



Treatment of inflammatory conditions: principles of treatment with anti-inflammatory medications, including corticosteroids (Papich, MG).

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Glucocorticoids are the most consistently effective drugs available for the treatment of various forms of inflammation in animals. However, their potent anti-inflammatory effects and immunosuppressive actions must be balanced by the multiple side-effects produced by these drugs. Glucocorticoids exert their action via binding to intracellular receptors, translocating to the nucleus, and binding to receptor sites on responsive genes, where they modulate the transcription of glucocorticoid-responsive genes. By regulating glucocorticoid-responsive genes, protein synthesis is altered which affects cell function. For controlling inflammation, the major effect of corticosteroids is inhibition of the synthesis of inflammatory proteins. These effects may be mediated by the interaction of glucocorticoids with activator protein-1 (AP-1) and nuclear factor κ -B (NF κ -B).

For short-term therapy (less than two weeks), glucocorticoids can be used daily at anti-inflammatory doses without serious long-term side effects. If long-term therapy is not needed, the medication can be discontinued abruptly with little chance of a rebound effect from adrenal suppression. For long-term, chronic therapy, glucocorticoid doses should be titrated to the lowest dose that is effective and, if possible, these drugs should be administered every other day (EOD). Prednisolone, prednisone, methylprednisolone, or triamcinolone are the most common choices because they are intermediate-acting steroids and can be used on an every-other-day (EOD) schedule. Initial (induction) dosages (prednisone or prednisolone) for anti-inflammatory activity are approximately 1 mg/kg/day for 5 to 10 days then the dose is gradually lowered to approximately 1 mg/kg every-other-day for another 5 to 10 days and eventually to less than 0.5 mg/kg, EOD. These are typical anti-inflammatory maintenance dosages, although in some patients it may be possible to lower the dose further. Some conditions (for example, atopic dermatitis) can often be controlled with prednisolone or prednisone at a dosage as little as 0.25-0.3 mg/kg q48h. There can be wide variation of response among individuals and doses should be titrated for each patient.

Is there a difference among the drugs? There is no clinical evidence published to show that one corticosteroid is more effective than another. It is unusual for animals to not respond to one corticosteroid (eg, prednisolone) to respond more favorably to another drug (eg, dexamethasone). Some animals (eg, cats, and perhaps some dogs) may have a deficiency in metabolizing prednisone to prednisolone, but this is a pharmacokinetic difference, not a pharmacodynamic one. For animals that cannot tolerate corticosteroids, other options are available. Topical forms that are inhaled (via metered dose inhalers) for the respiratory tract (eg, inflammatory airway diseases) can be effective with minimal systemic adverse effects. Local treatment with budesonide can be effective for intestinal diseases. It may often be necessary to select another class of drug to provide the desired anti-inflammatory effect. For



skin diseases, cyclosporine (Atopica) is a common choice and for pruritus in dogs, oclacitinib (Apoquel) has recently become available. For respiratory diseases, methylxanthines (eg, theophylline) may be used.

