Baileys' Story

As told by Stephanie Robinson VN

Bailey, a 5 year old male Clumber spaniel, was referred to the Animal Health Trust with a sudden onset of non-ambulatory tetraparesis and difficulty in breathing. His postural reactions and spinal reflexes were decreased and many were absent in all four limbs. CSF was taken which suggested inflammatory Polyradiculoneuritis (a type of meningo-myelitis).

General nursing

Bailey was placed on a water bed initially to prevent decubitus ulcers, and maintained in sternal recumbency for the first 5 days until his breathing improved sufficiently, enabling us to turn him into lateral recumbency. From then on he was turned hourly (including overnight) to prevent his lungs from collapsing which may have predisposed him to pneumonia. Because of his breathing difficulties he was placed in intensive care and maintained on oxygen via nasal prongs. His blood gas levels were monitored regularly to ensure his oxygen saturation was stable and within normal limits. A urinary catheter was placed and he was put onto IVFT. Urine output and specific gravity were checked every 6 hours and fluid intake was adjusted accordingly.

Feeding

Although keen to eat, Bailey's increased respiratory effort meant there was a chance he could inhale food. A naso-gastric tube was placed to allow easy, stress-free feeding. On the first day of feeding, Bailey was given only a third of his required amount as he had not eaten for a few days and we didn't want to overload his stomach too soon. On Day 2 his food intake was increased to two thirds and by the third day he was up to his required intake (IER x 2).

Physiotherapy

Within 12 hours of Bailey's admission, the nurses started him on a course of physiotherapy. There was a good chance of getting Bailey back on his feet if physiotherapy was able to prevent his muscles, tendons and ligaments from shortening and seizing up. The aim was also to keep his muscle tone and prevent muscle atrophy. His limbs were massaged to encourage venous return to the heart, and slowly encourage passive joint movement by moving each limb through its normal range. This also included massaging his spine, neck and tail. The physiotherapy was repeated every 1-2 hours and he tolerated it extremely well.

Hydrotherapy

As a working dog, Bailey was used to water and so we decided to try hydrotherapy. Under the supervision of a human/animal physiotherapist, Bailey was placed in a hydrotherapy bath for just 5 minutes twice each day. Jets of water were used on his limbs gently encouraging and moving his muscles. He was supported with floats while each limb was moved through its normal swimming motion. At first, Bailey was not able to hold his head above the water but, after just a few days, he was not only holding his head up, but was also starting to move all four limbs and even wag his tail.

Progress

Bailey's progress was very slow initially but the slightest improvement was another step closer to getting him walking. By Day 11 his oxygen prongs and naso-gastric tube had been removed and he was eating normally. Further improvements were noticed in hydrotherapy by about Day 17 when he began using all four legs. He didn't tolerate the hoist very well and so a sling was used to support his hindquarters and chest.

Gradually he started to bear weight on his front legs and could sit himself up in the kennel. His back legs were slower to respond but with more physio he was soon able to move around and use them until eventually, on Day 25, he walked about 6 feet unaided. This meant his urinary catheter could now be removed.

Bailey remained hospitalised for a couple more days to ensure he was urinating normally and until he was slightly more stable on his legs. He finally went home on Day 30 after four weeks of nursing. His recovery gave all the nurses and everybody else involved a great sense of achievement and it was very rewarding to see him walk out of reception wagging his tail!

Presented by CSAS clinicians at BSAVA Congress 2002

Simon Platt BVMS DipACVIM DipECVN MRCVS

- Neuromuscular disorders (3 hr specialist session with J Penderis)
- Neurological weakness (interactive case presentation)
- Appropriate anticonvulsant use (main programme lecture)
- Tarlov cysts in dogs (scientific abstract)
- CA - MRI appearance of canine spinal cord infarction (scientific abstract)

Jacques Penderis BVSc MVM CVR DipECVN MRCVS

- Head tilt (main programme lecture - interactive)
- Approach to the dog with back pain (main programme lecture)
- Treatment of acute spinal cord injury (main programme lecture)
- Neurology of the ear: deafness and vestibular disease (main programme lecture)
- Localising brain lesions (main programme lecture)
- Neuromuscular disorders (main programme, specialist session with Simon Platt)

Prudence Neath BSc BvetMed DipACVS/ECVS MRCVS

- Patient preparation for intestinal surgery (main programme lecture)

Dr Andy Sparkes BvetMed PhD DipECVIM MRCVS

- Management of feline hyperthyroidism (for Soft Tissue Surgery specialist meeting)
- Decision making in feline endocrinology (main programme, specialist session)
- Feline hepatobiliary disease (main programme lecture)
- Why is this cat ascitic? (main programme lecture)
- The coughing cat (main programme lecture)

Ruth Dennis MA VetMB DVR DipECVDI MRCVS

- MRI of head and neck tumours (for Soft Tissue Surgery Satellite meeting).
- Case report - 'Incidentaloma' in a dachshund (for European Association of Veterinary Diagnostic Imaging Satellite meeting).
- Advances in imaging cancer (main programme lecture).

Francisco Llabres Diaz CertVR MRCVS

- Focal intestinal muscular hypertrophy in a cat (EAVDI Pre-satellite meeting)

Mast cell tumour project

First of all, many thanks to all practices that replied to our questionnaire.

The project consisted of a retrospective study of all dogs with a diagnosis of mast cell tumour (MCT) 1997-1999, whose samples were received by the pathologists at the Animal Health Trust. The study was enhanced by means of a questionnaire completed by general practitioners on receipt of the animal's clinical records. This meant that the majority of animals had been treated by general practitioners, although some had been treated by other referral centres.

Results

352 dogs were identified as having MCT between 1997-1999. Looking more closely at their histories through to April 2000 these dogs combined, had suffered 469 identified MCT's, although some dogs are walking around with as yet undiagnosed 'lumps', so the percentage of dogs with multiple tumours could be higher. Accumulated data from the pathology computer was used for analysis of breed, age, tumour grade and site.

225 dogs (64%) with returned case reports/questionnaires, were used for analysis of survival relative to grade/site/breed and treatment. Since general practitioners treated most of these dogs, the data also gave an insight into the treatment offered to the majority of dogs suffering from MCT.

Appearance

The descriptions received on the patholology submission form confirmed the heterogeneous nature of this tumour.

MCT's were described as lipoma, haemangiopericytoma, cyst, nipple, nodule, papilloma, granuloma and blister. They appear soft, hard, fibrous, inflamed, plaque-like, painful, painless, rapidly growing, slowly growing or increasing and decreasing in size!

Breed

We had a 97.5% response to this question (detailed on the pathology submission form) with 46 breeds being represented.

This data was compared to Pedigree Masterfood's Dog Ownership survey 1998 (the survey results suggest which breeds are most commonly owned by the dog owning public).

It seems that Weimeraners, Boxers, Pugs and Golden Retrievers in the UK are at an increased risk of developing MCT in comparison to the average dog. The data should be interpreted with caution because, even with 352 dogs in the study, the numbers of each breed were lower than statisticians would like. It was noted that Boxers had a statistically significantly decreased risk of developing a poorly differentiated tumour.

Site

There was no evidence for any site predilections. However, when we examined the grade and survival data it did seem that the inguinal area was associated with higher grade tumours, and dogs with primaries in this area were more likely to die of their disease.

Grade and survival

2 pathologists only were used to minimise inter-observer variation

Survival: from the table below it can be seen that the survival rate for dogs presenting with well and intermediately graded tumours is fairly good.

Grade	Percentage of all MCT tumours seen	1 year survival	4 year survival
Well	25	over 90%	87%
Intermediate	60	over 90%	82%
Poor	15	45%	32.5%

The few dogs with intermediately graded MCTs that were euthanased, were often subject to other factors, apart from the grade of the tumour which contributed to the decision to put the dog to sleep. These included a dog with concurrent cardiac disease and another elderly Labrador with a large lesion near its elbow, whose treatment would need to include amputation.

Multiple MCTs

53 dogs (15%) had multiple MCTs, all of which were treated by surgery alone. Golden Retrievers were over represented with 21 of the 49 dogs in the study having multiple MCTs. One Weimeraner had 13 tumours removed and is currently disease free and happy. Dogs with multiple MCTs had a prognosis associated with the grade of the tumour. So dogs with multiple, well or intermediately graded tumours are still alive, those with poorly differentiated tumours are dead. This should encourage people to treat these dogs as though each mast cell tumour was the dog's first.

Treatment

Surgical excision was the treatment of choice, as it should be with these tumours. However, most lesions were removed before a diagnosis had been made by FNA. This meant that no pre-surgical planning could occur. For most animals this was not a problem, but may have saved some animals a second surgery when the tumour re-grew.

Most of this work confirmed, in a more formal way, clinicians' experience of these tumours.

Summary

Our recommendation would always be to fine needle aspirate suspicious lesions, and because mast cell tumours can look like any other lesion, every cutaneous lesion should be investigated. If feasible, this should be with a good margin of normal tissue. Dogs developing multiple MCTs should have a prognosis dictated by the grade of the tumour and not because it has suffered more than one tumour.

Once again a big thank you to all the practices who replied to the survey. This work contributed greatly towards the final mark given by the University of Birmingham for the MSc (Clin Onc), and also has led onto further work on mast cell tumours at the Animal Health Trust. Sue Murphy graduated with a distinction in December 2001

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Veterinary News

Animal Health Trust Veterinary News
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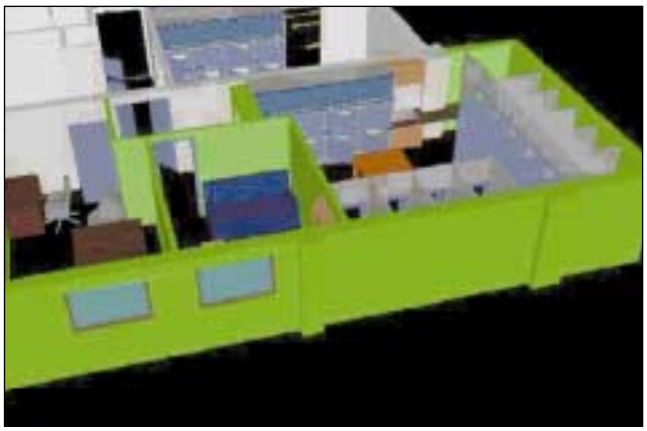
Generous donation allows extension to the Small Animal Centre



Over the last 2 years, the Trust's Small Animal Centre has enjoyed almost a 50% increase in referrals. While this is very good news indeed, it has placed an undeniable strain on the resources of the Centre. We are therefore enormously grateful to the EBM Charitable Trust in Jersey, a long-time benefactor of the AHT, for coming to our rescue and generously providing the much-needed funds to extend our current premises.

In June this year work will begin on a new wing, providing almost double the kennelling space for in-patients, a bedsit/restroom for members of staff (working around the clock) and additional offices helping to accommodate a 37% increase in clinical and nursing staff. As well as providing the vital additional space, it is also our aim to refurbish and improve the existing hospital areas.

It is hoped that the new EBM wing will be opened officially in October and that this additional resource will greatly benefit our ability to accommodate an ever increasing number of emergency cases while, at the same time, alleviating some of the pressures on the current accommodation.

The Animal Health Trust on behalf of its future patients, extends its gratitude to The EBM Charitable Trust.

What the work entails:

Phase 1 (see picture), which will take approximately 15 weeks to complete, will provide 70m^2 of additional space and increase our kennel capacity by 75%. This new accommodation, exclusively for canine use, will meet the same exacting standards as those provided by the existing kennels. Together with the obvious need for an increase in patient space, it is increasingly apparent that our growing nursing and kennel staff are having to operate in a space originally intended for a much smaller team, and this situation has been addressed with the addition of a bedsit/restroom. A large 4 person office is also included in the plans thus creating additional space for a growing number of residents.

Phase 2 will commence at the completion of Phase 1 and consists of changes to the exisiting hospital kennels; its main intention to increase the amount of general working space (with the removal of a wall and 2 sets of double doors) and to provide for easier access to some areas. These changes will take three weeks to complete. Disruption for the patients will be kept to a minimum with the erection of dust-proof panelling to isolate work areas, together with the removal of the majority of patients to the new wing prior to the start of work.

AHT Nurses' Club

The Nurses' Club continues to be popular and successful. So far this year we have held two meetings, each have been very well attended. The first meeting of 2002 kicked off with a practical workshop presented by Colette du Feu from Janssen Animal Health and concerned suturing. Each nurse in attendance was able to practise their skills on simulated skin, try out varieties of suture patterns and get the feel for different suture materials. At our second meeting Jill Pearson MRCVS gave us all a great presentation on Parrots, it gave many of us cause to reflect on the variety of concepts involved in successfully keeping psittacine species, including some very funny anecdotes concerning her own animals .

The Nurses' Club attracts people from across east anglia, primarily qualified & trainee nurses, but we also welcome anyone who has a particular interest in certain topics. As yet there remain the following meetings to look forward to:-

20th June – Feline Nursing – Dr Andy Sparkes

19th August – Equine Nursing – Bonnie Millar

22nd October – Theatre Practice – James Gasson

12th December – Anaesthesia – Dr Jacqueline Brearley

If you require any information on joining the Nurses' Club, please contact Karen Felton: Tel: 01638 552700; e.mail: karen.felton@aht.org.uk

Animal Health Trust
Lanwades Park
Kentford,
Newmarket,
Suffolk
CB8 7UU

Telephone: 01638 751000
Fax: 01638 750410
e-mail: info@aht.org.uk
Web site: www.aht.org.uk

Oxidative Stress and Lung Health in Equines

The Respiratory Group in the Centre for Equine Studies has had an interest in the role of free radicals and antioxidants in pulmonary inflammation for the last 8 years. Free radicals (particularly reactive oxygen species - ROS) are known to initiate or propagate inflammation in many different tissues and have been implicated in conditions or diseases such as asthma, ARDS and NRDS, poor response to vaccination, oxygen toxicity, idiopathic pulmonary fibrosis, COPD (human), cystic fibrosis, emphysema, ageing, cancer, atherosclerosis, skin disease, arthritis, muscular atrophy, liver disease and auto-immune disease.

ROS are essential for life and are produced in biological events such as mitochondrial oxidative phosphorylation. They are also produced during the respiratory burst of phagocytes to damage or kill pathogens. Whilst controlled production of ROS is essential, excess production can damage surrounding tissues or induce or propagate inflammation. In order to limit unwanted damage by ROS, the body has both enzymatic (eg catalase, superoxide dismutase) and non-enzymatic (eg ascorbic acid, glutathione) antioxidant pathways for deactivation or removal of ROS. Work has indicated that horses which suffer from recurrent airway obstruction (RAO), previously referred to as COPD, may have a disturbed oxidant/antioxidant equilibrium.

Studies carried out at the AHT in healthy horses have identified ascorbic acid (vitamin C) as the major antioxidant in lung lining fluid, whilst studies in horses with RAO have shown a marked deficiency of Ascorbic acid (AA) both during clinical exacerbations and even during clinical remission. The apparent deficiency in lung antioxidants in animals affected by RAO led the Respiratory Group to investigate the effect of dietary supplementation with balanced mixtures of antioxidants.

Collaborative studies between the AHT and the Equine Studies group at the WALTHAM® Centre for Pet Nutrition have shown that balanced antioxidant supplements may have a positive impact in helping to maintain a healthy respiratory system. This is essential for the overall wellbeing of the horse and particularly of the performance animal. A 500kg horse will breathe in excess of 70,000 litres of air each day when resting, more if exercised; and today's environment contains many atmospheric pollutants including traffic fumes, irritants and allergens such as pollens and dusts. The studies showed that lower levels of AA are found in the epithelial lining fluid of horses suffering from RAO and those with lung inflammation, when compared to a healthy horse. The research, outlined below, suggests that appropriate antioxidant supplementation may play an important part in maintaining lung and respiratory health.

An exciting new product WINERGY® VENTIL-ATE™ incorporates this scientific research. Investigations carried out in collaboration with the Animal Health Trust and the University of Liege, have shown that the antioxidant cocktail used (based on WINERGY VENTIL-ATE) may help to improve lung function and reduce inflammation in horses susceptible to RAO.

The research

Recent work has shown that α–tocopherol (vitamin E) was not present in measurable concentrations in the epithelial lining fluid of either healthy or RAO affected horses. Ascorbic acid (AA) appears to be quantitatively the most important antioxidant in the epithelial lining fluid (ELF) of the equine lung being present at levels around 20–30 times higher than total glutathione (although glutathione remains quantitatively more important than ascorbic acid as a circulating antioxidant) (Smith *et al* 2001).

The concentrations of AA in the horse are much higher than in humans:

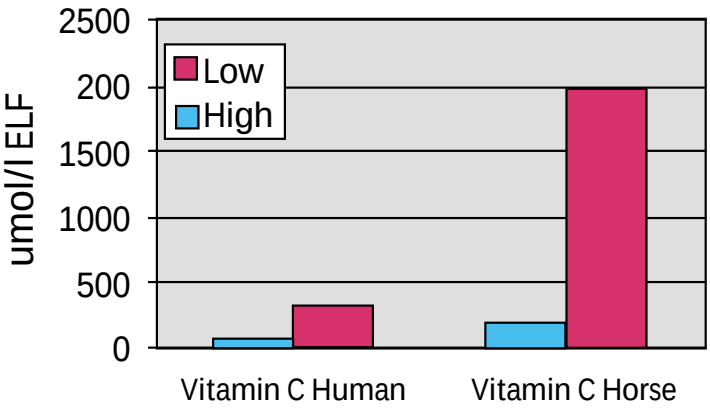


Fig 1: Range of concentrations of ascorbic acid in the lung epithelial lining fluid of healthy horses and humans

Both pulmonary and plasma concentrations of ascorbic acid (AA) have been shown to be reduced in horses affected by RAO (Smith *et al* 2001).

	Control (n=4)	RAO (n=10)	
Plasma AA µmol/l	11.2 ± 0.7	8.0 ± 2.6	P=0.002
BAL AA (umol/l)	13.1 ± 4.0	2.1 ± 1.4	P=0.013
ELF AA (mmol/l)	3.0 ± 1.9	0.2 ± 0.1	P=0.06

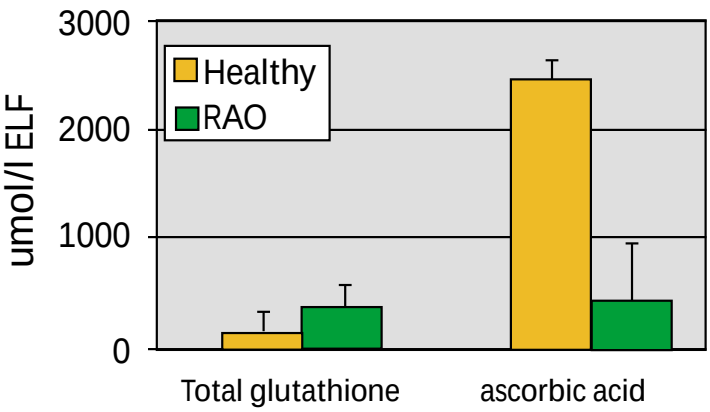


Fig 2: Concentrations of total glutathione and ascorbic acid in the lung epithelial lining fluid (ELF) of healthy horses and horses suffering from Recurrant Airway Obstruction (RAO)

Supplementation can effect the level of lung antioxidant defences

Whilst plasma but not pulmonary bio-availability of AA has been demonstrated (Snow and Frigg 1987) this work did show that some forms of AA were not very bio-available. Recent work has also explored the bio-availability of different forms of AA in horses (Deaton *et al* 2001). This work showed that oral supplementation with either ascorbyl palmitate (a form of vitamin C) or a stabilised form of vitamin C caused an increase in the plasma ascorbic acid concentrations. The epithelial lining fluid ascorbic acid (AA) concentrations also increased in four of the six ponies following supplementation with either of the two sources.

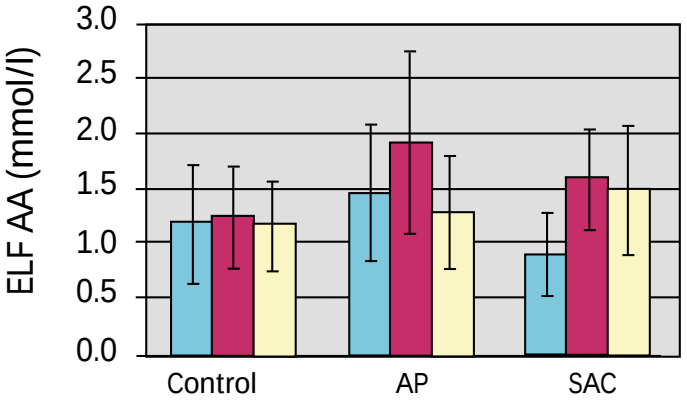


Fig 3: ELF AA concentrations (mmol/l) after a 2 week lead in period, 2 weeks of supplementation and a 2 week washout period. A: Control, no supplement; B: Ascorbyl palmitate; C: Stabilised form of Ascorbic Acid; SAC: D: Mean ± sd of the six ponies for each supplement. Pre-supplement; 2 weeks of supplementation; 2 weeks washout.

Supplementation may be beneficial for lung function and inflammation

The question of whether nutritional antioxidant supplementation might reduce oxidative damage by enhancement of the antioxidant defence, thereby modulating inflammatory processes, was tested in a placebo-controlled, blind study.

This study evaluated whether dietary antioxidant cocktail supplementation fed for four weeks would improve lung function and reduce airway inflammation in affected horses. Eight horses in clinical remission were investigated at rest and after a standardised exercise test before and after the antioxidant cocktail (based on WINERGY® VENTIL-ATE™ or placebo treatment). Pulmonary function and exercise tolerance were monitored; systemic and pulmonary lining fluid uric acid, glutathione and 8-epi-PGF2 were analysed, and bronchoalveolar lavage (BAL) cytology and inflammatory scoring of the airways were performed. The antioxidant treatment significantly improved exercise tolerance and significantly reduced endoscopic inflammatory score.

Further information with respect to WINERGY® VENTIL-ATE™ can be obtained from the WINERGY Helpline on free phone 0800 7319469.

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For further information please contact David Marlin BSc PhD on 01638 751908 or e-mail: david.marlin@aht.org.uk

Managing idiopathic feline lower urinary tract disease

Idiopathic disease accounts for the vast majority of cases of feline lower urinary tract disease (FLUTD). However, it is a diagnosis that can only be made by exclusion of the other recognised causes (eg urolithiasis, neoplasia, anatomical defects, bacterial cystitis), and thus appropriate investigations are indicated in any cats with severe or recurrent clinical signs of urinary tract disease (pollakiuria, haematuria, dysuria).

Studies have shown that the majority of cases of idiopathic FLUTD (iFLUTD or idiopathic cystitis) will spontaneously resolve after a few days (usually 3–7 days) irrespective of whether any treatment is given. It is not uncommon for cats to receive antibiotics or anti-inflammatory treatment (such as prednisolone or non-steroidal anti-inflammatories), but due to the spontaneous resolution that usually occurs, it is very difficult to assess response to treatment accurately. Often (probably usually) what is taken to be improvement due to the treatment the cat is receiving, is in fact simply spontaneous recovery and would have occurred even in the absence of any treatment.

Of the few well-controlled studies that have been published, no therapy has been shown to be of benefit in the treatment of iFLUTD. These studies have included evaluation of the following agents:

- Antibiotics
- Propantheline (anti-cholinergic) – smooth muscle anti-spasmodic
- Prednisolone

A plethora of other drugs have been used to treat iFLUTD, but their efficacy has not been documented and their use has not been subjected to controlled studies. Treatment of recurrent iFLUTD can be difficult and frustrating, and with recurrent cases it is imperative that full evaluation is undertaken to rule out other causes of FLUTD. In genuine idiopathic cases, few therapies have really appeared helpful. The spontaneous resolution that is the rule though in these cases certainly confounds the interpretation of any non-controlled studies.

Antibiotics and urinary antiseptics

Empirical antibiotic therapy is clearly unjustifiable in i FLUTD, as less than 3% of cases are due to bacterial cystitis. Antibiotic therapy can only be justified on the basis of urine culture results documenting a genuine bacterial infection.

Urinary acidifiers and calculolytic diets

The use of urinary acidifiers and/or calculolytic diets has been one of the most common recommendations for the

treatment of iFLUTD. This recommendation seems to be based mainly on the fact that crystalluria is found in a proportion of cats with iFLUTD. However, although uroliths and crystal-containing urethral plugs are clearly important causes of iFLUTD, there is no evidence to suggest that crystalluria *per se* is implicated in the pathogenesis of idiopathic cases. Microscopic crystalluria is indeed found as a normal feature in many cats, and studies have shown that the proportion of cats that have crystalluria, and the degree of crystalluria does not differ significantly between healthy cats and cats with idiopathic cystitis. The routine use of acidifiers or calculolytic diets therefore also seems irrational in these cats

Smooth muscle antispasmodics

Pollakiuria and/or urge incontinence is a common feature of iFLUTD. These features presumably occur secondary to inflammation in the lower urinary tract. Contraction of the detrusor muscle is largely mediated by parasympathetic (cholinergic) stimulation, and anti-cholinergics have therefore been used in an attempt to treat these clinical signs. In a study of the effectiveness of a single dose of propantheline in cats with cystitis, no significant effect was observed. However, it has not been established whether a longer duration of therapy might be effective. To prevent urinary retention, propantheline should probably not be used in higher doses than 7.5 mg every 3 days. However, even if this drug were effective in alleviating the clinical signs, its value should be questioned, as it is only symptomatic therapy and will not control the underlying disease.

Anti-inflammatory agents

It seems reasonable to assume that most cats with iFLUTD have lower urinary tract inflammation, and therefore there is apparently good rationale for the use of anti-inflammatory agents. Nevertheless in a well-conducted double-blind placebo-controlled study, anti-inflammatory doses of prednisolone were shown to have no significant effect on the resolution of cats with idiopathic cystitis, and subjectively, non-steroidal anti-inflammatory agents have appeared equally disappointing.

Idiopathic cystitis, interstitial cystitis and amitriptyline therapy

Recent evidence from investigation of iFLUTD cases has revealed a number of similarities to a form of sterile cystitis in humans termed 'interstitial cystitis'. Although differences between the two diseases exist, on the basis of the observed similarities some of the treatments that have been shown to be useful for the management of interstitial cystitis in humans have been tried in cats with iFLUTD.

For this reason, amitriptyline has been commonly recommended for cats with iFLUTD. Amitriptyline is a 'tricyclic antidepressants', and certainly has some central nervous system effects, which may help in controlling iFLUTD (it is speculated that stress factors may be involved in the development of disease in at least some cats). However, other potential benefits of this drug include reducing bladder inflammation and controlling the discomfort associated with the disease. Generally, amitriptyline has been used at a dose of 5–10 mg per cat, given once daily in the evening (as administration may cause temporary sedation).

Subjectively the drug appears to be useful in a number of cases of recurrent iFLUTD, and trial therapy may be justified in recurrent cases where other diagnoses have been ruled out. A recent study reported the long-term use of amitriptyline in 15 cats with severe iFLUTD that had failed to respond to other treatments. Although not a controlled study, this investigation was conducted carefully and documented improvement in clinical signs (though not cystoscopic lesions) in 9 of the 15 cats. Nevertheless, experience suggests that even if amitriptyline does produce genuine clinical improvement in some, this will not occur in all treated cats.

Other agents

Other agents have also been suggested for the therapy of idiopathic cystitis such as glycosaminoglycan replacements (eg pentosan polysulphate, glucosamine). These again are used on the basis of the similarity between iFLUTD and human interstitial cystitis. Clinical experience reported with these agents has been extremely variable, and there are no published studies to support or refute a clinical benefit.

Diet

The use of calculolytic and acidifying diets is probably unjustifiable unless there is macroscopic evidence of crystalluria (eg a visible sediment forming in a urine sample) or crystals have formed part of a urethral plug in a male cat. However, as cats with lower water intake appear more predisposed to developing the disease, there is rationale to using tinned rather than dry cat foods, and for the addition of extra water to the diet. Indeed the use of tinned rather than dry foods is one of the things that has actually been documented to reduce the frequency of recurrence of iFLUTD. Encouraging frequent urination is linked to the increased water intake and is also likely to be of importance in the long-term control of the disease. In cats that use a litter tray, providing several litter trays at different locations, containing different materials may be valuable to try and encourage more frequent urination.

In the future, as our understanding of iFLUTD increases in cats, it is likely that we will find a number of different disease processes may be involved, and this may allow us to treat cases more appropriately and successfully.