A single dose of dexamethasone acetate was given (dose not recorded) subcutaneously but the reason for doing this is unclear. Again, there was no differential diagnosis list generated. At this stage some of the differentials from the above list **should have been considered and a more logical approach taken.**

Revisit: On revisit a week later the owners reported that Ned was still displaying signs of vomiting and inappetance. He had also developed diarrhoea (could have been attributed to the large doses of Cat-lax® he was getting? or IBD, neoplasia or infectious causes (or possible hypocobalaminemia?)).

Physical exam: Thickened intestinal loops were palpated. His weight had dropped to 2.9kg.

Management: At this stage the veterinarian offered exploratory laparotomy. The owners declined. At the very least, a dietary trial and faecal analysis were warranted at this stage, but were not offered.

Revisit: One week later the owners returned and were very worried about Ned as he was making no improvement.

Physical exam: At this stage haematology and biochemistry were repeated (Table 2). There was a mild leukocytosis and neutrophilia (stress, inflammation, excitement) and mild hypoproteinaemia and low globulins (gastro-intestinal, renal or effusion losses). Given that the albumin was normal, gastro-intestinal losses were more likely. Urinalysis was performed which showed isosthenuria and nil protein (Table 3). He was FeLV and FIV negative using an in-house Snap test.

Recommended plan: The recommended plan at this stage was to do a gastrointestinal profile (serum cobalamin, folate, fPLi and fTLi) and abdominal ultrasound with fine needle apirates or preferably exploratory laparotomy with full thickness biopsies and repeat urinalysis. Faecal flotation should also have been recommended as this was a young cat with diarrhoea.

Editor's Note: A multiplex PCR panel for enteropathogens should also have been considered.

Investigations: The owners elected to go straight to exploratory laparotomy with biopsies. Abdominal ultrasound was performed prior to surgery which showed normal layering of the intestinal walls but they were subjectively thickened. Some enlarged lymph nodes were also seen.

On exploratory laparotomy the stomach and proximal small intestinal walls were subjectively diffusely thickened. The mesenteric lymph nodes were also moderately enlarged. The large intestine seemed normal. Full thickness biopsies were taken of the stomach, duodenum, ileum, jejunum and lymph nodes and sent for histopathology.

Ned recovered uneventfully from his surgery and returned home, awaiting biopsy results. No treatment was given at this stage and no special diets were prescribed. He had a good appetite and no vomiting was seen.

	<i>Result</i>	<i>Ref range</i>
RBC parameters	WNL	
WBC	19.4 x 10 ⁹ /L *	6.0 – 16.0
Neutrophils	14.4 x 10 ⁹ /L *	3.8 – 10.1
Lymphocytes	3.9 x 10 ⁹ /L	1.6 – 7.0
Monocytes	0.6 x 10 ⁹ /L *	< 0.6
Eosinophils	0.6 x 10 ⁹ /L	< 1.4
Basophils	0.0 x 10 ⁹ /L *	< 0.2
Platelets	394 x 10 ⁹ /L	200 – 700
Sodium	158 mmol/L	147 – 161
Potassium	4.7 mmol/L *	3.7 – 4.9
Chloride	122 mmol/L	100 – 125
Bicarbonate	16 mmol/L *	15 – 24
Urea	7.0 mmol/L *	3.0 – 10.0
Creatinine	120 mmol/L *	40 – 190
Plasma Glucose	3.5 mmol/L	3.9 – 8.3
Anion gap	25 mmol/L	
Bilirubin	1 umol/L	< 17
AST	73 U/L	1 – 60
ALT	54 U/L	1 – 80
GGT	< 5 U/L	< 6
ALP	38 U/L	< 81
Protein	51 g/L *	55 – 78
Albumin	33 g/L	22 – 35
Globulin	18 g/L *	33 – 43
Calcium	2.24 mmol/L	1.90 – 2.70
Creatinine kinase	496 U/L *	< 261
Cholesterol	3.1 mmol/L	2.4 – 5.2
Triglyceride	1.9 mmol/L *	0.1 – 0.6

Table 2. Haematology and Biochemistry on visit 6

<i>Chemistry</i>	<i>Result</i>	<i>Ref range</i>
pH	7.5	
Protein	nil	
Glucose	nil	
Blood	trace	
Ketones	nil	
USG	1.010	
<i>Microscopy</i>		
Leucocytes	0 x 10 ⁶ /L	< 10
Erythrocytes	20 x 10 ⁶ /L	< 10
Epithelial cells	0 x 10 ⁹ /L	< 10
Bacteria	nil	

Table 3. Urinalysis (cystocentesis sample) on visit 6

Histopathology report

Stomach: Irregularly lining the luminal epithelium but present in large numbers within underlying glands are round approximately 5µ diameter protozoal organisms which appear to be mostly attached to the apical surface of the cell. There is extensive loss of goblet cells and erosion and attenuation with localised sloughing of epithelium. In addition to the

protozoa some of the crypts also contain sloughed epithelial cells admixed with spiral bacteria and neutrophils. Often the glands and crypts appear hyperplastic and irregular and distorted. The submucosa is infiltrated by lymphocytes, fewer plasma cells, neutrophils and macrophages. There is irregular fibroplasia with localised loss and separation of glands.

Small intestine: There is mild expansion of the lamina propria by oedema together with a few dilated lacteals and scattered eosinophils, fewer neutrophils plus plasma cells and lymphocytes. There is patchy aggregation of lymphocytes within the submucosa accompanied by scattered eosinophils. There is localised neutrophil infiltrate associated with disruption to the muscularis mucosa and fibroplasia. The smooth muscle walls appear uninvolved. There is no recognisable lymph node.

SUMMARY

Stomach: Chronic moderate neutrophilic and lymphoplasmacytic gastritis with epithelial injury, irregular glandular hyperplasia, proprial fibrosis and intralesional protozoa.

Small Intestine: Mild diffuse eosinophillic enteritis.

COMMENT

This is a very interesting lesion. I have not seen such advanced protozoal infection in the stomach of cats previously. The morphology of the organism most resembles *Cryptosporidium muris*. Cryptosporidia have been associatd with gastritis in cats; however, infections are generally considered to be low-grade to asymptomatic or may be associated with diarrhoea in young or immunocompromised animals. Cryptosporidiosis is also a public health consideration as there are reports of *C. felis* infection in people associated with cats. Recommend submit faecal material for antigen testing to confirm my diagnosis.

Investigation: A faecal sample was obtained from Ned and sent to the lab for antigen testing. The owners were alerted to the potential zoonotic risk and were recommended to observe strict hygiene standards.

- An in-house faecal flotation was unremarkable.
- Faecal Giardia/Cryptosporidium Results
- Giardia antigen: Not detected
- Cryptosporidium antigen: Not detected

Comment: Crypto antigen negative, this assay may not detect *C. muris*, the likely pathogen in the stomach of this cat. There is a report of a cat with confirmed gastritis due to *C. muris* and duodentis with *C. felis*. The assay may detect *C. felis*.

Treatment: A number of antibiotics have been used to treat Cryptosporidium infections in cats, although all reports are anecdotal with no controlled studies to date. Drugs such as tylosin, azithromycin and nitazoaxanide have been used. Ned was prescribed a course of azithromycin at 10mg/kg q24h PO until resolution of clinical signs and another 7 days beyond. A hypoallergenic diet (RC Hypoallergenic®), metronidazole

50mg PO bid, sucralfate PO bid and prednisolone 1.5mg/kg PO bid (tapering over 8 weeks) were also prescribed. It would have probably been good to add in some cobalamin injections (250mcg sq every week for at least 4 weeks); however, the owners lived out of town and this would have been difficult for them.

Follow up: Ned's clinical signs resolved over the next 2 weeks and there were no further signs of vomiting. One month later he had gained 600g and the owners reported he was much happier in himself. After 8 weeks the prednisolone dose was reduced to 1.25mg PO every other day. This was switched to prednisolone syrup (Redipred®) at a dose of 1mg every second day, with a view to eventually weaning him off this. No further urinalysis was performed to test for persistence of the isosthenuria; however, this definitely should have been considered. A total T4 was also not done, however the cat was gaining weight, had no other clinical signs of hyperthyroidism and was a bit too young.

Discussion: *Cryptosporidium muris* is an enteric coccidian parasite that affects the gastric glands of mice. *C. muris* has been experimentally shown to readily infect non-rodent hosts including humans, dogs, rabbits and cats.

Pavlasек and Ryan (2007) definitively identified the first natural infection in a cat. The cat had presented to a veterinarian for gastroenteritis and vomiting. *C. muris* was identified using PCR testing.

The prevalence of *C. muris* as a pathogen in cats is unknown at present as few studies have been conducted to specifically identify the species of *Cryptosporidium* that affect cats. Given that this is a potential human pathogen, further studies may be warranted.

Reflections on this case: This case demonstrates the need to formulate good differential diagnoses lists from the outset, especially when there are serious clinical signs such as marked weight loss.

Non-specific supportive treatment would be warranted in acute cases of vomiting with no other clinical signs. However, this case had severe chronic vomiting coupled with marked weight loss. A good differential list would have allowed more specific diagnostic testing to have occurred much earlier on, preventing the multiple revisits the owners had to make. ■

References

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TAIL MASS IN A CAT

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'Tiger' was the 17-yo-cat with the suspected mass on his tail.

I had a bit of a panic on the day he was booked in for amputation that I should have worked it up better, but thankfully after we had clipped it I could see that it was most likely a mass rather than anything else.

As you can see from the X-ray (Figure 1), it involves the entire circumference of his tail and was extending distally.

His tail was oedematous and swollen (Figure 2), I expect due to the blocking of the blood flow return. It was very painful for him.

I did take some X-rays of his chest which seemed clear to me and have included the X-ray of his tail for everyone in DV and Lateral view.

I also included a post-op photo of his bottom (Figure 3) which, when the fur grows back, will look great.

He went home the next day weighing more than when he came in (even minus his tail!). They mustn't feed him like we do... His owner phoned the next day to say he was a different cat. He was so happy.

I tried really hard to get them to do histopathology but cost was too big a concern.

Postscript: I put Tiger to sleep about a month ago which was nearly 14 months after we did the surgery on his tail. Sadly, the tumour must have returned, invading his rectum and preventing him from being able to defaecate. ■



Figure 2. Photo of the cat's tail.

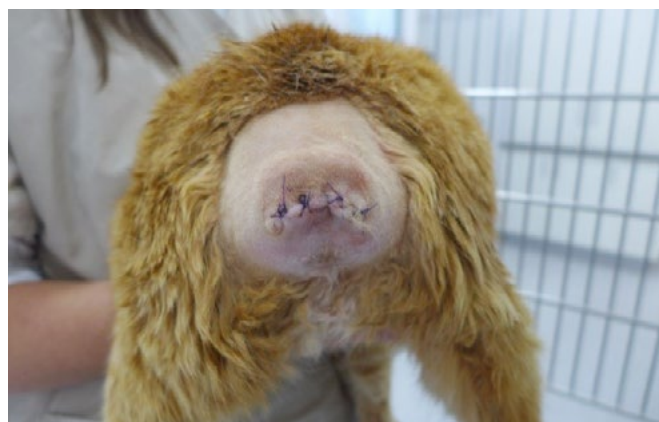


Figure 3. Photo of the tail stump after amputation.

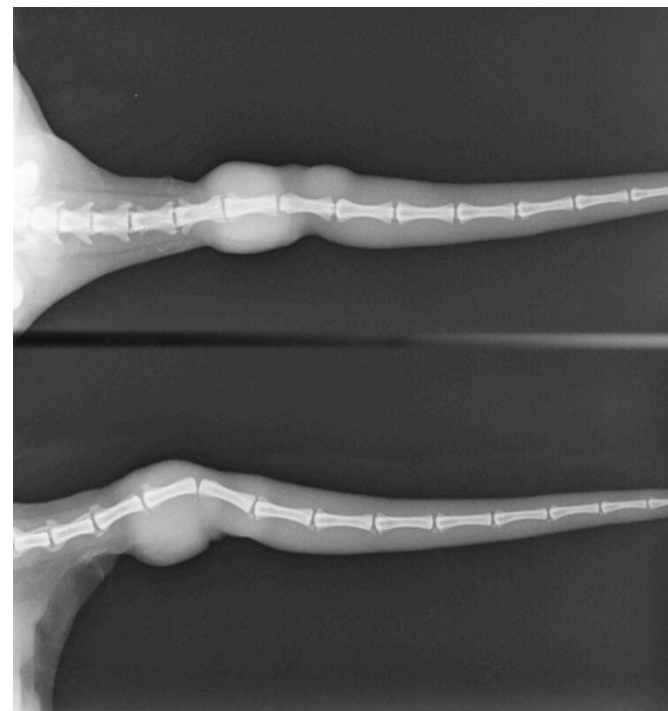
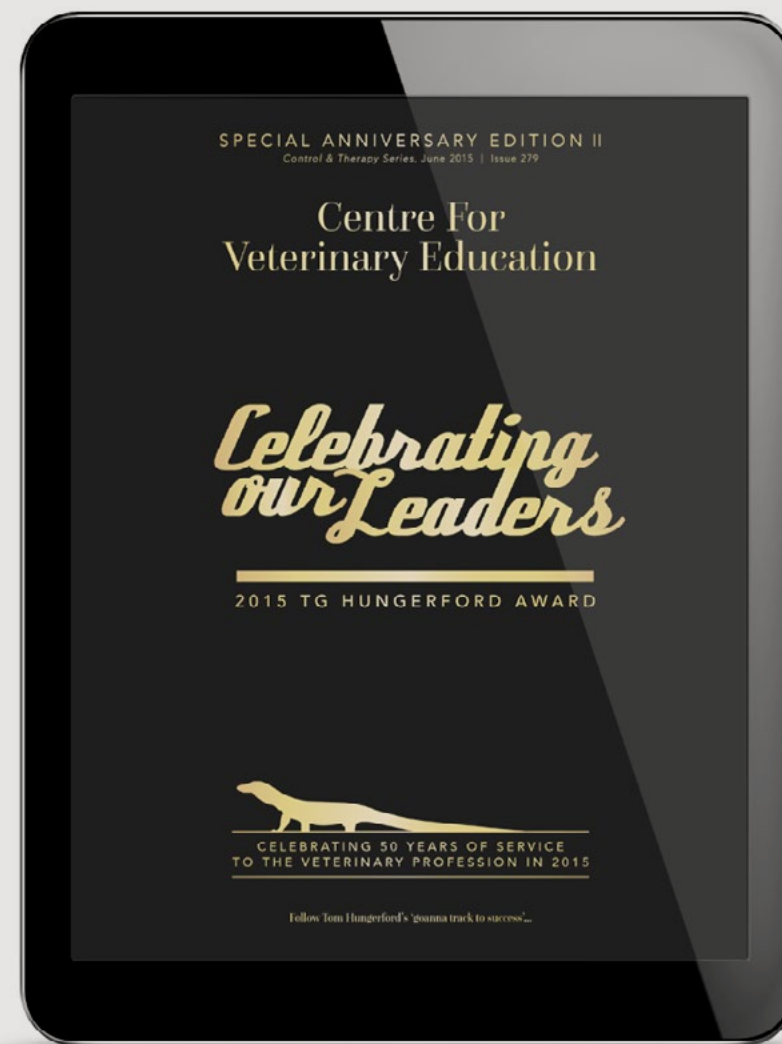


Figure 1. X-ray of the cat's tail.

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Perspective 58, Veterinary photography tips and tricks (Issue 243 June 2006)

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COMMENT & IMAGES COURTESY OF

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Comments

This sarcoma is poorly differentiated. The most likely histogenesis are fibrosarcoma or malignant peripheral nerve sheath tumour. There is an inflammatory component to the case but no multinucleate giant cells or foreign material consistent with vaccine associated sarcoma. It is not a site that is routinely associated with vaccination.

There is extensive ulceration of the overlying epidermis, with a dermal mass of proliferative spindle cells entrapping adnexal structures. (Fig 1)

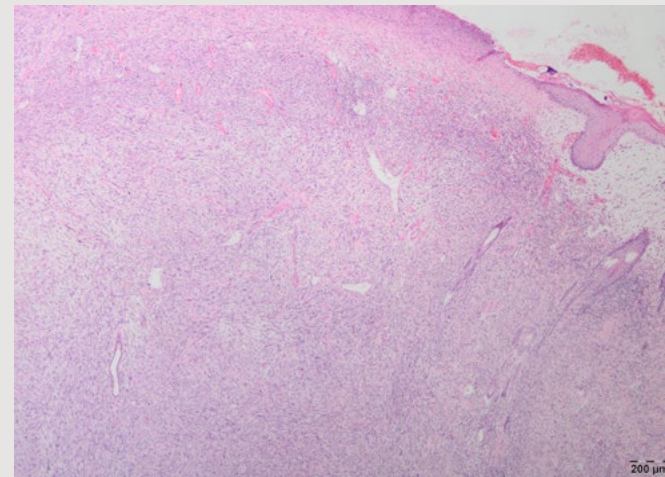


Figure 2. Tumour mass.

There are multifocal lymphoid aggregates within the tumour mass of bundles and whorls of spindle cells. (Fig 2)

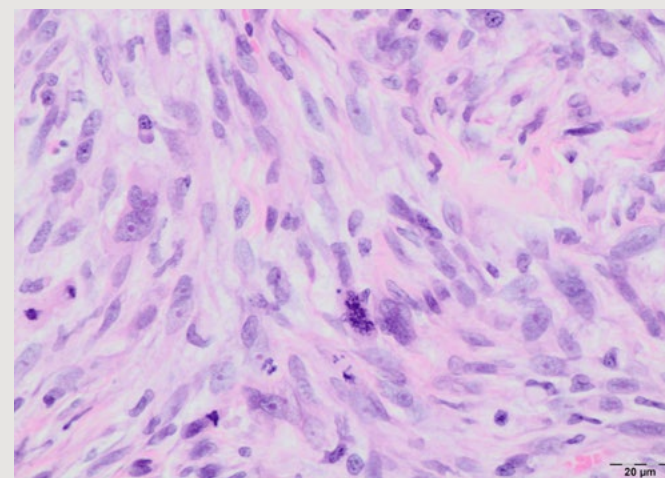


Figure 3. Spindle cells.

The spindle cells have large nuclei with finely stippled chromatin and a moderate amount of spindling eosinophilic cytoplasm. Mitoses are frequent and often of abnormal morphology. (Fig 3)

Note: These sort of tumours often do not exfoliate well on fine needle aspiration biopsy and scattered lymphoid cells may be preferentially aspirated.

Local invasion is a common feature of sarcomas, so local extension rather than distant metastasis (as in this case) is a relatively frequent occurrence. ■

Histopathological Description: There is extensive ulceration of the epidermis with a large dermal mass comprised of a highly cellular proliferation of large pleomorphic spindle cells forming sheets, interwoven bundles and whorls. Numerous small and medium sized nerves are entrapped within the tumour mass, as are some skeletal muscle elements.

The spindle cells have large plump elongate hyperbasophilic nuclei with finely stippled chromatin and small nucleoli. There is a moderate amount of eosinophilic spindling cytoplasm with indistinct cell boundaries. Small amounts of extracellular matrix collagen is associated with the cells. There are large numbers of scattered mitoses (56 mitoses per 10 hpf), frequently of abnormal morphology. Numerous multifocal aggregates of small lymphocytes and scattered plasma cells are present, along with moderate numbers of scattered neutrophils.

Diagnosis

anaplastic sarcoma (likely fibrosarcoma)

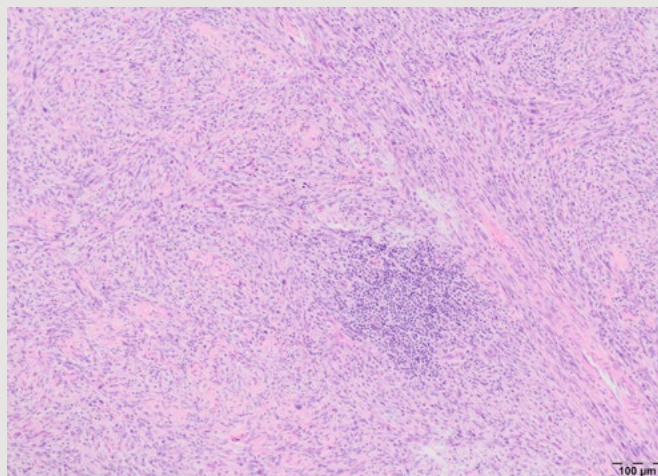


Figure 1. Ulceration of the epidermis.

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CHECKLIST FOR TAKING PERFECT RADIOGRAPHS

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Working in small animal practice you will come across patients that require thoracic radiography most days. I am a big fan of taking abdominal radiographs regularly too, particularly for vomiting animals and those that present with signs of an acute abdomen. Obtaining perfect, diagnostic radiographs may be daunting, but a simple checklist for technical excellence can help you get the most out of this modality. Radiography remains a simple and highly effective diagnostic tool, and obtaining radiographs should be quicker than waiting for your blood samples to be analysed in-house.

Sedation is really helpful. Routinely lightly sedating dogs and cats for radiographic procedures (particularly abdomen and thorax) will significantly improve the quality of your study. In the vast majority of patients sedation is safe. Fractures, painful musculoskeletal imaging (e.g. cruciate ruptures) and spinal imaging may require a general anaesthetic (GA). Any good pre-medicant sedative combination will work. In our practice we favour:

- Butorphanol 0.3mg/kg + ACP 0.01mg/kg IM/SC
- For IV doses: reduce to
 - butorphanol 0.2mg/kg & ACP to 0.005mg/kg
- For cardiac, renal, hepatic disease: reduce to
 - butorphanol 0.1mg/kg +/- ACP 0.005mg/kg (or avoid ACP)

Technique

Table top exposures: extremities, anything less than 10-12cm thick (cats, small dog thoraxes). Even in digital systems (computed radiography, CR), you will have better detail with the tabletop technique, so consider this for any extremity.

Grid/Bucky exposures: anything > 10-12cm thick (medium to large dogs) for CR and film. Digital radiography (DR) mostly does not require a grid.

Collimation: make sure you can see all 4 edges of the beam on your plate for medium and large dog thoraxes and abdomens. For ANY table top exposure, open up your collimation to expose at least 30% of the plate. This is

because in digital systems (CR and DR) the receptor plates function better if there is a relatively larger area exposed. Avoid making multiple exposures of distal limbs on the one CR plate – it can confuse the processing algorithms and makes reading images challenging, plus you are not saving any money doing this.

Positioning for Thorax and Abdomen

1. Fasting is generally required for elective imaging.
2. Sedate your patient.
3. **Two orthogonal views are always required** (R lateral and VD)
 - a. Lung disease: 3 views (R and L lateral and VD, or DV) may be required
 - b. GDV cases are an exception: R lateral projection may be all that is required to prove this condition. If in doubt and the dog is stable, the other projections (e.g. the VD) can be obtained.
4. Lateral projection: palpate the spine and sternum so they are equidistant from the table. This means that on the radiographic image the
 - a. costochondral junctions are level (thorax)
 - b. transverse processes of spine superimposed (abdomen).
5. VD projection = the sternum and spine superimposed, pelvis is symmetrical. When standing at the head or foot of the patient, you should see that the 2 halves of the chest are symmetrical in size.
6. Collimate
 - a. THORAX: Centre on the caudal border of scapula. Collimate from the thoracic inlet (easily palpable) to the junction of where the 13th rib meets the spine.
 - b. ABDOMEN: centre on the umbilicus (most dogs and cats have an umbilical ‘scar’ but you may need to look carefully through the fur!) Collimate from the junction of last rib with spine to the greater trochanter of femur.

7. Rotation makes studies un-interpretable: if your study is rotated, try again.

Positioning for head and neck

1. GA is generally required, else rotation will occur.
2. Lateral: position the thorax for a lateral projection. Place a small sponge or towel under the mid neck to stop droop, particularly in big, fat dogs. Ensure the nose is elevated off the table to be level with the sagittal crest of the skull: this is more important with dolichocephalic dogs and easily achieved with a small towel or foam wedge under the nose.
3. VD: as for the thorax.

Positioning for Musculoskeletal structures (MSK)

- GA is generally required for pelvis, spine, head projections, or fractures of any bone
- Spine: take separate lateral projections for the thorax, abdomen and neck: this will minimize the parallax effect (the artifactual narrowing of the disc spaces at the end of the field). Don’t cram more than one region on the plate – obliquity degrades the image at the edges.
- Heavy sedation is adequate for most extremities, if fractures are not present
- For joints, ensure the joint is centered on the plate, and the mid diaphysis of each bone above and below is included
- For digits, ensure the entire distal limb from carpus/tarsus distally is included: this helps you work out which is lateral and medial, and which limb (front or back) is being imaged.
- Elbows, stifles + distal extremities: use a table-top technique (CR or film)
- Pelvis: in medium/large breed dogs, use a grid technique
- Shoulders: in large dogs are difficult. Consider using a grid technique
- Digits:
 - collimate out to include the carpus or the tarsus – this will help to orient for lateral and medial
 - the dorsopalmar projection is the main one to focus on
 - use sticky tape to splay the digits for the lateral projection, to stop superimposition

Perfect Positioning

Use a variety of positioning aids to help get straight and well-positioned images. No need to spend lots of money. Some of our favourites are:

1. **Foam V-troughs:** large pieces of foam, cut to size using an electric bread knife. Ours are covered in vinyl (by a local bean-bag/foam shop: try people in your area that sew covers for outdoor furniture or boats). Vinyl is easily wiped down with disinfectant between uses. We have 3 sizes: small (cats and small dogs), medium (cattle dogs, kelpies etc.) and large (Labradors, giant breeds). It is



Figure 1. Foam V-troughs

amazing how easy it is to get straight VD projections of the abdomen and thorax with these and useful for getting good pelvis, hip and spine radiographs. The animals are really comfortable lying in foam (better than hard perspex, in my opinion) and tend to stay still.

2. **Foam wedges:** in a variety of sizes, mostly as triangle, or thin rectangular wedges. We cover ours in glad®wrap and remove and re-cover when they get grossy.



Figure 2. Foam wedges

3. **Sand-bags:** these are marvellous for positioning all animals. They are made of vinyl with a nylon loop sewn into the top. Fill then only 3-quarters full with sand or kitty-litter, then they will fold over in half easily to hook around limbs. Wrap them around limbs, drape them over the pelvis or neck. The nylon loops are useful for hooking in extremities for MSK work in anaesthetised patients. I don’t like to hook these loops around sedated or conscious animals in case they try to jump and escape: they may fracture a limb.



Figure 3. Sand-bags

Ideal quantities and dimensions (cm) of sand bags are:

- 2x large 66 x 13 x 5cm; nylon handle 26cm long
- 4x medium 50 x 11x 3.5cm; nylon handle 18cm long
- 4x small 44 x 7 x 2.5cm; nylon handle 17cm long

With sedation, your patients should lie comfortably and straight for excellent positioning:

With these simple tips, you should be able to immeasurably improve the quality of your radiographs. After that, all you have to do is interpret them. Of course, a friendly radiologist would be happy to help! For plenty more great tips on imaging, consider a DE Imaging module. ■

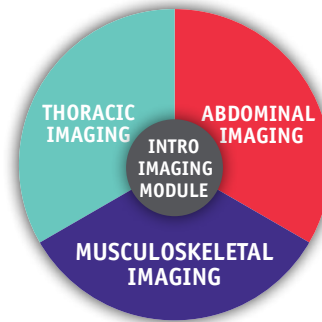


Figure 4. Using sand-bags to position cat.

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The introductory imaging module is a prerequisite for any unit; this needs to be completed once only prior to studying your first unit. If you enrol in all 3 units, the whole course comprises 10 modules, running from 1 February – 30 November, 2016.

See: www.cve.edu.au/de/diagnostic-imaging

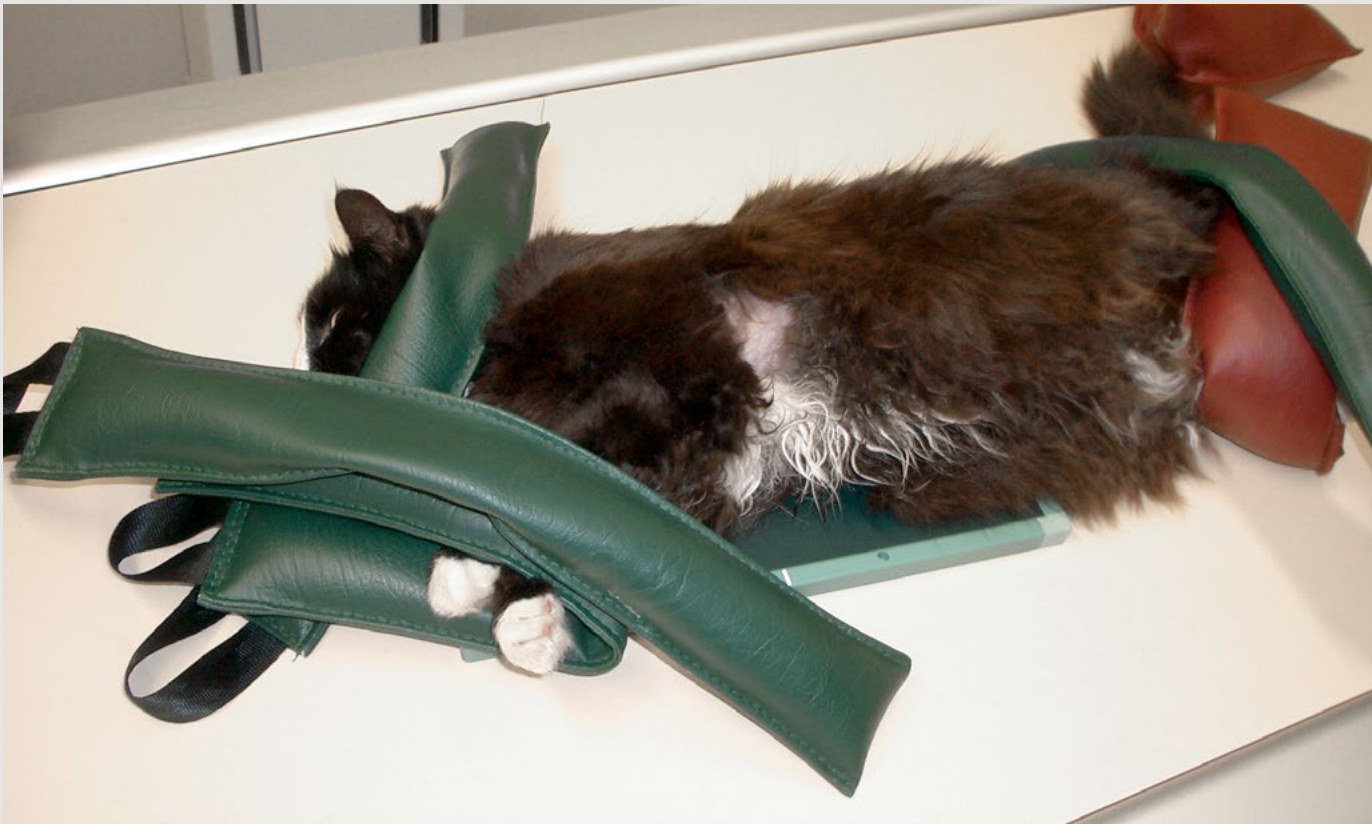


Figure 5. Using sand-bags to position cat.

