

Mouth: A Diagnostic Mirror

Harpreet Singh Grover¹, Rajinder Gupta², Anil Gupta³

ABSTRACT

The mouth is the major portal of entry to the body and is equipped with formidable mechanisms for sensing the environment and defending against toxins or invading pathogens. The oral cavity can be considered as a window to the body because many important systemic disorders manifest in the oral cavity. The dentist is frequently the first medical person to encounter such disorders. These oral manifestations must be properly recognized if the patient is to receive appropriate diagnosis and referral for treatment.

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¹Professor and Head
Department of Periodontics & Oral Implantology
SGT Dental College, Hospital and Research
Institute,
Gurgaon, Haryana,
India.

²Professor and Head
Department of Orthodontics
DeshBhagat Dental College & Hospital,
Muktsar, Punjab,
India.

³Professor and Head
Department of Pedodontics,
I.D.S.T. Dental College & Hospital
Modinagar, Uttar Pradesh,
India

INTRODUCTION

The mouth and face are highly accessible parts of the body, sensitive to and able to reflect changes occurring internally. The mouth is the major portal of entry to the body and is equipped with formidable mechanisms for sensing the environment and defending against toxins or invading pathogens. In the event that the integrity of the oral tissues is compromised, the mouth can become a source of disease or pathological processes affecting other parts of the body. It can also become a source of contagion by means of contaminated fluids or materials passed to others (1).

The relationship between oral and general health has been increasingly recognised during the past twodecades. Several epidemiological studies have linked poor oral health with cardiovascular disease, poorglycaemic control in diabetics, low birth-weight pre-term babies, and a number of other conditions, including rheumatoid arthritis and osteoporosis. Oral infections are also recognised as a problem for individuals suffering from a range of chronic conditions, including cancer and infection with human immunodeficiency virus, as well as patients with ventilator-associated pneumonia. The oral cavity can be considered as a window to the body because many important systemic disorders manifest in the oral cavity. The dentist is frequently the first medical person to encounter such disorders. These oral manifestations must be properly

recognized if the patient is to receive appropriate diagnosis and referral for treatment. We have summarized known and newly described oral manifestations of several systemic diseases (2).

HAEMATOLOGIC DISEASES

Anaemia

It is an abnormal reduction in the number of circulating red blood cells, the quantity of haemoglobin and the volume of packed red cells in a given unit of blood.

In India, Iron deficiency anaemia is the most common type, especially in females and children. Oral manifestations- Pallor of mucosa, generalized atrophy of the tongue and buccal mucosa, angular cheilitis, soreness or burning of tongue, filliform papillae over the anterior two third of the tongue are first to undergo atrophy. In severe cases fungiform papillae are also affected leaving tongue completely smooth and glistening. Recurrent aphthous ulcerations and candidal lesions can also occur (3).

Pernicious anaemia

Tongue is generally inflamed and described as beefy red in colour. Tongue is smooth and bald due to atrophy of papillae referred as Hunter's glossitis. There is disturbance in taste sensation and dryness of the mouth.

Aplastic anaemia

Petechiae often are present over the soft palate.

Contact Author

Dr. Harpreet Singh Grover
drgrover13@yahoo.co.in

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Plummer-Vinson syndrome

It is characterized by dysphagia, iron deficiency anaemia, dystrophy of nails (Koilonychia) and glossitis, seen exclusively in middle aged women. Patients have angular cheilitis, soreness and fissuring of the tongue. Dysphagia is due to pharyngoesophageal ulcerations.

Sickle cell anaemia

Oral mucosa show pallor, delayed eruption of teeth. Patient is more prone to develop osteomyelitis, may present with paresthesia of the mental nerve.

Leukemia

The leukemia are malignant neoplasias of WBC precursors characterized by diffuse replacement of bone marrow with proliferating leukemic cells, abnormal number and forms of immature WBC's in the circulating blood, widespread infiltrates in the liver, spleen, lymph nodes and other body sites.

Leukemic gingival enlargement is a common finding, gingiva appears initially bluish red and cyanotic with rounding and tenderness of gingival margin, then it increases in size, covering the crowns of the teeth. Bleeding of gingiva can be an early sign of the leukemia. Other oral signs are petechiae, ecchymosis, mucosal ulcers and haemorrhage (3).

Numb chin syndrome due to mental nerve neuropathy may be the presenting complain, palatal ulcerations and necrosis may also be seen (4). Bacterial infections of the oral cavity, which may be the source of septicemia are also common in these patients, and must be recognized early and treated aggressively.

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.

Oral manifestations- Patient may experience pain, swelling and numbness of the jaws, epulis formation or unexplained mobility of the teeth. Intraoral swelling tends to be

ulcerated, rounded and bluish red (5). On palpation swelling is tender and eggshell cracking may be elicited. Punched out lesions of the skull and jaw are characteristic radiographic findings. Since multiple myeloma results in immune-suppression, a variety of the infections may be present, including hairy leukoplakia and candidiasis (6, 7). Amyloid deposits in the tongue can lead to macroglossia (8).

RHEUMATOLOGICAL DISEASES**Sjogren's Syndrome**

It is a chronic inflammatory disease that predominantly affects salivary, lacrimal and other exocrine glands, mostly in middle aged and elderly women.

Oral manifestations- Xerostomia is a major complaint, along with unpleasant taste, difficulty in eating dry food, soreness with dentures, enlargement of the parotid glands and sub-mandibular glands (9, 10). It is often associated with rheumatoid arthritis. Bacterial parotitis, accompanied with fever, purulent discharge from the glands, may also occur.

Scleroderma- (Progressive systemic sclerosis)

It is a chronic disease characterized by the diffuse sclerosis of skin, GIT, heart muscle, lungs and kidneys. Lips may appear pursed due to constriction of the mouth aperture, thus making it difficult to open the mouth (11). Esophageal fibrosis leads to gastroesophageal reflux, there is dysphagia and heart burn. Tongue can lose mobility and become smooth in appearance as the palatal rugae flatten.

Lupus Erythematosus

Oral and nasopharyngeal ulceration is recognized as a major diagnostic manifestation of SLE by American Rheumatism Association on diagnosis and therapeutic criteria. These ulcerations are usually painless and often involve palate. Purpuric lesions such as ecchymoses and petechiae may also occur. In upto 30% of patients with SLE, salivary gland involvement may occur concomitantly, leading to Sjogren's syndrome and severe xerostomia (12, 13).

Rheumatoid Arthritis

TMJ is often involved. This is usually characterized by lesions in the condyle, leading to a decreased range of motion of the mandible with pain upon movement. Oral dryness and salivary gland swelling can also be seen.

ENDOCRINE DISORDERS**Diabetes Mellitus (DM)**

About a third of Diabetic patients complain of xerostomia, which may be due to an overall diminished flow of saliva and an increased salivary glucose level. Concomitant diffuse, nontender, bilateral enlargement of the parotid glands, called Diabetic Sialadenosis, may be seen. Altered taste and burning mouth syndrome have been reported in poorly controlled diabetes. Xerostomia may act as a predisposing factor in the development of the oral infections. Dry and damaged mucosa is more susceptible to opportunistic infections by *Candida albicans* (14, 15). Erythematous candidiasis presents as central papillary atrophy of the dorsal tongue papillae which have been reported in up to 30% of diabetic patients.

Periodontal manifestations- Patients with DM are more prone to developing periodontal disease, there is a greater tendency towards bleeding on probing, patients with uncontrolled DM may exhibit fulminating periodontitis with periodontal abscess formation and increased tooth mobility, more severe and rapid alveolar bone resorption. Insulin dependant diabetics tend to have more destruction around first molars and incisors. DM alters the response of periodontal tissue to local irritants, hastening bone loss and retard post surgical wound healing.

Hypoparathyroidism

It occurs following iatrogenic surgical removal of the parathyroid glands, as well as from autoimmune destruction of the parathyroid tissue (16). Hypocalcemia follows the loss of parathyroid hormone. Chvostek's sign, an important finding associated with hypocalcemia, is characterized by twitching of the upper lip

when the facial nerve is tapped just below the zygomatic process. A positive response suggests a latent degree of tetany. If hypothyroidism develops early in life during tooth development, a pitting enamel hypoplasia and failure of the tooth eruption may occur (17).

Hyperparathyroidism

Loss of laminadura surrounding the roots of the teeth is an early manifestation of hyperparathyroidism, with alteration in the jaw trabecular pattern developing ground glass appearance in the radiographs. With persistent disease, other osseous lesions develop, such as so called “brown tumors” of hyperparathyroidism. Radiographically these lesions are unilocular or multilocular well demarcated radiolucencies which commonly affect the mandible, clavicle, ribs and pelvis (18).

HYPERCORTISOLISM OR CUSHING'S SYNDROME

It results from a sustained increase in blood glucocorticoid levels. Fatty tissue deposition in the facial area is described as the characteristic “moon” facies. Pathological fractures of the mandible, maxilla or alveolar bone may occur upon low impact trauma due to osteoporosis. Healing of fractures as well as healing of alveolar bone and soft tissue after dental extraction is also delayed.

HYPOALDRENOCORTICISM

It results from insufficient production of adrenal corticosteroid hormones caused by destruction of the adrenal cortex (Addison's disease). Orofacial manifestations include a “bronzing” hyperpigmentation of skin especially sun exposed areas and pressure points. This is caused by increased level of adrenocorticotropic hormone (ACTH). The skin changes are often preceded by oral mucosal melanosis. There is diffuse brown macular pigmentation of buccal mucosa (19).

RENAL DISEASES

Uremic Stomatitis

It is mostly seen in cases of untreated chronic renal failure. Painful plaques and

crusts are distributed predominantly on the buccal mucosa, the floor or dorsum of the tongue and the floor of the mouth. The most commonly accepted mechanism for development of uremic stomatitis i.e. irritation and chemical injury of mucosa by anaemia or ammonium compounds formed by hydrolysis of urea in saliva by urease, when intraoral concentration of urea exceeds 30 mmol/l (20).

There are two types of uremic stomatitis. In type-I, there is a generalized or localized erythema of the oral mucosa and a thick gray pseudomembranous exudates which does not leave a bleeding or ulcerated base when removed. Type- II leaves ulceration if pseudomembrane is removed. This type may indicate a more severe form of stomatitis, secondary infection, anaemia or underlying systemic haematological disturbances caused by renal failure.

GASTROINTESTINAL DISEASES (21)

Crohn's Disease

Clinically these patients present with diffuse swelling of one or both lips with associated angular cheilitis and “cobblestoning” of the buccal mucosa with hyperplastic rigid mucosa. Painful linear ulcerations in the buccal vestibule, painless localized swellings within the lips or face, fissuring on the midline of the lower lip and erythematous edematous gingiva may be seen. Oral lesions have been documented to precede the intestinal lesions by years and in some cases are the only manifestations of disease. The oral lesions only respond to treatment with systemic steroids.

Ulcerative Colitis

Ulcerative colitis has been associated with destructive oral ulcerations resulting from immune mediated vasculitis. These are similar to aphthous ulcers. Pyostomatitis vegetans is believed to be an oral manifestation of ulcerative colitis. These multiple painless microabscesses connect in linear or serpentine tracks on the mucosa of lips, soft palate and ventral tongue.

CONCLUSION

The oral cavity is a portal of entry as well as the site of disease for microbial infections

that affect general health status. Many systemic diseases and conditions have oral manifestations. These manifestations may be the initial sign of clinical disease and as such serve to inform clinicians and individuals of the need for further assessment. The dentist must be familiar with these problems to serve their patients in the best way.

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