

## **Drugs and the Bladder**

### **common problems**

- cystitis
- urolithiasis
- incontinence

### **cystitis**

- commoner in females
- usually *E. coli*
- broad spectrum antibacterial
  - penicillins
    - eg, amoxicillin
  - urinary antiseptic

### **urolithiasis**

- male cats
- dogs
- castrated calves
- castrated lambs

### **urolithiasis**

- surgery & antibacterials
- dietary control
- drugs / medicated food to control pH
- diuretics??
- analgesics!

### **urinary acidifiers**

- ammonium chloride
- sodium acid phosphate
  - sometimes used with
    - penicillin
    - tetracyclines

### **urinary alkalinisers**

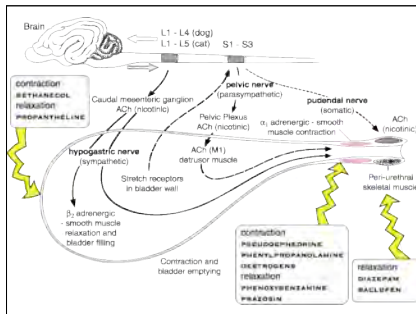
- sodium bicarbonate
- sodium acid citrate
  - sometimes used with
    - potentiated sulphonamides
    - erythromycin

### **incontinence**

- detrusor instability
  - cystitis
- sphincter atony
  - spayed bitches
- detrusor paralysis
  - road accidents - spinal injury

## incontinence

- **dribblers**
  - sphincter atony
  - overfull bladder
- **strainers**
  - cystitis
  - neoplasia
  - detrusor instability
  - sphincter incompetence
  - urolithiasis



## dribblers

- **sphincter atony**
  - oestrogens & α<sub>1</sub> agonists
- **overfull bladder**
  - bethanecol
- **ectopic ureters**
  - surgery

## spayed bitches

- **oestrogens**
  - oestradiol inj
  - oestrogen tablets
    - ethinyloestradiol
    - oestriol
    - oestrogen conjugates
  - (stilboestrol)

### **spayed bitches**

- $\alpha$ 1 agonists
  - phenylpropanolamine
  - pseudoephedrine
  - ephedrine
  - P!!!

### **oestrogen side effects**

- bone marrow depression
- endometrial hyperplasia
- abortion if pregnant
- behavioural changes
- mammary tumours

### **$\alpha$ 1 adrenergic side effects**

- vasoconstriction
- hyperexcitability
- anorexia
- abortion

### **strainers**

- cystitis
- neoplasia
- detrusor instability
  - propantheline
- excess sphincter tone
  - phenoxybenzamine
  - diazepam
- urolithiasis

### **anti-inflammatory drugs**

- corticosteroids
- NSAIDs

### **7 yr old male Jack Russel**

- frequent urination
- straining
- sometimes blood in urine

### **problems**

- prostatic hyperplasia
- infection?

### **treatment**

- oestrogens
- anti-androgens
- castration
- antibiotics?

### **8yr old male cat**

- hit by car
- fractured pelvis
- not urinating
- large bladder

### **problems**

- pelvic nerve damage
- detrusor atony

### **treatment**

- muscarinic agonist
  - bethanecol
- (OP)

### **bladder**

- antibiotics (usually broad spectrum penicillins) used for cystitis ± urolithiasis
- oestrogens +  $\alpha_1$  agonists used for incontinence in spayed bitches
- bladder pH is sometimes manipulated to increase secretion of drugs or to dissolve uroliths
- drugs do not always work

## **The Uterus**

### **relaxants**

- clenbuterol
  - $\beta_2$  agonist
- (nifedipine)
  - calcium channel blocker
- (glycerol trinitrate)
  - converted to nitric oxide

### **relaxants**

- used to delay parturition
- used in obstetrics
- abused as growth promoter

### **contraction**

- oxytocin
  - mainly large animals at parturition
- (prostaglandin F $2\alpha$ )
  - bitches
  - care with handling
    - women
    - asthmatics

### **uterus**

- clenbuterol is used to relax the uterus to postpone calving by about 6 - 12 hours
- oxytocin is used to promote uterine involution after parturition and to promote parturition in sows with uterine atony