



STEROIDS APPLICATION IN ORAL DISEASES

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ABSTRACT

Steroids are substances that are naturally produced in the body. Steroids are produced by the adrenal glands which are small glands lying above the kidneys. It may regulate our immune system, balance the intake of salt and water in our bodies. Steroid helps in reducing inflammation. Most common types of steroids that are used in dentistry are hydrocortisone, dexamethasone, methylprednisolone and prednisolone. In dentistry, apart from surgeries, steroids are widely used and accepted mode of treatment for oral mucosal lesions such as oral lichen planus, oral submucous fibrosis, erythema multiforme, pemphigus vulgaris, pemphigoid and mucocele. This review discusses about the steroids application in oral diseases

KEYWORDS: Steroids, Hydrocortisone, oral lichen planus, oral submucous fibrosis, erythema multiforme



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INTRODUCTION

Synthetic Corticosteroids or steroids since the early 1940s have been developed for their anti-inflammatory and immunomodulatory effects. Dental patients with the history of corticosteroid usage may require special consideration before and after any dental treatment. In dentistry, corticosteroids are mainly useful in reducing post-surgical edema, which can cause post-surgical pain^{1, 2}. Oral lichen planus, oral submucous fibrosis, pemphigus vulgaris, erythema multiforme, aphthous stomatitis and allergic reaction respond very well to topical or systemic corticosteroids.^{3, 4} Corticosteroids should be avoided in viral lesions such as herpes simplex because they show high potential for exacerbation of the infection due to immune system suppression. Topical and inhaled corticosteroid does not require any type of supplementation. Contraindications of usage of corticosteroids include, chronic condition such as diabetes mellitus, tuberculosis, osteoporosis, cataracts, viral infections etc. Long term usage of corticosteroids affects the central nervous system resulting in euphoria, sleeplessness, restlessness and psychosis.

CORTICOSTEROIDS

Corticosteroids are drugs which are used for the management of many oral inflammatory conditions. Their usage should be completely based on the detailed medical history, current intake of drugs and accurate diagnosis of dental or oral condition, as it should not be prescribed in the presence of infection or when infection is likely to occur. Corticosteroids can be administered intradentally (within the tooth), topically and systemically. Intradental or topical corticosteroids are mostly preferred, as these drugs can be administered directly at the site of required action resulting in rapid action and minimal chances of any systemic complications. Steroids look like clear fluids for injection when dissolved with powder few appear as tablets whose colour and dose depend on the type of steroids used. Soluble tablets of prednisolone and dexamethasone syrups are available for the patients suffering from dysphagia. Topical corticosteroids are

widely used and acceptable mode of treatment for vesiculo-erosive diseases of the oral mucosa including oral lichen planus to reduce pain and inflammation⁵. Over the years several trials, researches and formulations of steroids have been used in the treatment of oral lichen planus. Topical fluocinonide 0.05% when used as an adhesive base displayed vast improvement in oral lichen planus lesions with no adverse effects.⁶ For short term management of symptomatic oral lichen planus, fluticasone propionate spray and betamethasone sodium phosphate mouthrinses are used effectively and extensively with desired results⁷. Clobetasol, fluocinolone acetonide, fluocinonide along with other potent topical steroids have been found to be trusted and effective drugs in the treatment of oral lichen planus. The most suitable and widely accepted corticosteroid therapy in the management of oral lichen planus is the topical therapy, because it is easier and less expensive than the systemic therapy followed by topical treatment.⁸ Oral recurrent aphthous stomatitis can be effectively treated with the administration of topical steroids. Most common topical steroids uses glucocorticoids such as hydrocortisone, triamcinolone, flucinonide, betamethasone and flumethasone.⁹ In severe cases of oral aphthous stomatitis systemic prednisolone is used with a 2 weeks of dose starting with 60mg and has showed excellent results.¹⁰ Pemphigus vulgaris is a potentially life threatening disease and its first signs are seen in oral cavity. Pemphigus vulgaris is an autoimmune disorder resulting in development of harmful antibodies which reacts with the surface layers of oral cavity and mucous membranes. Ulceration is seen mainly in lips, floor of the mouth, palate, tongue and sometimes extending to the throat. Vesicles and bullae appear and rupture rapidly leaving a red ulcerated and painful base region. The daily administration of prednisone 0.5–2 mg/kg is recommended, which depends on the response.^{11,12} Corticosteroids are used as dressing agents for cavities and exposed pulp which helps in controlling the inflammatory pulp response and also in reduction of pain. Post

endodontic treatment, some patients complain of pain. Then various steroids have also been found to be effective but oral dexamethasone with higher dose of corticosteroids according to Glassman et al., has given excellent results.¹³ After any surgical procedure, inflammation and pain are post-operative problems that can induce fear in the patient's mind. Generally analgesics are prescribed to curb down the pain and inflammation, but several steroids are found to be effective. Oral dexamethasone is one of the most effective drug as it can be used as a single dose in both pre-or post surgical period to reduce pain and discomfort for the patients.^{14, 15} Surgical removal of teeth sometimes causes trauma and in such situations anti-inflammatory drugs are used. Use of prednisolone is an effective strategy in limiting post-operative trismus and edema. The side-effects of long term use of corticosteroids include peptic ulcer, osteoporosis, muscle atrophy, acne, hypertension, amenorrhea and hirsutism.

ORAL SUBMUCOUS FIBROSIS -

Oral submucous fibrosis is an insidious, chronic, resistant disease involving the mucosa, sub-mucosa or any part of the oral cavity including the pharynx and esophagus. The disease produces excessive salivation, burning sensation, difficulty in chewing, swallowing and restricted mouth opening in severe cases. Various treatment modalities are used for treatment of oral submucous fibrosis but application of steroid ointment topically helps in cases with ulcers and painful oral mucosa. Such application have therapeutic effects and mainly shows anti-inflammatory activity showing a direct healing action on the mucosal patch.¹⁶

ORAL LICHEN PLANUS

Oral lichen planus is a common mucocutaneous disease. The condition can affect either the skin or mucosa or both causing bilateral white striations, papules or plaques on the buccal mucosa, tongue and gingiva. The etiopathogenesis of oral lichen planus involves many factors such as matrix metalloproteinases, chymase, trypsin and proinflammatory cytokines¹⁷. Recently, TNF- α one of the proinflammatory cytokines plays a

pivotal role in the pathogenesis and inflammatory process of oral lichen planus¹⁸. The dose of systemic steroid must be specified for each patient depending on the severity of the lesion, the patient's weight and the patient's response to treatment. Topical steroid such as mometasone furoate microemulsion shows a significant reduction in pain in erosive-ulcerative oral lichen planus. The atrophic-erosive type of oral lichen planus can be treated systematically with prednisone (50 mg/day), in combination with clobetasol ointment in an adhesive form along with antimycotics.

MUCOUS MEMBRANE PEMPHIGOID

Mucous membrane pemphigoid is a rare chronic blistering condition of the mouth, eyes and genitals and rarely the skin. The initial site of involvement is the oral mucosa. Many patients have mucous membrane pemphigoid affecting only the gums. The blister appears as fragile, fluid-filled and leaves an ulcer on bursting. The treatment of choice for mild mucous membrane pemphigoid appearing in the mouth include mouthwashes and ointments are used which are topically anti-inflammatory corticosteroids. If severe form of oral lesion are seen, then corticosteroids like deflazacort, dexamethasone and prednisolone are administered.

TEMPORO MANDIBULAR DISORDERS

Temporo mandibular disorders are the major cause of facial pain and discomfort. Recently different types of corticosteroids are available for intra-articular injection which ranges from solutions of more soluble agents to suspensions of triamcinolone hexacetonide and other relatively insoluble steroids. In adults, with TMJ arthritis a single dose of intra-articular injection of methylprednisolone diluted with lidocaine have shown positive response in reducing pain for atleast 4 to 6 weeks.

ERYTHEMA MULTIFORME

Erythema Multiforme is a blistering, ulcerative mucocutaneous condition of uncertain etiopathogenesis. The most common etiologic association with erythema multiforme is herpes simplex virus infection, which is frequently associated with the erythema multiforme

flare¹⁹. It displays a wide range of clinical disease. In mild cases, ulcerations develop, affecting the oral mucosa. In severe cases, diffuse sloughing and ulceration of the entire skin and mucosal surfaces are seen. Generally, younger patients with male predilection are seen. The prodromal signs and symptoms include fever, malaise, cough and headache. Erythematous skin lesion appears on the extremities and presents itself as flat, round and dusky-red in hue. They are slightly elevated and may evolve as bullae with necrotic ulcers. Oral lesions starts as erythematous patches showing epithelial necrosis which later on may evolve into large, shallow erosions and ulcerations with irregular borders. The ulcerations most often show a diffuse distribution. The lips, buccal mucosa, tongue, soft palate and floor of the mouth are the most common site of involvement. A more severe form of erythema multiforme major or stevens-johnson syndrome, is usually triggered by drug administration than the infection. Oral lesions may take longer time to heal, but significant residual ocular damage is prominent in half the patients. The use of systemic corticosteroids remains controversial for the treatment of erythema multiforme. The mechanism of action of systemic corticosteroids in erythema multiforme and stevens- Johnson syndrome is that the anti-inflammatory effects of glucocorticosteroids is the result of their profound effect on peripheral leukocytes and their suppressive effects on multiple inflammatory cytokines and chemokines²⁰. Corticosteroids helps in maintaining vascular integrity, promotes the synthesis of lipocortins, and decreases the expression of leukocyte adhesion molecules, which results in a beneficial, but depressed, inflammatory reaction when treating erythema multiforme²¹. In stevens – Johnson syndrome corticosteroids suppresses the immunological functions of the damaging effects of cytotoxic T- lymphocytes and the macrophages²². Worldwide it has been suggested that the early use of systemic corticosteroids is mandatory in the cases of erythema multiforme and stevens – Johnson syndrome. The appropriate dose and route of administration providing the most benefit in erythema multiforme and stevens-johnson syndrome still remains in question.

Early therapy begins with systemic prednisone (0.5 to 1.0mg/kg/day) or pulse methylprednisolone (1mg/kg/day for 3 days) has shown to be very effective²³. Intravenous (IV) pulsed dose methylprednisolone (3 consecutive daily infusions of 20–30mg/kg to a maximum of 500mg given over 2 to 3 hours) is reported, with the suggestion that this approach is superior to oral prednisone because it imparts the benefit when treatment is administered as early as possible in the progression of the cutaneous insult²⁴.

MUCOCELE

Mucocele is defined as mucous filled cyst present in the oral cavity, appendix, gall bladder, lacrimal sac and paranasal sinuses. They classically appear as dome-shaped mucosal swellings ranging from 1 or 2mm to several centimetres in size. The lesion characteristically is fluctuant, but some mucoceles appear firm on palpation. The most favoured site of occurrence in oral cavity is the lower lip whereas the less common sites include floor of the mouth, anterior ventral tongue, palate, buccal mucosa and retromolar pad. Mucoceles rarely appear on the upper lip. There are mainly two etiological factors associated with mucoceles namely –

- 1) Trauma
- 2) Obstruction of salivary gland ducts

The surgical approach is the treatment of choice for treating these lesions. However some clinicians have suggested that the initial cryosurgical approach or intralesional corticosteroid injection is used in treating these lesions but cases of relapse in these techniques has been more than often reported²⁵.

BULLOUS PEMPHIGOID

Bullous pemphigoid is the most common auto-immune blistering conditions. Pruritus may be the first sign of symptom followed by development of multiple, tense bullae on either normal or erythematous skin. The oral lesion begins as bullae but ruptures early leaving a large, shallow ulceration with smooth, distinct margins. Treatment includes topical and systemic corticosteroids. Potent topical corticosteroids should be the treatment of

choice in patients with limited or moderate disease²⁶.

CONCLUSION

Steroids are considered as the drug of choice to treat various disorders affecting the oral mucosa. In dentistry, they are primarily used to manage post-operative edema and oral inflammatory diseases like lichen planus, pemphigus vulgaris, oral submucous fibrosis etc. The long term usage of corticosteroids leads to peptic ulcers, hypertension, muscle atrophy, osteoporosis, osteonecrosis. Hence,

the clinician should have a complete knowledge about the actions, uses and adverse effects of steroids to render efficient care for the patients in need. Future for the complete relief and cure of oral mucosal lesions with the use of steroids seems feasible but for now, we have to deal with the current available steroids which are effective but not definitive. Current researches are going on in order to direct them in finding substitutes for general corticosteroid therapy which will subsequently lower the rates of iatrogenic morbidity.

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