

Mouth - A Diagnostic Mirror of Various Diseases

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The mouth is a unique site, due to the presence of hard and soft tissues in close approximation. It serves in various purposes of speech, mastication and digestion. It is an important entry point for many pathogens in the body. Many systemic diseases manifest in the oral cavity and mouth can show early signs or the only signs of a disease process at a site elsewhere. As the mouth is an easily accessible site, the indicators it shows of various diseases should not be overlooked. A dentist thus can frequently be exposed to such conditions and play a key role in the diagnostic procedure of various systemic diseases. Appropriate knowledge of these oral manifestations is essential for early diagnosis, treatment and referral of cases.

Keywords: Oral manifestations, Mouth, Systemic diseases

INTRODUCTION

In the past few years, the association between the oral and general health has been a topic of interest for the medical and dental fraternity. Many systemic diseases have oral manifestations. In many instances, the oral signs may precede the systemic ones and in a few cases might be the only indication of a pathologic process. These lesions develop on the oral mucosa, tongue, gingiva, dentition, periodontium, salivary glands and the facial skin. These oral manifestations must be recognized early if the patient is to receive speedy diagnosis and referral for his treatment. This article aims to review nutritional, hematologic, gastrointestinal, endocrine, metabolic, rheumatological, and renal disorders that show oral manifestations.

NUTRITIONAL DISEASES

Nutritional diseases are considered to be the most common diseases, and also the most common diseases to go unnoticed. The changes may occur in the color of the oral mucosa and also the papillae of the dorsum of the tongue in various nutritional states. Table 1 enlists the nutritional deficiencies and their oral manifestations.

HEMATOLOGICAL DISORDERS

Blood disorders may be manifested early in the oral cavity. The manifestations that may show are that of hemorrhage, infections, and cellular infiltration of tissues pallor of the oral mucosa, loss of lingual papillae and burning sensation may be seen in anemia. The acute leukemias tend to produce oral manifestations like diffuse gingival hypertrophy. Gingival bleeding or accumulation of blood in tissues may occur in thrombocytopenia.²

Anemia

The common oral manifestations seen in anemia are pallor of mucosa, generalized atrophy of the tongue and buccal mucosa, angular cheilitis, soreness or burning of the tongue. The filiform papillae over are first to undergo atrophy. In severe cases, fungiform papillae are also affected. Recurrent aphthous ulcerations and candida lesions can also occur secondary to anemia.³

In pernicious anemia, the tongue is bald and beefy due to papillary atrophy and is known as hunter's glossitis. In aplastic anemia, petechiae often are present over the soft palate. The oral manifestation of plummer vinson syndrome also includes the dysphagia due to pharyngo-oesophageal ulcerations.⁴

Leukemia

Leukemic gingival enlargement is a common finding; Bleeding of gingiva can be a nearly sign of the leukemia. Other oral signs are petechiae, ecchymosis, mucosal ulcers and hemorrhage.³ Numb chin syndrome due to mental nerve neuropathy may be the presenting complaint, palatal ulcerations and necrosis may also be seen.⁵ Oral mucositis

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Table 1: Nutritional deficiencies and their oral manifestations¹

Vitamin and other nutritional deficiencies	Oral manifestations
Vitamin A	Eruption rate is retarded, retarded alveolar bone formation, hyperplastic gingival epithelium followed by keratinization
Vitamin D	Developmental anomalies of dentin and enamel, delayed eruption, and misalignment of the teeth in the jaws
Vitamin D resistant rickets	There is often periapical involvement of grossly normal appearing deciduous or permanent teeth, followed by the development of multiple gingival fistulas. Radiographically there is abnormal alveolar bone pattern, cementum, and lamina dura around the teeth is absent or poorly defined
Hypophosphatasia	There is loosening and premature loss of deciduous teeth, chiefly the incisors
Vitamin K	Most common oral manifestation is gingival bleeding. Prothrombin levels below 35% result in bleeding after tooth brushing; and when below 20% result in spontaneous gingival hemorrhages
Vitamin C deficiency (Scurvy)	There is inflammation of the interdental and marginal gingiva followed by bleeding, ulceration, foul breaths due to fusospirochetal stomatitis. Hemorrhages into and swelling of the periodontal membranes occur, followed by loss of bone and loosening of the teeth, which eventually exfoliate
Riboflavin deficiency	Initially, glossitis involving the tip and/or the lateral margins of the tongue, followed later by complete atrophy of all papillae. The tongue has a magenta color. Pallor, involving the oral mucosa, followed by cheilosis, maceration and fissuring at the angles of the mouth
Niacin deficiency	Oral mucosa becomes fiery red and painful. Glossitis, pain, redness and ulceration begin at the interdental papillae and spread rapidly

can also occur from chemotherapy since thinning of the surface layer of mucosa and/or bone marrow suppression allows for the opportunistic organism.⁶

Multiple myeloma

It is a malignant neoplasm of plasma cells of the bone marrow with widespread involvement of the skeletal system including skull and jaws. These lesions cause swelling of the jaws, pain, numbness, mobility of teeth, and pathological fractures.⁷ Punched out lesions of the skull and jaw are characteristic radiographic findings. Amyloid deposits in the tongue can lead to macroglossia.⁸

GASTROINTESTINAL DISEASES

Crohn's Disease

These patients may present with diffuse swelling of lips, angular cheilitis, and hyperplastic rigid mucosa. Another phenomenon called the "cobble stoning" of the buccal mucosa may be seen.⁹ Oral lesions have been documented to precede the intestinal lesions by years. In some cases, they are the only manifestations of disease.

Ulcerative Colitis

The association of destructive oral ulcerations resulting from immune-mediated vasculitis has been found with ulcerative colitis.¹⁰ Pyostomatitis vegetans is believed to be an oral manifestation of ulcerative colitis.

METABOLIC AND ENDOCRINAL

Diabetes

Concomitant diffuse, non-tender, bilateral enlargement of the parotid glands, called diabetic sialadenosis, may be seen xerostomia may be possibly the reason for altered

taste and burning mouth in the un-controlled diabetes. It can also be the reason for the development of the oral infections. Which in turn may lead to infections of *Candida albicans*.¹¹

Hypoparathyroidism

The common reasons for hyperthyroidism may be autoimmune destruction of the parathyroid tissue or surgical removal.¹²

During tooth development stage if the patient develops hypoparathyroidism, the clinical features may be pitting enamel hypoplasia and failure of the tooth eruption.¹³

Hyperparathyroidism

Loss of the lamina dura around the roots of the teeth may be seen radiographically. Alterations in the jaw trabecular pattern follow. The trabecular density may decrease, and the normal pattern may blur resulting in a "ground glass" appearance on the radiograph. Furthermore, "brown tumor" of hyperparathyroidism may develop. Radiographically these lesions are unilocular or multilocular well-demarcated radiolucencies that commonly affect the mandible, clavicle, ribs and pelvis.¹⁴

Hypercortisolism

There is a tendency of pathological fractures of the jaw bones upon low even with trauma force that usually does not cause damage. The reason could be osteoporosis of the jaw bones. Post extraction healing of the extraction site is also compromised.¹⁵

Hypoadrenocorticism

Orofacial manifestations include "bronzing" or hyperpigmentation of the skin. This is usually seen on the

sun-exposed areas and over the pressure-bearing areas. These skin changes are often preceded by oral mucosal melanosis. The usual site of the diffuse brown macular pigmentation is the buccal mucosa. The other sites affected can be the floor of the mouth, ventral tongue, and other areas of the oral mucosa.¹⁶

RHEUMATOLOGICAL DISORDERS

Sjogren's Syndrome

The most important clinical sign as well as symptom is xerostomia. Altered taste sensation, sore mouth, pain during deglutition and enlargement of salivary glands may be the other findings.¹⁷

Another manifestation could be bacterial parotitis, along with fever and purulent discharge from the gland.¹⁸

Rheumatoid Arthritis

The temporomandibular joint is a common joint to be involved with rheumatoid arthritis. It usually presents as erosions in the condyle, which may lead to limitation of motion of the jaw usually due to pain on opening and closing the jaw. Oral dryness and salivary gland swelling may also be noted.

Scleroderma

There is notable constriction of the mouth aperture, thus making it difficult for the patient to open the mouth.¹⁹ Esophageal fibrosis leads to gastroesophageal reflux, there is dysphagia and heart burn. The tongue also may lose mobility and there may be salivary hypofunction.

Lupus Erythematosus

A major diagnostic manifestation of systemic lupus erythematosus (SLE) is oral or nasopharyngeal ulcerations.²⁰ Palate is the common site of presentation of the ulcerations. The ulcers are usually asymptomatic. Purpuric lesions such as ecchymosis and petechiae may also occur. About one-third of the patients with SLE also show salivary gland involvement and secondary Sjogren's syndrome and severe xerostomia.²¹

RENAL DISEASES

Painful plaques and crusts are distributed predominantly on the buccal mucosa, dorsum of the tongue, and floor of the mouth. This occurs when the intraoral concentration of urea exceeds 30 mmol/L.²² Uremic stomatitis clinically can present in two types. In Type-I, erythema of the oral mucosa is seen and pseudomembranous exudates that are thick and gray colored, that do not show bleeding when removed. In Type-II when the pseudomembrane is removed, there is bleeding and ulceration seen at

the base. Type II is indicative of a more severe form of stomatitis and may be due to some other underlying systemic disease.²²

CONCLUSION

Oral cavity can serve as a diagnostic mirror for various systemic diseases. The dentist and the physician should be well aware of all the systemic conditions that have oral manifestations before and during the disease course, for early diagnosis and better treatment outcomes.

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