

Treatment of Canine Pyoderma

Systemic and topical therapy can be used in canine pyoderma. Systemic antibiotic therapy is essential in both superficial and deep canine pyoderma. It is always indicated except perhaps in some cases of limited juvenile impetigo or non extensive folliculitis of various causes, in which topical antiseptic therapy may be sufficient.

A. Selection of antibiotics

- The criteria for the choice of an antibiotic are as follows :
- appropriate kinetics and good cutaneous penetration,
- activity against Staphylococci activity in pus and reactive tissues,
- bactericidal activity rather than bacteriostatic activity particularly in severe cases,
- easy administration (oral, q12h or q24h),
- absence of secondary effects,
- reasonable cost.

The choice can be empirical, particularly in superficial pyoderma, after cytological examination of pus from an intact pustule which shows bacterial invasion. Bacteriology and sensitivity testing must be used in case of deep pyoderma, recurrent pyoderma, when cytology shows a complex flora with rods, and in case of empirical antibiotic therapy failure. They can be repeated during therapy.

B. Dosage and duration of Treatment

Ideal doses must be used and duration of treatment must be long enough (a few weeks to several months depending of extension and depth of lesions, and always beyond clinical cure). Maintenance pulse treatment (e.g. 2 to 3 days a week) can be used in chronically relapsing pyoderma but it could theoretically select resistant strains as well as the use of subminimal doses. They are both used for economical reasons but the former is preferable.

C. Antibiotics useable in canine pyoderma

Antibiotics useful in canine pyoderma are included in the following table. They all have a good cutaneous diffusion (because of their liposolubility) and can be given orally, which is useful because of long therapeutic courses (ease of administration). They are all bactericidal except macrolides which are bacteriostatic. Recent studies have confirmed the efficacy of many of them.

Class	Characteristics	examples
Macrolides	narrow spectrum/Gram+	erythromycin : 30 to 50 mg/kg div. bid or tid lincomycin : 40 to 50 mg/kg div. bid or tid clindamycin : 5,5 to 11 mg/kg sid or div. bid tylosin : 40 mg/kg div. bid
Penicillins M	resistant to penicillinases narrow spectrum/Gram+	oxacillin : 30 to 50 mg/kg div. bid
Penicillins A potentiated by clavulanic acid	resistant to penicillinases larger spectrum	amoxicillin-clavulanic acid : 25 mg/kg/ div. bid
Cephalosporins	resistant to penicillinases broad spectrum	cephalexin : 30 to 60 mg/kg div. bid cefadroxil : 44 to 70 mg/kg div. bid
Cephalosporin P	resistant to penicillinases narrow spectrum/Gram+ synergy with penicillins and erythromycin	fucidic acid (the only one of this group) : 60 mg/kg div. tid
Sulfonamides- Diaminopyrimidines	broad spectrum	trimethoprim-sulfa : 30 mg (i.e. 5 mg trimethoprim)/kg sid or div. bid baquiloprim-sulfadimethoxine : 30 mg (i.e. 5mg baquiloprim)/kg q.48h ormethoprim-sulfadimethoxine : 30 mg (i.e. 5mg ormethoprim)/kg sid after a single double dose the first day
Fluoroquinolones	broad spectrum excellent tissue penetration	enrofloxacin : 5mg/kg sid of div. bid
	(not to be used in puppies of giant breeds)	marbofloxacin : 2 mg/kg sid difloxacin : 5 mg/kg sid orbifloxacin : 2.5 mg/kg sid

Penicillin G (which is injectable) and A are sensitive to penicillinases. Aminoglycosides have a low cutaneous diffusion (they are hydrosoluble), are injectable and toxic. Chloramphenicol has a bad reputation in humans and the cat (haematologic toxicity). Tetracyclines have a very low activity against Staphylococci. These antibiotics are never or rarely used in canine pyoderma. Rifampicin is effective against Staphylococci, as it is still used to treat human tuberculosis, it should be used when there is no other therapeutical possibility (5 to 10 mg/kg SID). In addition, it should be then associated to a betalactamine to prevent the selection of resistant strains of Staphylococci. Mupirocine, a topically active bactericidal antibiotic, in a polyethylene glycol base is effective against

D. Associated treatments

Topical therapy is always beneficial in canine pyoderma, particularly in superficial staphylococcal disease. Clipping can be useful and is necessary in deep pyoderma such as cellulitis. The main useful topical products are chlorhexidin

(lotion and/or shampoo), povidone-iodine (lotion and/or shampoo), benzoyl-peroxyde (shampoo and eventually gel), ethyl-lactate (shampoo). They should be used frequently, e.g. once a day, at the beginning of therapy. Later, frequency of application may decrease. Each shampoo should be followed by the application of an appropriate humectant. Therapy of an underlying skin disease is mandatory and an appropriate diagnosis should be made. Staphylococcal immunotherapy (Staphage Lysate®) has been demonstrated to be effective in idiopathic superficial pyoderma. Topical or systemic glucoc

orticoids should never be used in true canine pyoderma, even in case of pruritus, because they cause severe relapses (« rebound effect »). In contrast they can be used and are effective in pseudo-pyoderma (eg prednisolone : 1 mg/kg/day for pyotraumatic dermatitis and 2 mg/kg/day for juvenile cellulitis).