

Oral Manifestations Of Systemic Diseases

Abstract

The oral cavity is an important anatomical location with a role in many critical physiologic processes, such as digestion, respiration, and speech. It is also unique for the presence of exposed hard tissue surrounded by mucosa. The mouth is frequently involved in conditions that affect the skin or other multiorgan diseases. Systemic autoimmune and inflammatory diseases often manifest oral lesions in their earliest stages, and early diagnosis, which may be spurred by a dental examination, is key for improved outcomes. After systemic diagnosis, oral lesions benefit from specialized care by dentists in collaboration with the medical team. This article is intended as a general overview of conditions that have oral manifestations but also involve other organ systems.

Key Words

Oral cavity, Oral manifestations, Systemic diseases.

Introduction

A systemic disease is one that affects a number of organs and tissues, or affects the body as a whole[1]. Wide arrays of systemic diseases encountered in internal medicine have manifestations in the oral cavity[2]. Mouth is an important anatomical location with a role in many critical physiologic processes, such as digestion, respiration and speech[3].

Oral cavity is an important diagnostic area because it contains derivatives of all of the primary germinal layers and is made up of the same cell types and cellular aggregates found throughout the body[2],[4]. As mouth is the mirror of health and disease signs of systemic disease are often manifested in the oral cavity before the systemic disease itself is suspected[5],[6]. Lesions may develop on the oral mucosa tongue, gingiva, dentition, periodontium, salivary glands, facial skeleton, extra oral skin and other related structures[2].

An understanding of the relationship between systemic disease and oral pathology is important with respect to establishing the diagnosis and determining the complexity of subsequent management[2]. Referral and consultation between dentists and physicians will facilitate diagnosis and management of local or systemic conditions that manifest as oral problems[7]. The use of the mouth as a diagnostic zone is heightened by the fact that there are few other regions of the body which can be examined more easily

and with fewer tools and less training[4].

This article is a brief overview of the oral manifestations of bacterial, fungal and viral infections, hormonal disorders and dermatologic disorders.

Tuberculosis

Tuberculosis (TB) is a communicable chronic granulomatous disease caused by *Mycobacterium tuberculosis*. Tuberculosis of the oral cavity is an uncommon occurrence, might be because of an intact squamous epithelium of the oral mucosa which makes tuberculosis bacilli penetration difficult and provides protection against the infection. Most common oral manifestations are tuberculous ulcer characterized by irregular edges with minimal indurations the base of an ulcer may be granular or covered with pseudo-membrane, regional lymphadenopathy and osteomyelitis presents as simple bony radiolucency. Tongue is most affected followed by palate, buccal mucosa and lips. Other sites can be salivary glands, tonsils, uvula and mandibular ridge.[8],[9],[10]

Syphilis

Syphilis is a sexually-transmitted disease (STD) produced by *Treponema pallidum*[17]. The primary mode of syphilis transmission is sexual contact. After *T. pallidum* penetrates through the genital mucosa or abraded skin, it enters the lymphatic and blood stream and disseminates to various organs including the Central Nervous System. Syphilis evolves through a series of four

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overlapping stages.[11]

Primary syphilis

Oral chancres are present on tongue, gingiva, soft palate and lips. Lesions appear as painless indurated ulcers associated with enlargement of the submandibular and cervical lymph nodes, lasting 3–7 weeks. The lesions are asymptomatic but are teeming with the spirochetes is highly infectious and lesion is usually single and heals spontaneously without scarring.[11]

Secondary syphilis

The most well-recognized and characteristic lesions are condyloma latum and multiple mucous patches that are slightly raised and covered by grayish, white pseudomembranes and surrounded by erythema. The typical sites are the soft palate and pillars, tongue and vestibular mucosa. Cervical lymph nodes are usually enlarged and rubbery in consistency. Oral lesions are often painful and snail track ulcers result when multiple mucous patches become confluent. Often nonspecific pharyngitis, tonsillitis and laryngitis are associated.[11],[12]

Tertiary syphilis

Tertiary syphilis manifests itself in the oral cavity as gumma localized mainly in the hard palate. Other sites may be the tongue, lips and soft palate. An additional feature is glossitis with mucosal atrophy, which may have a malignant potential.[11]

Congenital syphilis

Manifestations of congenital syphilis include mainly the triad of Hutchinson, characterized by:

- Hutchinson's Teeth
- Interstitial Keratitis
- Eighth Nerve Deafness.

Other features are Moon's molars, Saddle Nose, Palatal Erosions, High-Arched Palate, Protruding Mandible Frontal Bossing and Angular stomatitis is common in the infectious infantile stage of the disease and may cause permanent scarring of the lips (rhagades). [11],[13],[14]

Candidiasis

The most commonly occurring oral fungal infection is caused by *Candida* species with *Candida albicans* most often encountered. Oral *Candida* infections, commonly referred to as candidiasis or oropharyngeal candidiasis, are one of the most common conditions affecting the oral mucosa.[15]

Clinical Presentations Of Oral Candidiasis

Pseudomembranous candidiasis It is commonly referred to as thrush. It appears as white or yellow plaques on any mucosal surface. The plaques are readily removable leaving a raw underlying surface.[16],[17]

Erythematous candidiasis sometimes referred as atrophic candidiasis. This variant of candidiasis appears as erythematous patches on any mucosal surface. Most often, the affected surfaces are the palate and dorsal tongue, where it can cause depapillation.[18]

Hyperplastic candidiasis It is typically described as a white plaque presenting on the commissural region of the buccal mucosa, and it cannot be readily wiped off. Other sites affected in decreasing order include buccal commissars, palate, and tongue.[19]

CONDYLOMA ACUMINATUM (verruca acuminata, venereal wart)

Condyloma Acuminatum is an infectious disease caused by virus which belongs to the group of human papillomaviruses (HPV). It consists of multiple cauliflower-like lesions. The most common intra-oral sites are the labial mucosa and the lingual frenum and soft palate.[20]

MEASLES (Rubeola, Morbilli) Measles, a paramyxovirus infection, is most commonly seen in children as an acute febrile illness and erythematous maculopapular skin rash.[11] The oral manifestation of measles is known as Koplik's spots which are white-red macules that appear on the buccal and labial mucosa.[21]

Mumps (Epidemic Parotitis)

Mumps is a contagious viral disease caused by a single-stranded RNA virus belonging to the genus Rubulavirus and the family Paramyxoviridae. Characteristically presents with a prodromal illness of headache, malaise and Low-grade pyrexia, followed by unilateral or bilateral parotid swelling of patients who are symptomatic. Complications of mumps include orchitis, oophoritis, aseptic meningitis, encephalitis, deafness and pancreatitis.[22],[23],[24]

Lichen Planus

Oral lichen planus (OLP) is a chronic inflammatory oral mucosal disease of unknown etiology association of lichen planus, diabetes mellitus and vascular hypertension has been described as Grinspan's Syndrome. Oral lichen planus presents as white striations (Striae of Wickham), white papules, white plaques, erythema, erosions or blisters affecting predominantly the buccal mucosa, tongue and gingiva.[25]

Psoriasis

Psoriasis is a chronic papulo squamous inflammatory condition of the skin. The scalp, elbows, or knees are typically affected with characteristic scaly, white, well demarcated plaques. When the silvery scale is elevated or scratched, bleeding points are evident (Auspitz sign).[26] It is characterized by angular cheilosis, fissured tongue and benign migratory glossitis. Pindborg recognized other findings suggestive of oral psoriasis. These findings include[27]:

Small whitish papules that yield

bleeding points upon scraping.

Red and white plaques that follow skin lesions.

CROHN DISEASE is an idiopathic disorder that can involve the entire GI tract with transmural inflammation, non caseating granulomas, and fissures. Orofacial symptoms of Crohn disease include Diffuse labial, gingival, or mucosal swelling, cobble stoning of the buccal mucosa and gingiva, Aphthous ulcers, Mucosal tags and Angular cheilitis, Increased dental caries[27].

GASTROESOPHAGEAL REFLUX

Erosion of the enamel (hard, dished out area) exposes the underlying dentin, which is a softer, more yellow, material commonly seen on the palatal surfaces of the maxillary dentition where enamel has dissolved and the underlying dentin is exposed.[27]

Diabetes Mellitus

It is a metabolic disease characterized by dysregulation of carbohydrate, lipid and protein metabolism. Oral signs that are seen in individuals with diabetes are: Burning mouth and taste disturbances, Xerostomia, Multiple carious lesions (root caries), Enlarged gingival tissues, bleeding easily upon manipulation, Multiple periodontal abscesses, Oral candidiasis (most commonly erythematous, together with atrophy of lingual papillae and Ulcers and irritation fibromas.[28],[29],[18]

Hyperthyroidism

Hyperthyroidism is a condition caused by unregulated production of thyroid hormones.[30] Oral manifestations include: Accelerated dental eruption in children, Maxillary or mandibular osteoporosis, Enlargement of extraglandular thyroid tissue, Increased susceptibility to caries, Periodontal disease, Burning mouth syndrome and development of connective-tissue diseases like Sjögren's syndrome or systemic lupus erythematosus.[31]

Hypothyroidism

Hypothyroidism is defined by a deficiency of the thyroid hormone. It can be acquired or by congenital defects. When it is present in infancy, it is manifested as cretinism and if it occurs in adults (especially in middle-aged women) it is known as myxedema. Oral manifestations include: Delayed

eruption, Enamel hypoplasia (less intense in the permanent dentition), Anterior open bite, Macroglossia, Micrognathia, Thick lips, Dysgeusia and Mouth breathing.[31]

Hyperparathyroidism

It is characterized by hyper secretion of parathyroid hormone. Oral manifestations include: Widened pulp chambers, Development defects, Alterations in dental eruption, Weak teeth, Malocclusions, Loss of bone density, Soft tissue calcifications.[31],[31],[32]

Hypoparathyroidism

Hypoparathyroidism is a metabolic disorder characterized by hypocalcemia and hypophosphatemia due to a deficiency or absence of parathyroid hormone secretion. It may also develop as an isolated entity of unknown etiology (idiopathic hypoparathyroidism), or in combination with other disorders such as autoimmune diseases or developmental defects.

Oral Manifestations include: Enamel hypoplasia, Poorly calcified dentin, Widened pulp chambers, Dental pulp calcifications, Shortened roots, Hypodontia, Delay or cessation of dental development, Mandibular tori, Chronic candidiasis, Paresthesia of the tongue or lips, Alteration in facial muscles.[33]

ADDISON 'S DISEASE In Addison's disease or primary adrenal insufficiency exists a deficiency in the secretion of glucocorticoid and mineralocorticoid hormones by the adrenal cortex. It is associated with idiopathic, surgical, or infectious destruction or tumor of parenchyma of the adrenal gland or infiltration of the cortex by sarcoidosis, tuberculosis or amyloidosis. The oral mucosa can in turn develop black-bluish plaques, mainly affecting buccal mucosa but it can also be seen on the gums, palate, tongue and lips.[34]

Conclusion

Often oral manifestations are the first sign or the most significant sign of systemic disease. Referral and consultation between dentists and physicians will facilitate diagnosis and management of local or systemic conditions that manifest as oral problems. Dentists must acquire familiarity with systemic conditions that

can affect the oral cavity, so that appropriate referral and consultation can be made. Physicians need to be aware of significance of oral complaints, their relationship to local causes, and potentially to systemic diseases.

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