King Edward Referrals News

Greetings from a thoroughly soggy PE. I hope you all survived the recent rains without major drama / structural damage to buildings! Having to negotiate the William Moffat double carriage way when it looked more like a river … makes a change from the drought a couple of years ago. And I was reminded that dry spark plugs really allow a car to perform so much better than wet ones!

It's been a while since the last newsletter and that is, in the main, **because you guys have kept me busy with cases—so thank you. I really value your support!**

The **EC-SAVA congress** came and went with only a small fire in the parking lot and a vervet monkey / two in the lecture hall to keep everyone on their toes. I doubt the **national SAVA congress in Pretoria** will be as eventful, but hope to see some of you there all the same. The overseas speakers are Dr Ross Palmer (pre-congress NVCG day on orthopaedic surgery), Dr Bobbi Conner (fluid therapy, CPR and electrolyes) and Prof Ian Ramsey. Ian was just completing his medicine residency at Cambridge vet school when I was starting mine. He now heads the medicine service at Glasgow vet school and will be speaking on the diagnosis and treatment of Cushing's disease, diabetes in dogs and hyperthyroidism in cats.

MDB labs are up and running and I'd like to take this opportunity to wish them every success with their venture. We've certainly been very happy with their service. See also Page 4.

And lastly, my good news (as many of you will have realised) is that **Sue is back** with us here at King Edward Referrals. Luckily for me, Velvet Sky went bust within a month of her leaving us, so we could con her into coming 'home'.

Regards

Case study 10: an unexpected anaemia

Last month, Bert van Reenen from Marine Way Animal Hospital called about Coco, a 3 year old FE Golden Retriever that had presented to him with bite wounds. The bite wounds hadn't appeared to cause much blood loss and he was puzzled because her PCV had fallen to 25% 4 days after the bite and by day 9 after the bite was only just starting to improve. On haematology, she had a persistent lymphocytosis (4.3-7.8x10^9/l) in addition to a moderate neutrophilia. Immediately after she'd been bitten she was mildly hypoglycaemic (2.5 mmol/l) but this had not recurred. Liver enzymes were normal and she was not azotaemic. However TSP was 40 g/l and albumin 16 g/l on the day she was bitten. On reflection, her owner reported that she hadn't been quite herself for 7-10 days prior to the bite.

Question 1: Does this patient HAVE a problem that is worth investigating?

Question 2: Make a master problem list and a DD list for each problem

Question 3: How would you work this case up further?

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No I do NOT accept snakes as patients!

See page 3 for notes on managing dogs with Puff adder bites

Answers for Case 10

Coco

Q1: I know: a dumb question in this context—because I wouldn't have written about it if she didn't. But consider for a moment whether you would have bothered / just put it down to an unusually slow improvement after a bite?

Q2: Master problem list with DD (differential diagnoses)

- **Moderate, poorly regenerative anaemia**: DD
  - blood loss
  - decreased stimulation of erythropoeisis: CRF, hypothyroidism, Addison's, hypopituitarism
  - lack of precursors: B12, iron sequestration causing anaemia of chronic disease
  - damaged factory (leukaemias, other marrow infiltrates, toxins / drugs, infections eg parvo). Usually associated with other cytopenias
  - rarely: increased RBC destruction (this must be happening at the level of the bone marrow for you not to see reticulocytes)

This DD list is the longest and in this case is more difficult to investigate because the bite wounds will have worsened the anaemia. **So we didn't follow it.** But 2 useful observations apply: immediately after whole blood loss, the PCV will be the same as it was before the blood loss. It takes a few hours for the body to absorb and translocate fluid into the vessels (assuming you're not pumping in fluids). This means this patient was already anaemic when she was bitten. The regenerative response will be at its peak 5-7 after acute haemorrhage—so we have more evidence that Coco really does have another problem in addition to the bites.

- **Hypoalbuminaemia** DD
  - decreased intake, loss in exudates, negative acute phase protein (ie decreases as part of any inflammatory response): these don't apply to Coco as she was already hypoalbuminaemic on presentation
  - decreased liver function
  - decreased kidney function: unlikely as not azotaemic, but can exclude glomerular protein loss
  - intestinal loss (haemorrhage, maldigestion, malabsorption, parasites). Bert reported that the stool was formed and yellow-brown making maldigestion and malabsorption much less likely. The hypoalbuminaemia is severe and can't be explained by the bite. **This is the most easily investigated problem.**
- **Lymphocytosis:** DD inflammatory response, adrenalin release (esp in cats), lymphoma, leukaemia, Addison's disease. The change in numbers is mild but **this problem is significant because** a stressed patient should be lymphopenic—so **Coco is doing the opposite of what we expect her to do**. Her Na and K were 141 mmol/l (normal 143-156) and 4.3 mmol/l (normal 3.6-5.0) on presentation—so Addison's wasn't screaming at us. Her lymphocytes didn't look very abnormal on smear.
- **Hypoglycaemia:** DD sepsis, insulinoma, insulin treatment, liver disease, Addison's disease, polycythemia, paraneoplastic syndrome. Her age made neoplasia less likely (though not impossible). The most likely DD on this list were **liver disease and Addison's.**

Q3: in order

1. Faecal analysis: to exclude severe helminth infection as the cause of intestinal blood loss
2. Urine analysis: to exclude renal protein loss
3. Bile acid stimulation test: to identify decreased liver function
4. Repeat electrolytes: to look for Addison's / determine whether she needs Florinef
5. ACTH stimulation test: to look for Addison's
6. Abdominal ultrasound and bone marrow aspirate to look for neoplasias

Coco's electrolytes were normal but **her ACTH stim flat-lined.** She has a pure cortisol deficiency .Current treatment: 1.5 pred bid

Puffadder bites—a brief review

Who and where:

- Hunting dogs; inquisitive dogs
- Typically bitten around the head or neck
- Venom is cytotoxic. The swelling is the consequence of s/c **bleeding** and oedema
- Swelling typically starts within 2 hrs, peaks at 12-24 hrs and is much reduced by 72 hrs—even without anti-venom
- Swelling is not painful. If it is, the bite could have penetrated a muscle belly—or the culprit could be a spitting cobra not a puff adder.
- Venom makes platelets aggregate so most dogs are SEVERELY THROMBOCYTOPENIC. **This means that if you want to give pain relief, give opiates.**

With thanks to Andrew Leisewitz for the use of his photos

Complications:

- Hypovolaemic shock owing to blood loss: most of that swelling is BLOOD. Signs: weakness, tachycardia, thready pulse, pale mucosa, decreased rectal T. **NB dogs lose whole blood into the bite so the PCV will take time to fall (12-24 hrs).**
- If severe, hypovolaemic shock may cause significant organ compromise leading to ARF, heart failure etc
- Severe swelling around the head may cause upper airway obstruction requiring entubation
- Secondary immune-mediated haemolytic anaemia

Treatment: Not all dogs need antivenom. Give it if

- ☺ Swelling is or could compromise respiratory function
- ☺ There is spontaneous haemorrhage
- ☺ There is evidence of IMHA (ISA+ve, haemoglobinuria)
- ☺ There are signs of hypovolaemic shock

- Antivenom neutralizes a fixed amount of venom. So antivenom dose is dependent on envenomation and NOT on the size of the dog. 1 vial of antivenom is better than nothing. OP recommends 5 vials if you're treating a puff adder bite. Always give SLOWLY I/V. Urticaria / angioedema are treated with a single dose of short acting steroids. Anaphyllaxis requires adrenalin
- IV fluids (crystalloid, colloid / whole blood)
- Monitor for complications eg monitor urine output, PCV, ISA

Reasons NOT to give NSAIDs

- Patients are hypovolaemic
- Patients are thrombocytopenic
- The kidneys are pissed off enough as it is

Myths:

- Dogs should be given antibiotics: No, not routinely—snake venom has antibacterial action and there are few bacteria in snakes' mouths. Use only if necrosis is evident or the dog is showing signs of multiple organ failure.
- Dogs need steroids: No—they don't stop the swelling. They are indicated only if you show there's IMHA or the dog develops a reaction to antivenom. Otherwise you risk side effects for no benefit
- The wound should be incised to prevent necrosis: No—see below

Why do humans get such horrible, painful wounds from puff adder bites?

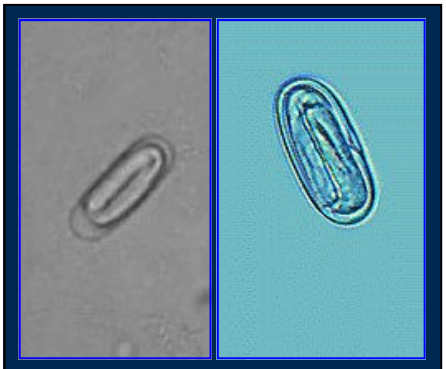
- Humans are often bitten in areas with lots of pain receptors like the hands
- The skin is not as loose, so the fangs typically penetrate muscle bellies. Swelling within muscles bellies is constrained by the fascia. This results in increased pressure within the muscle sheath, further decreasing perfusion and leading to necrosis.

Upcoming CPD events and other bits and bobs

date	venue	organisers	speaker	topic
25 July	The Plantation, PE	Merial	Remo Lobetti, overseas speaker	Tick borne diseases
2-3 Aug	CSIR, Pretoria	National SAVA congress	various	various
22 Aug	Online webinar	Webinar Vet Australia	Marlies	Parvovirus—same lecture I gave in 2011
29 Aug	Kelway Hotel, PE	Hill's	Tanya Schoeman	Hyperthyroidism in cats
11 Sept	Old Gray's, PE	PECG sponsored by Hill's	Liesel van der Merwe	Incontinence in dogs and cats
26 Sept	Pinelodge, PE	NVCG	Christopher Byers	Acute pancreatitis; AIHA, DKA, and other 'emergencies
11 Oct	Old Gray's, PE	PECG sponsored by	Anthony Goodhead	ophthalmology

Granulomas on endoscopy

Tarryn and I tried out a new faecal flotation method to find ***Spirocerca lupi*** eggs the other day (published by Jevan Christie in last year's JSAVA). It worked! Performed correctly, it will reveal eggs in about 2/3 of dogs with oesophageal nodules. Remember that these little suckers are less than 1/4 of the volume of an ancylostoma egg—so you'll need 400x magnification to be sure of what you're seeing. Alternatively, you could just send some poo to **Tarryn at MDB laboratories**.

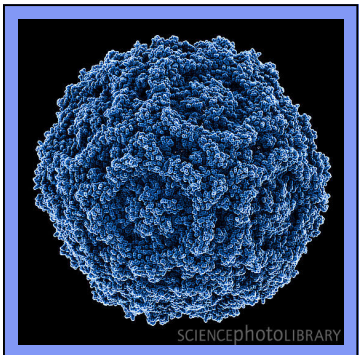

S.lupi eggs in flotation fluid

If you want to view the article for **detailed cooking instructions, go to www.jsava.co.za**. The articles are open access ie free of charge. Click on archives and go and find the article— 2011,volume 82, issue 2, page 71-75.

Anaesthetic machine for sale

R7000
Contact Tim Reed on 074 8991248 or tandp@telkomsa.net … before 25 September

Scary parvo factoid for the day



Parvovirus under scanning electron microscope

Number of parvo virus particles in 1 IU of parvo puppy diarrhoea?
- Up to 10^{12} - that's a million millon or 1000 000 000 000
- Average: 10^{9} - that's 1000 000 000

Number of CPV particles needed to cause an infection?
No idea but in experimental infections, they use between $8x10^{8}$ to $8x10^{11}$ virus particles. This means that **1 unit of CPV** diarrhoea can **infect between 1 and 1000 puppies!**

Reduction in CPV numbers caused by bleach (10 min), F10 or Vetguard (20-30 min contact time)? **10^{3} to 10^{4} times!!** These are our best disinfectants against CPV.

This means that physical isolation, separation of staff, and physical removal of poo is absolutely essential if you want to prevent nosocomial parvo cases