MERCK MANUAL

Veterinary Manual

Urinary Incontinence

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Urinary incontinence is most commonly caused by urethral sphincter incompetence. It is most common in large breed, spayed female dogs (11%–20% incidence) but may be seen in intact females, male dogs, and cats. Estradiol-17β concentrations decrease after ovariohysterectomy in bitches, resulting in deterioration of urethral closure within 3–6 mo. Currently, there are no approved drugs to treat incontinence in animals, and most of the human products traditionally used have been removed from the market because of toxicity concerns. Some estrogen compounds and α-adrenergic drugs may still be available to veterinarians through compounding pharmacies (see Table: Drugs Used to Treat Urinary Incontinence).

Drugs Used to Treat Urinary Incontinence

Drug	Dosage
Diethylstilbestrol	Dogs: 0.1–0.3 mg/kg/day, PO, for 7–10 days, followed by 1 mg/dog/wk
Phenylpropanolamine	Dogs: 1.5–2 mg/kg, PO, once to three times daily
Ephedrine	Dogs: 1.2 mg/kg, PO, bid-tid
	Cats: 2–4 mg/kg, PO, bid-tid
Pseudoephedrine	Dogs >25 kg: 30 mg/dog, PO, tid
	Dogs <25 kg: 15 mg/dog, PO, tid
Testosterone propionate	Dogs: 2.2 mg/kg, IM, every 2–3 days
Testosterone cypionate	Dogs: 2.2 mg/kg, IM, every 30–60 days

Diethylstilbestrol (DES) is a nonsteroidal estrogen derivative that closely resembles the natural estrogen, estradiol. Because it is inexpensive and infrequently administered, it is the first choice to

treat urinary incontinence in female dogs. It is orally bioavailable and reaches peak plasma concentrations in 1 hr in dogs; it has an elimination half-life of 24 hr because of enterohepatic recirculation. Estrogens sensitize the urethral sphincter to α-adrenergic stimulation; therefore, DES therapy is synergistic with α-adrenergic drugs. DES is given as a daily loading dose for 7–10 days and then reduced to once weekly dosing, if possible, to avoid toxicity. Treated dogs are susceptible to bone marrow suppression from estrogen, typified by early thrombocytopenia and potentially fatal aplastic anemia. Hematopoietic toxicity is rarely seen in cats. Other adverse effects seen in dogs include alopecia, cystic ovaries, cystic endometrial hyperplasia, pyometra, prolonged estrus, and infertility. When used once weekly in spayed female dogs, adverse effects from DES are rare.

α-Adrenergic agonists such as phenylpropanolamine (PPA), ephedrine, pseudoephedrine, and phenylephrine act directly on smooth muscle receptors to increase urethral tone and maximal urethral closure pressure. Although often more clinically effective than DES, their action is short lived, usually requiring dosing bid-tid. Of this class of drugs, PPA is the most effective and results in fewer cardiovascular adverse effects. Previously available in over-the-counter cold medications and appetite suppressants, it was withdrawn from the human market because of toxicity associated with overuse as a diet aid. Ephedrine, pseudoephedrine, or phenylephrine may be tried but are less efficacious than PPA. Adverse effects of α-adrenergic drugs include excitability, restlessness, hypertension, and anorexia.

In male dogs, testosterone injections are used to treat urinary incontinence but are generally less effective than estrogen therapy in female dogs.

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