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Undesirable Drug Reactions in Orofacial Region

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Abstract

Adverse drug reactions can involve every organ and system of the body and are frequently mistaken for signs of underlying disease.Every drug can produce untoward consequences,even when used according to standard or recommended methods of administration.Good oral health,including salivary function,is very important in maintaining whole body health.A wide spectrum of drugs can sometimes give rise to numerous adverse orofacial manifestations, particularly dry mouth, taste disturbances, oral mucosal ulceration or gingival swelling.In this article,the drugs that may cause adverse effects in the mouth and related structures are reviewed.

Keywords: Drug reactions, oral reactions, side effects, oral mucosal reactions.

INTRODUCTION:

A wide spectrum of drugs can sometimes give rise to numerous adverse oral manifestations, particularly dry mouth, taste disturbances, oral mucosal ulceration, or gingival swelling.Although the skin is more commonly involved in adverse reactions to drugs,the oral mucosa is also frequently affected.Virtually any drug has the potential to cause an untoward reaction, but some have a greater ability to do so than others.Pathogenesis of drug reactions may be related to either immunologic or nonimmunologic mechanisms.

Pathogenesis of adverse drug reactions:

Three mechanisms have been proposed for drug allergies.

- First,IgE mediated reactions occur when the drug reacts with IgE antibodies bound to mast cells.
- Second,drug allergies can involve a cytotoxic reaction in which an antibody binds to a drug that is already attached to a cell surface
- Third, drug allergy involves circulation of the antigen for extended periods allowing sensitization of the patient's immune shyster and production of a new antibody.

Nonimmunologic drug induced reactions result from a drug overdose or toxicity.

EFFECTS OF DRUGS ON ORAL MUCOSA AND TONGUE:

Dry Mouth (XEROSTOMIA)

Xerostomia is the reduction of salivary flow as well as a change in the quality of saliva,both of which increase the risk of dental caries[1-7].Dry mouth has a variety of possible causes [8]. Common habits such as tobacco smoking, alcohol use (including in mouthwashes), and the consumption of beverages containing caffeine (coffee, some soft drinks) can cause some oral dryness. Drugs are the most common cause of reduced salivation[8].Systemic drug therapies can also affect the oral environment,most notably when causing xerostomia. Dry mouth is a common complaint in patients treated for hypertensive, psychiatric, or urinary problems [9]. A large number of drugs including antihistamines,antidepressants,anticholinergics,antipsychotics may cause xerostomia.

Some of the common problems associated with dry mouth includes a burning sensation, constant sore throat,difficulties in speaking and swallowing.Clinically saliva appears either foamy or thick and ropy.Mucosa appears dry and the clinician may notice that the examining gloves stick to the mucosal surface.There is an increased prevalence of oral candidiasis in patients with xerostomia because of reduction in the cleansing and antimicrobial activity

Drugs That Can Cause Dryness Of Mouth

-Amphetamine
-Anticholinergics
-Antineoplastic drugs
-Antihistamines
-Didanosine
-Levadopa
-Omeprazole
-Thiabendazole
-Tramadol
-Tricyclic antidepressants

Taste disturbances:

Drugs commonly impair taste. Drugs may cause a loss of taste acuity (hypogeusia), distortion of taste (dysgeusia), or loss of taste sense (ageusia), though this is rare[10]. Drugs act either by interfering with the chemical composition or flow of saliva, or by affecting taste receptor function or signal transduction [11].A wide range of drugs give rise to dysgeusia or hypogeusia either by interfering in chemical composition or flow of saliva or more specifically affecting taste receptor function or signal transduction[1,12].

Drugs Which Cause Taste Disturbances Are

- Acarbose
- Acetazolamide
- Aspirin
- Captopril
- Ceftirizine
- Clomipramine
- Cocaine
- Levodopa

- Losartan
- Penicillamine
- Phenytoin
- Sulfadoxine

Penicillamine causes partial or total loss of taste.Loss of taste has been found to be dose related.It appears that taste disturbance is reversible with in a period of 8-10 weeks,whether or notpenicillamine is discontinue[13].An impaired salty taste is a frequent complaint associated with Captopril.The extent of Captopril induced dysgeusia seems to be related to dose and renal function and can be compounded by smoking.Taste disturbance tends to be self limiting and reversible in 2-3months even if the drug is continued.In addition other drugs especially those used for gastrointestinal disorders may cause some degree of loss of taste or altered taste.

DRUG RELATED ORAL MUCOSAL DISORDER:

Oral mucous membranes may be the sole site of involvement, or they may be a part of a more generalised skin reaction to the offending drug.The main type of hypersensitivity reaction that affects oral mucosa is a delayed reaction mediated by sensitized T-lymphocyte[1,14,15].

Oral ulceration:

A wide range of etiologies, from burns to vesiculobullous disorders of various kinds, can result in oral ulceration. Many reports of mouth ulceration following drug use have been from non-specialists, and therefore their description as 'aphthous'-like or other fairly specific entities can often be questioned, leading to some difficulty in accurately ascribing cause and effect. A number of chemicals used by dental surgeons can cause burns of the oral mucosa.

Drugs that Can Cause Oral Ulceration

- Aspirin
- Allopurinol
- Atrovastatin
- Azathiopurine
- Barbiturates
- Captopril
- Chlorambucil
- Chloroquine
- Cyclosporine
- Enalapril
- Erythromycin
- Fluconazole
- Ibuprofen
- Lithium
- Metronidazole
- Indomethacin
- Penicillamine
- Phenytoin
- Promethazine
- Propranolol
- Quinidine

Oral ulceration such as fixed drug eruptions, aphthous stomatitis, burning mouth syndrome, lichenoid eruptions,erythema multiforme , etc are seen.

Fixed drug eruptions:

Fixed drug eruptions (contact stomatitis or stomatitis venenata) comprise repeated ulceration at the same site in response to a particular drug and may be caused by anesthetics, antibiotics, antiseptics, barbiturates, chewing gum, cosmetics, dental materials, dentifrices, mouthwashes, sulphonamides, or tetracyclines. The lesions may be localized to the mouth or can be associated with lesions at other mucocutaneous sites.Initially, the lesions are solitary, but with repeated drug exposure, they may become multiple. A wide range of drugs may cause fixed drug eruption, particularly paracetamol, barbiturates, sulphonamides, and tetracyclines.

Burning mouth syndrome:

This syndrome may occur due to psychogenic factors, hormonal withdrawal, folate, iron, pyridoxine deficiency or hypersensitivity reactions to the materials used in dental prosthesis[1].There is a case report of burning mouth syndrome after taking clonazepam[16].Captopril, lisinopril, enalapril also cause burning mouth syndrome.

Aphthous stomatitis:

Aphthous stomatitis is commonly observed and is mediated by the immune system.lesions are painful, tiny, grouped papules and vesicles and are small in diameter with round, shallow ulcerations predominantly seen over the buccal and labial mucosa.Recurrence will be common and the reactions heal without scarring in 10-14 days.Sodium lauryl sulfate may predispose to ulcers similar to aphthous ulceration

Drugs Which Cause Aphthous Stomatitis

- Azathiopurine
- Captopril
- Cyclosporine
- Gold compounds
- Losarton
- NSAIDs
- Penicillamine
- Sulfonamides

Lichenoid eruptions:

Since the advent of antimalarial therapy, there have been an ever-increasing list and spectrum of drugs that may give rise to mucocutaneous lichen planus (LP)-like eruptions (lichenoid reactions)[17].Unlike true lichen planus, drug induced lichenoid eruptions disappear after drug withdrawal.Lichenoid eruptions rarely affect the buccal mucosa and white lace patterns may be seen.

Drugs Which Cause Lichenoid Eruptions are

- Allopurinol
- Arsenical compounds
- B- blockers
- Bismuth
- Chloroquine
- Furosemide
- Gold compounds
- Hydroxychloroquine
- Mepacrine
- Mercury

- Methyldopa
- NSAIDs
- Penicillamine
- Propranolol
- Quinidine

Erythema multiforme:

Erythema multiforme , which when severe is termed as Steven-Johnson syndrome, is a mucho cutaneous disorder characterised by various clinical types of lesions.Males are mostly affected.Widespread can be seen in the bulbar conjunctivae,mouth and the lips are swollen,crusted and bleeding.Oral lesions may be disappear within 14days.Other mucocutaneous surfaces less commonly affected include the nasopharyngeal, respiratory, and genital mucosae.A wide range of drugs—especially barbiturates, cephalosporins, NSAIDs, estrogens, phenothiazines, progestogens, protease inhibitors, sulphonamides, sulphonylurea derivatives, and tetracyclines—may give rise to erythema multiforme.

Drugs Which Can Cause Erythema Multiforme

- Allopurinol
- Barbiturates
- Carbamazepine
- Cephalosporin
- Clindamycin
- Estrogens
- Ethambutol
- Gold compounds
- Sulphonamides
- Penicillamine
- Phenothiazine
- Progestogens
- Tetracycline
- Verapamil

CONCLUSION:

Drug reaction are dependent on dosage or cumulative toxicity.The majority of drug induced oral reaction are moderate in severity.However severe reactions necessitate rapid withdrawal of drug.The most common reactions are dry mouth, taste disturbances, and gingival swelling. Drug-induced oral mucosal ulceration is also not uncommon, particularly in cancer chemotherapy. There are many other occasional reactions.In some cases the oral reactions will be resolved by symptomatic treatment.As a final note,rapid progress in pharmacotherapeutics requires clinicians to constantly update their knowledge of drugs used by their patients.

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