Renal disease: successful long-term care at home

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About me

- Graduated University of Bristol, 1993
- UK Specialist in Feline Medicine
- Love first opinion and referral work
  - University and referral clinics
  - Standard first opinion vet practices
- Founder of Vet Professionals
  - Publications: books for sale
  - Education: CPD, free downloads
  - Clinics and research: via online owner questionnaires + specialised clinics

Lecture Plan

- How does CKD affect our patients?
- Management at home and at the practice
- What should gold standard care comprise?

What do normal kidneys do?

- Produce urine
  - Excrete products of protein catabolism
  - Excrete drugs, toxins, hormones
  - Regulate normal hydration status
  - Regulate normal electrolyte status
  - Regulate normal acid-base status
- Regulate blood pressure
- Produce and activate hormones

What happens in CKD?

- Produce urine
  - Accumulate products of protein catabolism
  - Accumulate drugs, toxins, hormones
  - Dehydration
  - Electrolyte problems
  - Acidosis
- Systemic hypertension
- Renal 2nd hyperparathyroidism, anaemia

Common Clinical Signs

- Dehydration
- Loss of appetite
- Lethargy/depression
- Weight loss
- Polyuria, polydipsia
- Vomiting
- Macrorenal
- Microrenal
- Anaemia
- Oral ulceration
- Diarrhoea
- Systemic hypertension

Often non-specific and unhelpful!

Treatment aims to improve the quality of life by managing these clinical signs
Managing cats with CKD

- Acute management (hospital)
- Chronic management (home)

Hospital care

Home management

- Diet
- Fluid support
- Electrolyte support
- Blood pressure
- ACEI
- Others

Diet
- THE single most effective treatment for cats with CKD: proven to prolong life by 2-3 times
- Especially beneficial for cats in Stage 3 and 4 CKD (creatinine > 250 μmol/l, > 2.8 mg/dl)
- Many key characteristics including
  - Palatable, high calorie
  - High quality protein, restricted levels
  - Phosphate restricted
  - Non acidifying
  - Potassium and vitamins added
  - Low sodium

Cats eating renal diets live longer!

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Anorexic cats

- Tactics
  - General nursing
  - Gradual introduction of the new diet
  - Home prepared diet?
  - Appetite stimulants
    - Cyproheptadine 1 mg SID-BID
    - Mirtazapine 1.875 mg q 2-3 days
    - Anabolic steroids, B vitamins etc

Nausea and vomiting

- Common in cats with CKD
  - Part of ‘uraemic syndrome’
  - Consequence of hypergastrinaemia (increased gastric acidity)
- Treatment options
  - Offer small amounts little and often
  - H2 blockers eg famotidine (Pepcid, 0.5 mg/kg SID or EOD)
  - Anti-emetics eg maropitant (Cerenia, 0.5 - 1 mg/kg SID for seven days, then EOD), ondansetron (Zispin, 1 mg SID)
Fluid support in CKD

- How common is dehydration?
  - ~65% of renal patients
- Why?
  - Inadequate intake to compensate for losses
- Consequences
  - Reduced renal perfusion
    - Worsens renal function
  - Worsens azotaemia, hyperphosphataemia, acidosis, constipation etc

Tactics

- Rehydrate (IV fluids)
- Water fountains
- Flavoured water, broths
- Moist rather than dry food
- Constant access to fresh water
- Via feeding tube
- Subcutaneous fluid therapy

See Free Downloads on SQ fluids and encouraging fluid intake

Managing electrolyte problems:
- which electrolytes are affected?

  - Phosphate
    - Hyperphosphataemia in ~65%
  - Potassium
    - Hypokalaemia in ~25%

Hyperphosphataemia

- How common is this?
  - ~65% of renal patients
- Why?
  - \( \downarrow \) number of nephrons \( \rightarrow \) failure of excretion
- Consequences
  - Renal secondary hyperparathyroidism (lethargy, depression, weakness, anorexia, \( \uparrow \) vulnerability to infections, nephrocalcinosis...)

Renal secondary hyperparathyroidism

- Triggers
  - Reduced calcitriol production by the kidneys
  - Hyperphosphataemia
- Very common
  - May precede development of azotaemia and hyperphosphataemia
- Detrimental to clinical status
  - Soft tissue mineralisation, progression of renal disease
- Helped by phosphate restriction
Renal secondary hyperparathyroidism

- **Diagnosis**
  - Blood phosphate levels high
    - R2HPT definitely present
  - Blood phosphate levels normal
    - R2HPT may still be present

- **Current recommendations**
  - Phosphate restrict all cats in IRIS Stage 2, 3, 4 renal disease

NB many labs have inappropriate phosphate ranges for CKD patients

- Ideal phosphate levels: 1 – 1.2 mmol/l
- Iris recommendations for target phosphate levels:
  - Stage 2 (mild): < 1.45 mmol/l (< 4.5 mg/dl)
  - Stage 3 (moderate): aim for < 1.6 mmol/l (< 5 mg/dl)
  - Stage 4 (severe): aim for < 1.9 mmol/l (< 6 mg/dl)

- Why?
  - Your patient will feel better
  - Your patient will live longer
  - ? their renal disease is less likely to progress??

Defining hyperphosphataemia in renal disease

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Managing Hyperphosphataemia

- Correct dehydration
- Phosphate restricted diet
- Oral phosphate binders
  - In combination with renal diet or normal cat food
  - Aluminium hydroxide/oxide/carbonate
  - Calcium carbonate/acetate
  - beware hypercalcaemia!
  - Lanthanum based products
  - Can take several weeks or months to become fully effective

Hypokalaemia

- Why?
  - Inadequate intake (anorexia)
  - Inappropriate loss of potassium from the kidneys (kaliuresis)

- How common?
  - 20-25% of patients

- Consequences?
  - Mild: loss of appetite, weakness/lethargy
  - Severe: polymyopathy, ventroflexion
  - And, hypokalaemia worsens renal function

Diagnosis

- Clinical signs
- Laboratory tests
  - K+ < 4 mmol/l
  - CPK
  - Renal function

Treatment

- Orally: 1 - 4 mmol bid
  - Potassium gluconate
  - Potassium citrate if acidotic
  - Avoid potassium chloride
  - (Renal diets)

- In i/v fluids
  - Potassium chloride 20 – 80 mmol/l (according to need)

Correction of hypokalaemia improves renal function!!
Preventing hypokalaemia

• Feed prescription renal diet
  – Low protein, non-acidifying diets with added K+
• Monitor K+, supplement if < 4 mmol/l
• Avoid:
  – High protein/acidifying diets
  – Low potassium/magnesium diets
  – Treatments promoting K+ loss in urine
    • Overzealous fluid therapy, Drug therapy e.g. frusemide, glucocorticoids

Systemic hypertension

~ 20% of CKD cats suffer from high BP

Risk of hypertension does not correlate with severity of azotaemia

Monitoring and Treatment

• Monitoring
  – Measure BP in all CKD cats at least twice a year and treat if
    • BP persistently above 160 mmHg (IRIS)
    • And/or ocular evidence of hypertension
• Treatment
  – Amlodipine (Istin), ACEI (eg benazepril)
  – Aim to keep SBP below 160 mmHg
  – Big improvement in quality of life, even if the cat remains blind!

Benazepril and CKD

• ACEI in people with CKD
  – Prolong lifespan
  – Reduce progression of renal disease
  – Main effects through reduced proteinuria, systemic and glomerular BP
• ACEI in cats with CKD
  – ACEI reduce proteinuria, systemic and glomerular BP
  – ACEI in cats with CKD
    • Improve quality of life, reduce proteinuria
    • No overall increase in survival?
    • Greatest benefits in cats with significant proteinuria (UPC > 1.0)
  – Benazepril increases appetite and weight gain in healthy cats!

How do I use benazepril in feline CKD?

• Not on day 1
• Stabilise the patient first
• Prioritise treatment for:
  – Proteinuric cats: UPC > 0.4
  – Hypertensive cats (+/- amlodipine)
  – (? Persian cats)
• Additional – but less dramatic - benefits in stable, non-proteinuric, normotensive cats
• But – benazepril is not a magic bullet – other components of therapy must not be neglected (eg diet, maintaining normal hydration, electrolytes etc)
Other treatments for cats with CKD

Long-term management of renal cases

- What is the optimum care package?
  - How frequent should check-ups be?
  - What should they involve? What’s really necessary?
  - How can we balance what we recommend with cost and other owner expectations?
- When should an owner be concerned as an emergency?
  - Visual deficits, acute deteriorations

Gold standard care

1. Check-up consultations
   - What: history and physical examination
   - Aims: assess progress, look for new problems, are further tests indicated or is ‘all well’?
     - Identify changes promptly as this ensures the best chance of recovery
     - Continued support and reassurance for owner – assisting dietary and treatment compliance
   - Frequency: monthly initially (if very stable reduce to 3 monthly)

Clinical examination

- Physical examination
  - Weigh
  - Palpate kidneys and bladder
  - Assess hydration status
  - Assess mucous membranes and oral cavity
  - Ophthalmic examination

Gold standard care

2. Blood pressure assessment
   - How: Doppler BP measurement, ophthalmic exam
   - Aims: identify systemic hypertension before it causes clinical problems, control existing hypertensive cases. Remember, systemic hypertension is the ‘silent killer’
   - Frequency:
     - Normotensive cats: At diagnosis of renal disease and again within 2 months; thereafter every 6 months
     - Hypertensive cats: weekly until stable, reducing to every 3-4 months

Gold standard care

3. Blood tests
   - What: urea, creatinine, haematology, electrolytes, proteins +/- others
   - Aim: monitor progression of renal disease (IRIS) + presence/severity of complications
   - Frequency:
     - Patients with no complications: every 6 months unless there is an indication from history, physical etc
     - Patients with complications: according to need
Gold standard care

4. Urine tests
- What: USG, dipstick, sediment, UPC, culture
- Aims: assess progression of renal disease, presence of complications/concurrent disease (e.g., UTI, proteinuria)
- Frequency:
  - Patients with no complications: every 6 months unless there is an indication from history, physical etc
  - Patients with complications: according to need

Gold standard care

Routine healthcare still important
- Diet – if not renal then why not? What ‘non renal’ diets are best?
- Worm and flea treatment
- Vaccination

Prognosis for cats with CKD can be excellent

What about those that cannot afford ‘gold standard’ care?

Prioritise what’s needed
For most cats:
- History and clinical examination are most helpful
  - These help to increase trust between you and your clients
- Further assessment if any hint of a problem

Encouraging compliance

Only possible if the owner wants it!
- Encourage teamwork between you and the owner to provide the best care for their cat
- Education helps to guide them
  - When to worry
  - When a change in therapy or further tests might be needed
  - Why check-ups are important
- Good teamwork makes care more satisfying for the owner and clinician as well as more successful for the cat

What support will help you?

In-house client literature and displays
Practice website
External literature
  - Printed – leaflets from drug companies, diet companies etc
  - ‘Cat Care’ books
  - Websites (i.e., useful links pages on yours)

Key points

Kidneys perform many different, vital functions
- management of cats with renal disease is not straightforward
Dietary management is the single most beneficial treatment for affected cats
- Variety of other treatments that are indicated in individual cats
- Thorough assessment, treatment, and monitoring is required to ensure that optimal therapy is being achieved
Many cats with CKD now live for several years with an excellent quality of life
- Many owners enjoy being involved in their cat’s treatment plan
- Treatment can be very rewarding to cat, owner, and clinician!
Thank you for listening!

- Further information
  - Free Downloads [www.catprofessional.com](http://www.catprofessional.com)
    - Articles, technical guides & videos for vets, nurses, owners
  - Caring for a cat with chronic kidney disease (2012)
    - Print and electronic versions (£9.99+postage, £7.70)
    - Discounts for vet practices buying in bulk: 10 or more books (any mix of titles): £6.99/book + postage