We are delighted to announce that we will be offering a Specialist-run dermatology service from March 2015.

Jon Hardy DipECVD is joining Willows on a full-time basis and will be available to see referred cases for a wide variety of dermatological problems, as well as to give telephone advice for those cases which may not be suitable for referral.

After qualifying at Cambridge, Jon initially spent a number of years working in both small animal practice in Surrey and in charity hospitals in the West Midlands, during which time he developed a very keen interest in dermatology. He subsequently trained as a resident at the RVC and went on to obtain the European Diploma in Veterinary Dermatology and European Specialist status.

Jon is interested in all aspects of dermatology, and enjoys the challenges that are associated with managing patients with skin disease. He is particularly interested in ear problems as well as parasitic and allergic skin diseases, and he undertook a study on food allergy during his residency training. Jon is delighted to be part of the Specialist team at Willows, providing a multi-disciplinary approach and the highest standards of support and care for our patients, owners and referring veterinary surgeons.

Jon will be involved in Willows’ CPD programme for 2015. His first evening CPD forum will be held on Tuesday 21st April, looking at the assessment and management of chronic ear disease. He is also hosting a dermatology Clinical Club at Willows on Wednesday 3rd June – see the CPD section of our website for further details!
What’s your diagnosis?

**WILLOWS CASE STUDY:**

**A two-year-old British Shorthair**

Alfie, a two-year-old British Shorthair, was presented for evaluation of right pelvic limb lameness and reluctance to jump and climb of three months duration. The onset was insidious and there had been a poor response to NSAID therapy. Examination revealed bilateral pelvic limb lameness (right worse than left), bilateral gluteal muscle atrophy and pain when both hips were extended and abducted (right more than left). Ventrodorsal (extended and flexed) radiographs of the pelvis were obtained.

---

**What is your diagnosis? Is there a sex predilection for this condition? How may this condition be managed? What is the prognosis?**

...for the answer see page 11

---

**Feline Friendly Clinics**

**A Cat-List for Success?**

You may have noticed something of a feline bias to this edition, reflecting the fact that more and more people are choosing cats as pets. Why then, is it that we see approximately 50% fewer ‘moggies’ than ‘doggies’ in our practices?

In a recent survey by ‘Your Cat’ Magazine, 20% of those questioned, said their recent visit to the vets had been so stressful they were either ‘never going to a vets ever again’, or they were ‘never going to that vets again’. And they will undoubtedly tell their friends or post their feelings on Facebook! Clearly, this is something of which we veterinary professionals should be aware and trying to address in our practices, in order to make ourselves more Cat Friendly.

The International Cat Care (ICC) ‘Cat Friendly Awards’, at either Silver (Essential) or Gold (Advanced) level provide formal accreditation and recognition of a practice’s desire and ability to provide appropriate care for feline patients. ICC provide a free information pack which details exactly what your practice has to provide to achieve both levels, plus useful feline friendly handling guidelines for both nurses and owners.

Although some physical adaptations to the practice may be required, these aren’t automatically major or expensive – altering the mindset and approach of staff members can often be more important – from the initial phone call through to reception, the waiting room and beyond.

Since gaining Cat Friendly status and raising feline awareness at Willows, we believe that we now provide a better service for both cats and their owners. As a result, we expect to see enhanced clinical and preventative feline care within the practice, as well as increased numbers of cats and their reassured owners sitting in our cat waiting area.

To find out more about the Cat Friendly Clinic Scheme and to receive a range of useful free literature, visit the ISFM’s website at www.icatcare.org and follow the ‘cat friendly clinic’ link.
Management of feline corneal ulcers

Corneal ulceration in cats is not uncommonly encountered in general practice and can prove very frustrating to treat. Unlike the situation in dogs, a primary infectious agent, i.e. feline herpes virus (FHV-1), is the most common cause of ulcerative keratitis in the cat. However, other aetiologies such as adnexal or lacrimal disease do occur in cats and must be considered.

GENERAL APPROACH
A systematic, logical approach is key to optimising the outcome in each case:

1. Take a detailed history
As FHV-1 is a relatively common cause of corneal ulceration in cats, the patient’s previous medical history is of importance. For example, if the cat suffered from previous ‘cat-flu’ signs as a kitten or regularly shows signs of upper respiratory tract disease, the clinician should consider FHV-1 infection to be more likely. An infectious aetiology may also be more likely in patients from multi-cat households, or if the onset of the ocular problem coincided with a stressful event e.g. being in a cattery.

2. Look for an underlying cause
The following are all potential cause of corneal ulceration in cats:

   - **Trauma**
     Lacerations and abrasions (due to cat fights or foreign bodies) are relatively common. If trauma is suspected, careful assessment is required to determine whether or not there has been globe perforation.

   - **Neurogenic keratitis**
     Orbital trauma e.g. due to a road traffic accident (RTA) may result in damage to the trigeminal nerve which provides sensory innervation to the cornea. Central ulcerative keratitis may develop secondary to corneal exposure and reduced reflex tearing. Such cases usually do not show signs of ocular discomfort, e.g. blepharospasm.

   - **Lateral lower eyelid entropion**
     This is most commonly seen in older cats in conjunction with loss of retrobulbar fat and enophthalmos. Surgical intervention in the form of a modified Hotz-Celsius procedure is required to evert the lower eyelid. Future recurrence is possible due to progression of the enophthalmos.

   - **Medial lower eyelid entropion**
     This is more common in brachycephalic breeds e.g. Persian. The position of the ulcer should correspond with the position of the entropion.

   - **Upper eyelid agenesis**
     An unusual congenital anomaly in which the upper lateral eyelid fails to develop, resulting in trichiasis and an exposure keratitis. Surgical intervention, using a blepharoplasty procedure such as the Mustardé technique, is required.

   - **Corneal sequestrum**
     This poorly understood condition can be the cause or the result of the ulcer. Chronic corneal irritation, FHV-1 infection and brachycephalic ocular conformation are all believed to be important contributory factors.

   - **FHV-1 infection**
     Corneal ulceration is the second most common ocular manifestation of FHV-1 infection. The virus replicates within the corneal epithelium and results in pathognomonic dendritic (branching) ulceration early on in the disease process. Larger superficial ‘geographic’ corneal ulcers then develop. The diagnosis of FHV-1 keratitis is difficult because PCR testing of corneal swabs give both false negative results (due to intermittent viral shedding) and false positive results (due to viral shedding in clinical healthy cats or detection of vaccinal virus). A presumptive diagnosis of FHV-1 infection is often made, using a combination of the clinical history, clinical signs and absence of other identifiable causes.

3. Assess the depth of the ulcer
Deeper ulcerative keratitis extending into the corneal stroma usually involves a secondary microbial infection. A progressive, deep corneal ulcer requires aggressive medical treatment. In addition, surgical intervention is required to remove the degenerate corneal tissue, provide tectonic support and also provide a blood supply to the resultant defect. Failure to treat such ulcers appropriately may result in globe rupture and potential loss of the eye.
Be sure that the cornea is truly ulcerated
Eosinophilic keratitis, a presumed immune-mediated condition seen in cats, may mimic a corneal ulcer because the proliferative, white to pink in-growth of tissue may take up fluorescein stain. Generally speaking, such cases are less painful when compared to cases of ulcerative keratitis. Diagnosis is made from the appearance and a corneal scrape to demonstrate eosinophils, which are not normally present on the corneal surface.

Uncomplicated corneal ulceration should be treated with a topical antibiotic e.g. fusidic acid once daily, and systemic analgesia e.g. meloxicam.

An FHV-1 associated corneal ulcer should be treated as above, with the addition of systemic famciclovir 125 mg twice daily per os for 7 to 10 days. Regular debridement (every 2 weeks) of loose corneal epithelium and the application of a bandage contact lens should also be considered.

Keratomalacia should be treated with a combination of topical serum, a broad-spectrum topical antibiotic e.g. ofloxacin (Exocin®, Allergan Ltd., Bucks.) and atropine 1% drops (the latter for its cycloplegic effects). Systemic doxycycline at a dose of 10 mg/kg once daily may also be beneficial.

NB. Keratotomies are not recommended in cats because they may increase the potential for a corneal sequestrum to develop!

Assess for corneal melting
Keratomalacia is a complication of corneal ulceration whereby proteinases and collagenases, which are released by bacteria and white blood cells, dissolve the corneal stroma. Prompt topical and systemic anti-melting medical therapy is required +/- surgical intervention in the form of a conjunctival grafting procedure, to avoid globe rupture and potential loss of the eye.

TREATMENT OF FELINE CORNEAL ULCERATION
The aims of treatment are to:
• remove the inciting cause where possible
• support the corneal healing process
• improve patient comfort

Medical treatment
Uncomplicated corneal ulceration should be treated with a topical antibiotic e.g. fusidic acid once daily, and systemic analgesia e.g. meloxicam.

An FHV-1 associated corneal ulcer should be treated as above, with the addition of systemic famciclovir 125 mg twice daily per os for 7 to 10 days. Regular debridement (every 2 weeks) of loose corneal epithelium and the application of a bandage contact lens should also be considered.

Keratomalacia should be treated with a combination of topical serum, a broad-spectrum topical antibiotic e.g. ofloxacin (Exocin®, Allergan Ltd., Bucks.) and atropine 1% drops (the latter for its cycloplegic effects). Systemic doxycycline at a dose of 10 mg/kg once daily may also be beneficial.

NB. Keratotomies are not recommended in cats because they may increase the potential for a corneal sequestrum to develop!

Surgical treatment
Upper eyelid agenesis, lower lateral entropion, lower medial entropion, corneal sequestrum, corneal lacerations, deep/progressive corneal ulcers and cases of keratomalacia are generally best managed surgically.

Indolent superficial corneal ulcers often respond well to surgical intervention in the form of a superficial keratectomy +/- a conjunctival pedicle grafting procedure. The latter is used to provide a blood supply, but with the aim of minimising its impact on the visual axis.

Deeper ulcers require tectonic support, and a lamellar corneo-conjunctival transposition graft is advantageous in this regard. It also has the added benefit of keeping the axial cornea relatively clear (as compared to a conjunctival pedicle graft).

The appropriate level of training in microsurgery and the use of specialist equipment are vital when considering surgical intervention – early referral to a specialist is recommended when possible.

Assess for corneal melting
Keratomalacia is a complication of corneal ulceration whereby proteinases and collagenases, which are released by bacteria and white blood cells, dissolve the corneal stroma. Prompt topical and systemic anti-melting medical therapy is required +/- surgical intervention in the form of a conjunctival grafting procedure, to avoid globe rupture and potential loss of the eye.

Be sure that the cornea is truly ulcerated
Eosinophilic keratitis, a presumed immune-mediated condition seen in cats, may mimic a corneal ulcer because the proliferative, white to pink in-growth of tissue may take up fluorescein stain. Generally speaking, such cases are less painful when compared to cases of ulcerative keratitis. Diagnosis is made from the appearance and a corneal scrape to demonstrate eosinophils, which are not normally present on the corneal surface.

Uncomplicated corneal ulceration should be treated with a topical antibiotic e.g. fusidic acid once daily, and systemic analgesia e.g. meloxicam.

An FHV-1 associated corneal ulcer should be treated as above, with the addition of systemic famciclovir 125 mg twice daily per os for 7 to 10 days. Regular debridement (every 2 weeks) of loose corneal epithelium and the application of a bandage contact lens should also be considered.

Keratomalacia should be treated with a combination of topical serum, a broad-spectrum topical antibiotic e.g. ofloxacin (Exocin®, Allergan Ltd., Bucks.) and atropine 1% drops (the latter for its cycloplegic effects). Systemic doxycycline at a dose of 10 mg/kg once daily may also be beneficial.

NB. Keratotomies are not recommended in cats because they may increase the potential for a corneal sequestrum to develop!

TREATMENT OF FELINE CORNEAL ULCERATION
The aims of treatment are to:
• remove the inciting cause where possible
• support the corneal healing process
• improve patient comfort

Medical treatment
Uncomplicated corneal ulceration should be treated with a topical antibiotic e.g. fusidic acid once daily, and systemic analgesia e.g. meloxicam.

An FHV-1 associated corneal ulcer should be treated as above, with the addition of systemic famciclovir 125 mg twice daily per os for 7 to 10 days. Regular debridement (every 2 weeks) of loose corneal epithelium and the application of a bandage contact lens should also be considered.

Keratomalacia should be treated with a combination of topical serum, a broad-spectrum topical antibiotic e.g. ofloxacin (Exocin®, Allergan Ltd., Bucks.) and atropine 1% drops (the latter for its cycloplegic effects). Systemic doxycycline at a dose of 10 mg/kg once daily may also be beneficial.

NB. Keratotomies are not recommended in cats because they may increase the potential for a corneal sequestrum to develop!

Surgical treatment
Upper eyelid agenesis, lower lateral entropion, lower medial entropion, corneal sequestrum, corneal lacerations, deep/progressive corneal ulcers and cases of keratomalacia are generally best managed surgically.

Indolent superficial corneal ulcers often respond well to surgical intervention in the form of a superficial keratectomy +/- a conjunctival pedicle grafting procedure. The latter is used to provide a blood supply, but with the aim of minimising its impact on the visual axis.

Deeper ulcers require tectonic support, and a lamellar corneo-conjunctival transposition graft is advantageous in this regard. It also has the added benefit of keeping the axial cornea relatively clear (as compared to a conjunctival pedicle graft).

The appropriate level of training in microsurgery and the use of specialist equipment are vital when considering surgical intervention – early referral to a specialist is recommended when possible.

Assess for corneal melting
Keratomalacia is a complication of corneal ulceration whereby proteinases and collagenases, which are released by bacteria and white blood cells, dissolve the corneal stroma. Prompt topical and systemic anti-melting medical therapy is required +/- surgical intervention in the form of a conjunctival grafting procedure, to avoid globe rupture and potential loss of the eye.

Be sure that the cornea is truly ulcerated
Eosinophilic keratitis, a presumed immune-mediated condition seen in cats, may mimic a corneal ulcer because the proliferative, white to pink in-growth of tissue may take up fluorescein stain. Generally speaking, such cases are less painful when compared to cases of ulcerative keratitis. Diagnosis is made from the appearance and a corneal scrape to demonstrate eosinophils, which are not normally present on the corneal surface.

Uncomplicated corneal ulceration should be treated with a topical antibiotic e.g. fusidic acid once daily, and systemic analgesia e.g. meloxicam.

An FHV-1 associated corneal ulcer should be treated as above, with the addition of systemic famciclovir 125 mg twice daily per os for 7 to 10 days. Regular debridement (every 2 weeks) of loose corneal epithelium and the application of a bandage contact lens should also be considered.

Keratomalacia should be treated with a combination of topical serum, a broad-spectrum topical antibiotic e.g. ofloxacin (Exocin®, Allergan Ltd., Bucks.) and atropine 1% drops (the latter for its cycloplegic effects). Systemic doxycycline at a dose of 10 mg/kg once daily may also be beneficial.

NB. Keratotomies are not recommended in cats because they may increase the potential for a corneal sequestrum to develop!

TREATMENT OF FELINE CORNEAL ULCERATION
The aims of treatment are to:
• remove the inciting cause where possible
• support the corneal healing process
• improve patient comfort

Medical treatment
Uncomplicated corneal ulceration should be treated with a topical antibiotic e.g. fusidic acid once daily, and systemic analgesia e.g. meloxicam.

An FHV-1 associated corneal ulcer should be treated as above, with the addition of systemic famciclovir 125 mg twice daily per os for 7 to 10 days. Regular debridement (every 2 weeks) of loose corneal epithelium and the application of a bandage contact lens should also be considered.

Keratomalacia should be treated with a combination of topical serum, a broad-spectrum topical antibiotic e.g. ofloxacin (Exocin®, Allergan Ltd., Bucks.) and atropine 1% drops (the latter for its cycloplegic effects). Systemic doxycycline at a dose of 10 mg/kg once daily may also be beneficial.

NB. Keratotomies are not recommended in cats because they may increase the potential for a corneal sequestrum to develop!

Surgical treatment
Upper eyelid agenesis, lower lateral entropion, lower medial entropion, corneal sequestrum, corneal lacerations, deep/progressive corneal ulcers and cases of keratomalacia are generally best managed surgically.

Indolent superficial corneal ulcers often respond well to surgical intervention in the form of a superficial keratectomy +/- a conjunctival pedicle grafting procedure. The latter is used to provide a blood supply, but with the aim of minimising its impact on the visual axis.

Deeper ulcers require tectonic support, and a lamellar corneo-conjunctival transposition graft is advantageous in this regard. It also has the added benefit of keeping the axial cornea relatively clear (as compared to a conjunctival pedicle graft).

The appropriate level of training in microsurgery and the use of specialist equipment are vital when considering surgical intervention – early referral to a specialist is recommended when possible.

Assess for corneal melting
Keratomalacia is a complication of corneal ulceration whereby proteinases and collagenases, which are released by bacteria and white blood cells, dissolve the corneal stroma. Prompt topical and systemic anti-melting medical therapy is required +/- surgical intervention in the form of a conjunctival grafting procedure, to avoid globe rupture and potential loss of the eye.
On hearing the news of her win Heather said, “Wow! This is really great! It looks like our people are in for a bit of a treat at the next staff meeting! I’ve been very pleased and impressed with the quality and responsiveness of the entire Willows team from the receptionists on the front desk to the administrative support, right through to the excellent clinicians who’ve always been generous with their knowledge and time. I don’t hesitate to refer my patients and clients to Willows when appropriate, and they always report that they received excellent care when they come back to us.”

Our online registration form can be used for routine case referral at any time – just fill in some basic details and we will contact the client at the earliest opportunity and do the rest for you! And remember that it is even quicker to complete the form if you are already a registered member on the Veterinary Professionals section of our website.

Next time you wish to refer a case, you can save yourself time and automatically qualify for entry into our £1,000 prize draw, by visiting the Veterinary Professionals section of the website at: www.willows.uk.net/vp and following the link to the Referred Case Registration Form.

The latest winner of our quarterly online Referred Case Registration Form £1,000 prize draw is **Heather Manning** of **Bearwood Veterinary Clinic**.

**Figure 1** Right eye, superficial geographic corneal ulcer. Note the under running effect of the fluorescein due to the loose non-adherent epithelial edges of the lesion.

**Figure 2** Left eye of a cat with lower eyelid entropion and associated chronic ulcerative keratitis.

**Figure 3** Left eye, superficial corneal ulcer with an associated corneal sequestrum. Note the diagonal linear marks on the cornea due to a previous grid keratotomy that was performed on this case.

**Figure 4** Right eye of a cat 1 week following a lamellar corneo-conjunctival transposition graft. Significant clearing of the graft was seen over the next few weeks.

**Figure 5** Left eye, keratomalacia. Note the liquid appearance of the melting cornea.

**Figure 6** Left eye, eosinophilic keratitis. This condition can falsely manifest as ulcerative keratitis due to fluorescein uptake over the lesions.
Acute pain in cats

Over the last decade, significant progress has been made within veterinary medicine in the understanding of pain in animals. However, the recognition and management of pain in cats remains a challenge, and studies have shown that cats remain less likely to receive appropriate acute pain relief than dogs.

‘CATS ARE NOT SMALL DOGS’

It is known that the expression of pain varies between species, and this is particularly the case when cats are compared to dogs. Identifying and assessing pain in cats can be much more challenging than in dogs, as the way they show evidence of pain is often more subtle.

RECOGNISING PAIN IN CATS

A change in behaviour is usually the strongest evidence that a cat is experiencing pain. They very often become quiet, depressed and reluctant to move around. Other signs of pain include anxiety, aggression and sudden changes in personality.

PAIN ASSESSMENT

The best way of assessing pain in cats is to observe their behaviour, posture and facial expression.

A quiet cat that is sitting at the back of the kennel avoiding attention can be mistakenly thought to be comfortable, when in contrast it may well be in pain. Hunching of the back, sitting or lying in abnormal positions and walking with an abnormal gait are other manifestations of pain. Lack of appetite and thirst, or excessive licking of a wound may be additional clues that a cat is uncomfortable.

Characteristic facial expression features exhibited by cats that are experiencing pain include squinting of the eyes, partial closure of the eyelids, furrowing of the brow and low head carriage.

In addition to observation, palpation of any wound or painful area should be routine when assessing pain in cats. Another tool is the cat’s response to analgesia – if there is any doubt about the presence or absence of pain, pain medication should be administered and the effect assessed. However, there is no single means of assessing pain in any species – a combination of the ideas mentioned above, in addition to clinical experience, should be employed in each case.

MANAGING ACUTE PAIN

Acute pain should be managed promptly to prevent it from escalating due to peripheral and central sensitisation (referred to as ‘wind-up’). To achieve the best effects, a multi-modal approach should be used. Using a combination of agents is generally safer (as doses are usually reduced) and more effective than administering a single drug. It is also preferable to prevent pain rather than to allow it to develop and then treat it.

Opioids are a good option for managing perioperative and trauma pain in cats. They can cause side-effects, however, which include mydriasis, euphoria, vomiting, salivation and constipation. To reduce adverse side-effects and improve analgesia, opioids are often combined with non-steroidal anti-inflammatory agents. NSAIDs are excellent analgesics for acute pain management and should be used unless contraindicated. Ketamine is also a good analgesic drug as it may prevent ‘wind-up’ – it should be considered in the analgesia protocol for cats that have suffered trauma and those undergoing major surgery. Local anaesthetics can also be useful as part of a multi-modal approach – techniques include the use of a regional block, epidural or a ‘soaker catheter’.

Characteristic facial expression of a painful cat recovering from total ear canal ablation surgery. Note the squinted eyes, half closed eyelids and low head position.

A much more comfortable and happier cat, following administration of methadone (0.2mg/kg IV) - the eyes are now open, more relaxed and the head is in a more normal position. Note the dilated pupils (mydriasis).
### COMMONLY USED ANALGESICS FOR CATS

<table>
<thead>
<tr>
<th>Agent</th>
<th>Doses</th>
<th>Routes</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPIOIDS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>0.01-0.02mg/kg</td>
<td>IM, IV or OTM (oral transmucosal)</td>
<td>6-8 hours</td>
</tr>
<tr>
<td>Morphine</td>
<td>0.2-0.3mg/kg</td>
<td>IM, IV, Epidural</td>
<td>3-4 hours, 12-24 hours</td>
</tr>
<tr>
<td>Methadone</td>
<td>0.1-0.3mg/kg</td>
<td>IM, IV</td>
<td>4-6 hours</td>
</tr>
<tr>
<td>Fentanyl</td>
<td>12 and 25mcg/h</td>
<td>Transdermal patch</td>
<td>up to 6 days</td>
</tr>
<tr>
<td><strong>NSAIDS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carprofen</td>
<td>4mg/kg</td>
<td>SC or IV</td>
<td>once for post-surgical pain</td>
</tr>
<tr>
<td>Meloxicam</td>
<td>0.3mg/kg or 0.2mg/kg</td>
<td>SC, SC, PO</td>
<td>single injection, single injection, 24 hours for 4 days</td>
</tr>
<tr>
<td></td>
<td>followed by 0.05mg/kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>N-METHYL-D-ASPARTATE (NMDA) ANTAGONISTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketamine</td>
<td>0.5-1.0mg/kg or CRI (constant rate infusion) at 2-10 mcg/kg/minute</td>
<td>IM, IV, IV</td>
<td>20-30min</td>
</tr>
<tr>
<td><strong>LOCAL ANAESTHETICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lidocaine</td>
<td>1-2mg/kg</td>
<td>Perineural</td>
<td>1-3 hours</td>
</tr>
<tr>
<td>Bupivicaine</td>
<td>1-2mg/kg or 0.5-1mg/kg</td>
<td>Perineural, Local infiltration (soaker catheter)</td>
<td>4-6 hours, 6-8 hours</td>
</tr>
</tbody>
</table>

Appropriate pain management is a high priority for patients at Willows. In this regard, we are very pleased to announce that Anna Bryla, one of our anaesthetists, recently gained an MSc with Distinction in the Clinical Management of Pain.

When asked about her achievement, Anna said, “I have learned so much about the mechanisms of the different types of pain (as well as some of its mysteries!), and how these different forms of pain can be predicted, detected and managed. It has made a definite difference to the way we think about pain in our patients at Willows, and how we strive to make them as comfortable as possible on a day-to-day basis.”

Anna Bryla
DVM MSc MRCVS
Veterinary Anaesthesia and Analgesia

---

**Did you know that Willows website has a dedicated area specifically for veterinary professionals?**

[www.willows.uk.net/vp](http://www.willows.uk.net/vp)
An interesting case of icterus in a cat

Charlie, a 6 yo M/N DSH, was referred to Willows’ internal medicine department for further investigation of a two day history of inappetance, pyrexia and icterus. On presentation, he was found to be very quiet but responsive, pyrexic (T. 39.4 C) with a heart rate of 160 bpm and a respiratory rate of 24 rpm. Findings on thoracic auscultation and abdominal palpation were unremarkable. Charlie’s sclera, mucous membranes and skin were noticeably icteric.

Haematology revealed a mild neutrophilia of 14.6 x 10^9/L. The PCV was within reference range (36%), ruling out a pre-hepatic cause for the icterus.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Result</th>
<th>Units</th>
<th>Reference range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilirubin</td>
<td>116.3</td>
<td>µmol/L</td>
<td>0.1-5.1</td>
</tr>
<tr>
<td>Bile acids</td>
<td>23.6</td>
<td>µmol/L</td>
<td>0.1-5</td>
</tr>
<tr>
<td>K+</td>
<td>3.4</td>
<td>mmol/L</td>
<td>3.5-5.5</td>
</tr>
<tr>
<td>fpLi</td>
<td>13.3</td>
<td>µg/L</td>
<td>0.1-3.5</td>
</tr>
<tr>
<td>Cobalamin</td>
<td>234</td>
<td>ng/L</td>
<td>270-1000</td>
</tr>
<tr>
<td>PT</td>
<td>19</td>
<td>seconds</td>
<td>15-21</td>
</tr>
<tr>
<td>APPT</td>
<td>&gt;200</td>
<td>seconds</td>
<td>90-130</td>
</tr>
</tbody>
</table>

Serum biochemistry (see table) revealed a severe hyperbilirubinaemia and elevated bile acids. Mild hypokalaemia was present most likely due to decreased intake as a result of inappetance. Quantitative feline pancreatic lipase (fpLi) was elevated, and mild hypocobalaminemia was present. The latter could be associated with concurrent small intestinal disease, or due to lack of intrinsic factor as a result of chronic pancreatitis. A coagulation profile was performed, and whilst the prothrombin time (PT) was within the reference range, the activated partial thromboplastin time (aPPT) was markedly prolonged.

Abdominal ultrasonography was performed and this revealed that the left limb and body of the pancreas were mildly enlarged and markedly hyperechoic. The surrounding mesenteric fat appeared heterogeneously hyperechoic. There was mild dilatation of the left lobe pancreatic duct, which measured 2mm in diameter. There was also mild enlargement of the jejunal lymph nodes.

Due to the finding of a coagulopathy, fine needle aspirates were not performed at this stage. The findings pointed towards Charlie having pancreatitis, which was resulting in extrahepatic biliary duct obstruction – however, concurrent liver disease and/or intestinal disease (i.e. triaditis) could not be ruled out at this stage. The coagulopathy was most likely to be the result of the extrahepatic biliary duct obstruction – the lack of bile in the pancreatic component (fpLi) was elevated, and mild hypocobalaminemia was present. The latter could be associated with concurrent small intestinal disease, or due to lack of intrinsic factor as a result of chronic pancreatitis. A coagulation profile was performed, and whilst the prothrombin time (PT) was within the reference range, the activated partial thromboplastin time (aPPT) was markedly prolonged.

Abdominal ultrasonography was performed and this revealed that the left limb and body of the pancreas were mildly enlarged and markedly hyperechoic. The surrounding mesenteric fat appeared heterogeneously hyperechoic. There was mild dilatation of the left lobe pancreatic duct, which measured 2mm in diameter. There was also mild enlargement of the jejunal lymph nodes.

Due to the finding of a coagulopathy, fine needle aspirates were not performed at this stage. The findings pointed towards Charlie having pancreatitis, which was resulting in extrahepatic biliary duct obstruction – however, concurrent liver disease and/or intestinal disease (i.e. triaditis) could not be ruled out at this stage. The coagulopathy was most likely to be the result of the extrahepatic biliary duct obstruction – the lack of bile in the pancreatic component (fpLi) was elevated, and mild hypocobalaminemia was present. The latter could be associated with concurrent small intestinal disease, or due to lack of intrinsic factor as a result of chronic pancreatitis. A coagulation profile was performed, and whilst the prothrombin time (PT) was within the reference range, the activated partial thromboplastin time (aPPT) was markedly prolonged.

Abdominal ultrasonography was performed and this revealed that the left limb and body of the pancreas were mildly enlarged and markedly hyperechoic. The surrounding mesenteric fat appeared heterogeneously hyperechoic. There was mild dilatation of the left lobe pancreatic duct, which measured 2mm in diameter. There was also mild enlargement of the jejunal lymph nodes.

Due to the finding of a coagulopathy, fine needle aspirates were not performed at this stage. The findings pointed towards Charlie having pancreatitis, which was resulting in extrahepatic biliary duct obstruction – however, concurrent liver disease and/or intestinal disease (i.e. triaditis) could not be ruled out at this stage. The coagulopathy was most likely to be the result of the extrahepatic biliary duct obstruction – the lack of bile in the pancreatic component (fpLi) was elevated, and mild hypocobalaminemia was present. The latter could be associated with concurrent small intestinal disease, or due to lack of intrinsic factor as a result of chronic pancreatitis. A coagulation profile was performed, and whilst the prothrombin time (PT) was within the reference range, the activated partial thromboplastin time (aPPT) was markedly prolonged.

Abdominal ultrasonography was performed and this revealed that the left limb and body of the pancreas were mildly enlarged and markedly hyperechoic. The surrounding mesenteric fat appeared heterogeneously hyperechoic. There was mild dilatation of the left lobe pancreatic duct, which measured 2mm in diameter. There was also mild enlargement of the jejunal lymph nodes.

Due to the finding of a coagulopathy, fine needle aspirates were not performed at this stage. The findings pointed towards Charlie having pancreatitis, which was resulting in extrahepatic biliary duct obstruction – however, concurrent liver disease and/or intestinal disease (i.e. triaditis) could not be ruled out at this stage. The coagulopathy was most likely to be the result of the extrahepatic biliary duct obstruction – the lack of bile in the pancreatic component (fpLi) was elevated, and mild hypocobalaminemia was present. The latter could be associated with concurrent small intestinal disease, or due to lack of intrinsic factor as a result of chronic pancreatitis. A coagulation profile was performed, and whilst the prothrombin time (PT) was within the reference range, the activated partial thromboplastin time (aPPT) was markedly prolonged.

Abdominal ultrasonography was performed and this revealed that the left limb and body of the pancreas were mildly enlarged and markedly hyperechoic. The surrounding mesenteric fat appeared heterogeneously hyperechoic. There was mild dilatation of the left lobe pancreatic duct, which measured 2mm in diameter. There was also mild enlargement of the jejunal lymph nodes.
intestine causing reduced absorption of fat soluble vitamins, such as Vitamin K which is needed for clotting factor activity.

Treatment was commenced using intravenous fluid therapy with potassium supplementation. Other supportive drug therapy included maropitant (to reduce nausea), omeprazole (antacid effect), ursodeoxycholic acid (for its cytoprotective effects in the biliary system and to promote biliary flow), hepatosyl (as liver support) and buprenorphine (analgesia). Cobalamin supplements were given once weekly for four weeks, and then every two weeks for a further four weeks. Subcutaneous vitamin K1 injections were administered for 48 hours, following which the coagulation times normalised. As Charlie was still inappetant at this point, he was anaesthetised and an oesophageal feeding tube was placed. Fine needle aspirate biopsies of the pancreas, liver and jejunal lymph nodes were obtained at the same time – subsequent cytology confirmed the presence of pancreatitis, whilst the hepatic cytology was normal, and the lymph node was reactive. Enteral feeding was slowly built up over the following three days and Charlie also began to eat voluntarily at this stage.

Charlie was subsequently discharged for continued supportive care at home, where he started eating normally and made excellent progress. The oesophageal feeding tube was removed after a week – two weeks later the icterus had resolved, and blood work revealed normalisation of his hepatic parameters. Endoscopy was discussed with Charlie’s owners, to further investigate possible concurrent small intestinal disease, but given his marked improvement, this option was declined.

Charlie has continued to make excellent progress and has had no flare-ups of pancreatitis. He has been maintained on his normal commercial diet, as there is no evidence that a low fat diet is beneficial in cases of feline pancreatitis.

The management of pancreatitis in cats involves supportive care – nutrition is a very important component of this, particularly as cats can be prone to hepatic lipidosis. Abdominal pain is not commonly noted in feline pancreatitis (19% incidence reported), but this is most probably due to a lack of recognition rather than an absence of pain, and therefore opioid pain relief should be considered in all cases. Nausea and/or inappetance can usually be well controlled with maropitant.

The long term prognosis for Charlie is good, although recurrent episodes of pancreatitis are possible.

---

**FELINE OSTEOARTHRITIS**

**Clinical signs and diagnosis**

Lameness associated with an osteoarthritic joint is a less common presenting feature in cats than it is in dogs; instead, lifestyle and behavioural changes are more commonly seen in cats. The interpretation of clinical signs is often complicated, as some behavioural changes such as increased vocalisation, reduction in activity or alteration in grooming may be ‘normal’ age-related behaviour, or could be associated with other diseases, for example: hyperthyroidism, hypertension and/or chronic renal disease and cognitive dysfunction syndrome – not uncommon conditions in elderly cats. Prior to considering analgesic medication in a case of feline osteoarthritis, it is sensible to collect blood for a routine geriatric biochemical and haematological screen, to assess for co-morbidities. Accurate history taking is very important, and client questionnaire assessment both before and after treatment has been shown to be an important tool in diagnosing feline osteoarthritis and assessing a patient’s response to management.

In the cat, both physical and orthopaedic examination can be challenging – in some situations it is difficult to interpret whether a joint is genuinely painful, as opposed to the examination simply being resented. However, the converse is also true, in that joint pain may not be exhibited by the patient on examination, even though clinically significant osteoarthritis is present. Features such as crepitus, joint effusion, joint thickening and a reduction in range of joint motion can be less obvious than in dogs. That said, where such abnormalities are detected on examination there is an increased chance that radiographic pathology will be present, although these signs cannot be relied upon with certainty.

When both the history and clinical examination findings are suggestive of osteoarthritis, radiography is generally performed to confirm the diagnosis. Periarticular osteophyte deposition is the most common radiographic feature, although this is often mild and can be difficult to identify. These changes can often be misinterpreted as areas of increased subchondral sclerosis – a feature which itself can be associated with an osteoarthritic joint. Peri-articular and/or intra-articular soft tissue mineralisation can often be detected as part of the osteoarthritic process in feline joints, but in some sites e.g. the cranial pole of medial meniscus in the stifle joint, it may be a normal anatomical variant.

continued overleaf...
In some painful feline joints there may be no obvious radiographic evidence to support a history which suggests osteoarthritis. Although this may be due to over interpretation of the clinical examination findings, the patient may still have clinically significant joint disease. Post-mortem studies have shown that some cats have significant articular cartilage pathology when minimal to no radiographic osteoarthritic/degenerative joint pathology is identified. It is important to remember that joint pain in the absence of radiographic evidence of osteoarthritic pathology can also occur in patients with inflammatory arthritis. Synovial fluid collection and analysis should always be considered to exclude such pathology.

As can be seen, for a variety of reasons, making an accurate diagnosis of feline osteoarthritis can be challenging. In an ideal situation, historical evidence, orthopaedic examination findings, radiographic findings and perhaps synovial fluid analysis should be used to obtain a definitive diagnosis. However, given an indicative history, with or without supportive examination findings, and where radiographs are unrewarding or when obtaining them is not possible, it may still be appropriate to consider a therapeutic trial of a suitable analgesic.

**Mediolateral radiograph of the elbow:** The white arrow points to an enlarged supinator sesamoid bone as a consequence of osteophyte deposition. The blue arrows highlight an increase in subchondral sclerosis of the semilunar notch of the ulna; this is in part due to periarticular osteophyte deposition.

**Cranio-caudal radiograph of the elbow:** The red dots highlight periarticular osteophyte deposition on the medial humeral epicondyle and medial coronoid process.

**Ventralsdor fals radiograph of the hips:** The blue arrow highlights osteophyte deposition on the cranial effective acetabular edge, whilst the white arrows highlight osteophyte deposition at the insertion of the joint capsule onto the femoral neck.
Bilateral slipped femoral capital epiphyses (SFCE) is evident on the radiographs. The ‘open growth plates’ and displaced epiphyses are more apparent on the flexed projections (right more than left) – these features can be readily missed on a ventrodorsal extended view of the pelvis as is demonstrated by the left hip in this case! Typically the femoral neck will remodel, often appearing atrophied (‘apple-core’ appearance) and the femoral metaphysis will become sclerotic (increased radiopacity).

The precise aetiology of SFCE is unknown, although underlying physeal dysplasia is suspected; this causes an inherent weakness in the physis. Neutering at an early age prior to physeal closure has been hypothesised to be a contributing factor. Previously, the condition was described as metaphyseal osteopathy because of the changes affecting this aspect of the bone; however, these changes are now considered to be secondary to slipping of the epiphysis. The condition, although uncommon, is also recognised in dogs, pigs and humans. Displacement of the epiphysis occurs in the absence of trauma, and bilateral involvement is not uncommon. In cats, neutered males are over-represented.

The slipped epiphysis is in effect a chronic, unstable physeal fracture. Conservative management is contraindicated as it results in non-union and persistent pain and lameness. In contrast to traumatic femoral capital physeal fractures, fixation of SFCE is invariably unsuccessful, due to the chronic nature of the condition and resultant bone remodelling of the fracture fragments which hinders reduction and stabilisation.

As a result, salvage procedures such as total hip replacement (THR) and femoral head and neck ostectomy (excision arthroplasty) are the key management options. The outcome with the latter, even in cats, is variable and unpredictable. Thus, THR is generally the preferred surgical procedure, albeit that the additional cost and possible complications need to be carefully considered and discussed with the owner. A rapid improvement in limb function is expected following hip replacement surgery. With the advent of advanced prostheses, refined instrumentation and new cementing techniques, the complication rate in specialist centres where THRs are performed on a regular basis is now very low.

Alfie had staged replacements of both of his hip joints. He made an excellent recovery with a full return to normal outdoor activities, with no evidence of lameness or stiffness.

What referring vets’ clients say about us...

We could not be more delighted with Willows Referral Service. Our Cocker Spaniel was diagnosed with a tumour which had spread and he needed fairly extensive surgery. From the first appointment we knew that we were in safe hands. Everyone at Willows was friendly, warm and welcoming and the knowledge and professionalism of the whole team shone through. Our dog was operated on by Stephen Baines and we know that our Spaniel would not be with us now were it not for him. His aftercare has also been excellent. We cannot recommend Willows highly enough, and want to say a big ‘thank you’ to the whole team!
CPD at Willows
We have all our exciting CPD meetings planned for 2015, and you can see all the details by visiting our website.

Feline Update Day - in association with iCatCare!
This year we are delighted to be presenting a Feline Update Day in association with International Cat Care. We are thrilled to announce that Andy Sparkes, Veterinary Director, and Claire Bessant, Chief Executive of iCatCare, will be included in the program, and we are very pleased to say that part of the proceedings of the day will go towards iCatCare’s charitable foundation. Topics will include: ‘Why make your practice feline friendly?’, Pain management in cats; Approaches to managing diabetic cats; Tips and tricks in optimising feline eye examination and neurological examination. This exciting day will help you to update the way you approach your feline patients on a day-to-day basis!

If you would like to receive a reminder of the Feline Update Day and all our other CPD meetings a few weeks before each event, all you need to do is sign up to our email list by registering as a member of the Veterinary Professionals section of our website. In addition to the benefit of email reminders of forthcoming CPD, being a member also allows you to manage your Willows CPD Certificates of Attendance, and rapidly to complete our online referred patient Registration Form.

Free Evening Forums
- Ocular emergencies – prolapses, perforations and beyond
  Wednesday 28 January 2015
- Seizures – what’s new?
  Wednesday 25 February 2015
- Wet, dry or drowned?
  Understanding fluid therapy in the small animal patient
  Wednesday 1 April 2015
- Chronic ear disease: assessment and management – a systematic approach
  Tuesday 21 April 2015
- Osteoarthritis in dogs and cats - analgesia, arthrodesis or arthroplasty?
  Wednesday 29 April 2015
- Pale and interesting – an anaemia refresher
  Wednesday 10 June 2015

Day Meetings
- WRS Thoracic day: Principles of investigation and management
  Wednesday 25 March 2015
- Feline update - in association with International Cat Care!
  Wednesday 20 May 2015
- Back to Basics – how to see the wood from the Willows
  Wednesday 16 September 2015
- Emergency and Critical Care for Nurses
  Wednesday 21 October 2015

Free Clinical Clubs
Throughout 2015 we will continue to run FREE informal, interactive Clinical Club evening meetings for practitioners. The Clinical Clubs are generally run once a month and centre around a steeplechase of several case studies which are presented for small groups of 4 to 6 vets to discuss first amongst themselves, followed by further analysis and discussion with our Specialists.

The types of cases presented vary from one evening to another, and they currently encompass orthopaedics, ophthalmology, neurology, internal medicine, soft tissue surgery, dermatology, critical care, anaesthesia and oncology. The numbers are strictly limited to 20 delegates per evening, and you must register for these events online - so please check our website regularly for information about these popular events.

To book your CPD just go to our veterinary professionals section and follow the links to CPD:
www.willows.uk.net/vp