



CORTICOSTEROIDS: ORAL STOMATOLOGIST'S CONCERN

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ABSTRACT

Corticosteroids introduced in 1940s are cycloalkane based chemical compounds commonly known as steroid hormones are produced naturally by the adrenal cortex of vertebrates. They are also synthesized artificially in laboratories. Corticosteroids commonly hydrocortisone, dexamethasone, methylprednisolone and prednisolone have wide range of uses in dentistry owing to their excellent anti-inflammatory and immuno-modulatory effects. As steroids are immunosuppressive in nature, they should be used cautiously after emphasizing on their risks and benefits. This paper discusses the pharmacology of steroids and their uses in treatment of oral diseases/disorders like oral lichen planus, aphthous ulcers, pemphigus, pemphigoid, erythema multiforme, mucocoele, temporomandibular disorders etc.

KEYWORDS: Corticosteroids, Steroids, Oral Stomatologist, Oral lesions.

INTRODUCTION

Steroids also known as corticosteroids are produced naturally by adrenal glands lying above the kidneys in our body which are helpful in regulating multiple functions in our body like regulation of our immune system and the salt-water balance and water in the body and also regulates the usage of fats, proteins and carbohydrates in the body. They help to reduce inflammation also. Synthetic steroids can also be manufactured as drugs in the form of fluid for injections and tablets for oral use. Different types of steroids have different effects on the body.^[1,2]

Corticosteroids have revolutionized the medical science by saving lives of people suffering from several disabling diseases and disorders. On the other hand they do have side effects and adverse drug reactions taking continuous oral corticosteroids. Wide applications of corticosteroids use in dentistry are mainly due to their potent anti-inflammatory and immuno-modulatory actions. Thus, corticosteroids have evolved and emerged as the mainstay of therapy for numerous oral lesions and conditions. The purpose of this mini review is to give special consideration prior to receiving dental treatment on the use of steroids in dental patients who have a prior history of corticosteroid use, their withdrawal symptoms and side effects of corticosteroids.^[3,4]

Physiology

Chemically similar to endogenous cortisol, steroids contain four cycloalkane rings which are joined to each other. Androgens, Mineralocorticoids and Glucocorticoids are 3 groups of steroid hormones produced by the body. Secretion of steroid-producing cells (adrenal cortex and zona fasciculata) is controlled by the hypothalamic-pituitary axis (HPA) via adrenocorticotrophic hormone (ACTH). Daily 24-30 mg of cortisol in normal conditions and 300 mg in stress conditions respectively is secreted by adrenal glands.^[1,3,4]

Classification

The commonly followed and accepted classification of steroids is based on chemistry. MeSH performs this classification as follows:^[1]

Class	Examples	No of C atoms
Cholestanes	Cholesterol	27
Cholanes	Cholic acid	24
Pregnanes	Progesterone	21
Androstanes	Testosterone	19
Estranes	Estradiol	18

Mechanism of action

Corticosteroids maintain fluid electrolyte balance, cardiovascular and energy substrate homeostasis, functional status of skeletal muscles and nervous system.

Steroids help body to withstand the outcomes of any type of stress conditions. Carbohydrate, protein and fat metabolism is maintained and regulated by glucocorticoids where as mineralocorticoids maintain and regulate sodium ions, potassium ions and fluid balance.^[1,3,4]

STEROIDS IN ORAL LESIONS/CONDITIONS

Oral Lichen Planus

Steroids are used topically, intralesional and systemically in erosive, bullous or ulcerative form of oral lichen planus. Topically mild to moderate symptomatic lesions are treated to reduce inflammation and pain. Commonly used steroids include 0.05% clobetasol propionate gel, 0.05% flucinonide gel and 0.1% triamcinolone acetonide gel. Also high potency steroid mouthwashes (disodium betamethasone phosphate, clobetasol propionate) can be used. Intralesionally steroids are used for extensive lesions like injection of triamcinolone acetonide (10-20 mg). systemically steroids are used in wide spread erosive lichen planus where satisfactory relief from symptoms is not obtained. Systemic prednisone as drug of choice is used in range of 10-20mg/day for moderate cases and 35 mg/day for severe cases.^[3,4,5]

Oral sub mucous fibrosis (OSMF)

OSMF is a chronic insidious condition which affects oral mucosa, submucosa or involves any other part like pharynx, oesophagus and results in burning sensation, reduced mouth opening with difficult chewing and swallowing. Topical application of steroids helps in reducing burning sensation and shows healing because of anti-inflammatory action. Intralesional steroid (Dexamethasone)^[3] injections are commonly used for severe cases.

Recurrent aphthous stomatitis (RAS)

RAS, characterised superficial recurrent painful ulcers in the oral cavity is an auto-immune disease. Ulcers can be less than 1cm (minor) which persists for a week or more and no steroid therapy is required, whereas ulcers more than 1 cm (major) persisting for a month or more requires steroids alone or in combination with other drugs to reduce signs and symptoms. Commonly hydrocortisone hemisuccinate (pellets of 2.5 mg) and triamcinolone acetonide (adhesive paste containing 0.1% of the steroid) are used topically for easily accessible lesions, but ulcers which are located in the areas which are inaccessible can be controlled by betamethasone sodium phosphate rinse by dissolving 0.5 mg in 5 ml of water and asking the patient to rinse for 2-3 min. Prednisone therapy 40 mg/day for 1 week is usually adequate to manage painful major apthae. Systemic prednisone therapy should begin at 1.0 mg/kg a day as a single dose in severe RAS patients and should be tapered after 7-14 days. Intralesional steroids can also be employed to treat large indolent major lesions.^[1,4,6]

Behcet's syndrome

Along with oral aphthous ulcerations this disease is characterised by genital ulcerations also and thus immunosuppressive therapy is the mainstay of treatment. Steroids are given in combination with immunosuppressive agents to reduce inflammation. Prednisone, at doses of 40-60 mg/day, may be beneficial in acute phase. It may be used alone or in combination therapy with other immunosuppressive agents.^[1,4]

Pemphigus

Pemphigus is severe potent life threatening mucocutaneous vesiculobullous disease in which oral lesions are seen in 80% cases. In patients with non-progressive oral lesions, topical steroids can be used like 0.05% fluocinolone acetonide or 0.05% clobetasol propionate. Systemic prednisone is the drug of choice and principle treatment in severe cases with mucous and cutaneous lesions. The starting dose is more; a total oral dose of 100-200 mg prednisolone is employed every day until clinical signs disappear and then the dose can be gradually reduced to a maintenance dose of 40-50 mg daily. Intralesional steroid therapy is usually avoided as it can result in local scarring and atrophy.^[1,4,7,8]

Pemphigoid

Steroid therapy is commonly applicable to mucous membrane pemphigoid and bullous pemphigoid. Pemphigoid though rare is chronic blistering disease in which initial site of involvement is oral cavity followed by eyes, genitals and rarely skin. Topical triamcinolone, fluocinonide (0.05%) and clobetasol propionate (0.05%) in an adhesive vehicle are used for mild-moderate localised lesions. In patients with multiple oral lesions, systemic prednisone 1-2 mg/kg/day along with immuno-suppressive agents (like cyclophosphamide, azathioprine) are commonly used for satisfactory results. Intralesionally triamcinolone acetonide 3-10 mg/ml can be administered in resistant bullous pemphigoid lesions.^[4,9,10]

Erythema multiforme

Clobetasol propionate mouth washes in aqueous solution provide symptomatic relief in blistering and ulcerative mucocutaneous condition of uncertain etiology and multiple clinical presentation called erythema multiforme. Systemic prednisone, the drug of choice for obtaining good results in moderate-severe oral lesions is given in dose of 40-80 mg/day for 1-2 weeks then tapered rapidly. Intravenously pulse therapy with methyl prednisolone (3 consecutive daily infusions of 20-30 mg/kg to a maximum of 500 mg given over 2-3 hours) has shown appreciable results.^[3,4,11]

Systemic lupus erythematosus

Symptomatic patients are managed best with high potency topical steroids and anti-malarial drugs. Topical steroids like betamethasone/clobetasol is applied 2 times/day for good results. Systemically low dose prednisone 10-20mg/day is used.^[4]

Mucocele

Mucocele is fluctuant mucus filled, dome shaped mucosal swelling, 1-2 mm to several centimeters in size, found commonly on lower lip. The less common sites are buccal mucosa and floor of mouth with rarely seen on upper lip. Trauma and obstruction of salivary gland ducts are the main etiological factors. Though surgical excision of lesion is the treatment of choice, intralesional injection of corticosteroids are also used successfully.^[3,12]

Bell's palsy

Bell's palsy is an acute disorder of facial nerve characterised by pain in mastoid region with complete or partial facial paralysis of affected side. The cause can be congenital, infection, trauma, neoplastic and reactivation of herpes simplex virus type I. Prednisone 60-80 mg daily for first 5 days and then tapered gradually for next 5 days is the commonly followed corticosteroid therapy.^[3,12,13]

Temporomandibular joint disorders

Facial pain and discomfort are the common features of temporomandibular joint disorders. Intra-articular steroid injections are used for reducing pain, swelling and dysfunction in inflammatory diseases of temporomandibular joint (TMJ). Intra-articular steroid injection of triamcinolone acetonide ranging from 2-40 mg depending upon size of joint is used. The dose is usually 10mg in most TMJ cases. These injections are available in solutions of more soluble agents, suspensions to relatively insoluble agents.^[3,14,15]

Special considerations

Corticosteroids should never be discontinued abruptly because they cause the adrenal glands to slow or stop the production of cortisol. The adrenal glands take some time to start producing cortisol again. Tapering the dose of corticosteroids gradually is must as allows the body to start producing its own supply of cortisol again.^[4]

The common side effects of systemic corticosteroids include weight gain adrenal insufficiency, increased susceptibility to infection, osteoporosis, fractures, hypertension and peptic ulcer. Topical usage do have some side effects like atrophy, hypo-pigmentation, contact dermatitis, oral thrush, sub cutaneous fat wasting and cushingoid effect from systemic absorption whereas oropharyngeal candidiasis, bronchospasm and pharyngitis are commonly associated inhalational steroids use.^[16,17]

CONCLUSION

Corticosteroids are immunosuppressive and anti-inflammatory drugs very widely used topically, intralesionally and systemically to treat pathological process in medical and dental practice like acute adrenal crisis, vesiculobullous diseases, orofacial granulomatosis, temporal arteritis and other oral mucosal disorders. Corticosteroids play an important role in the management of lesions affecting the oral mucosa and

skin by controlling pain and edema. Dental patients with a prior use of corticosteroid may require special consideration before receiving dental treatment. As the risks associated with corticosteroids are equal to the benefits of their therapeutic nature, use of steroids should be viewed carefully in dentistry.

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