

Understanding Systemic Diseases Featuring the Oral Sign and Symptoms: A Review Article

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ABSTRACT

Background: The accurate examination of the oral cavity may acknowledge findings that demonstrate the presence of underlying systemic, which helps in earlier diagnosis as well as treatment. The oral tissues are accountable for damage as a disease's consequences that primarily affect other body systems. Various systemic diseases show oral manifestation. Some of these oral conditions include oral ulcers, caries, dry mouth, gingival bleeding, gingival hypertrophy, etc. This review article is prepared to make general physicians as well as dentists regarding systemic disorders or conditions that show dental or oral manifestations.

Keywords: Oral manifestations, systemic diseases.

INTRODUCTION

Inadequate oral health is utmost problem worldwide. There are many investigations done to check the relationship in-between various systemic diseases and oral health. Various epidemiology based studies have relate the bad oral conditions with different conditions like cardiovascular diseases, respiratory diseases, adverse pregnancy outcomes, stroke, malignaant diseases, obesity and rheumatoid arthritis ^{1,2,3,4,5}. Oral inspection or investigation shows clinical features of various diseases like hematologic conditions, endocrinopathies, immunoogic diseases, nutritional disorder, systemic infections etc⁶. Mouth may be considered as a reflector of diseases or health. Various systemic diseases shows their oral manifestation⁷.

VARIOUS SYSTEMIC DISEASES WITH THEIR ORAL MANIFESTATION

(A) PULMONARY DISORDER AND ORAL MANIFESTATION

(i) CHRONIC OBSTRUCTIVE PULMONARY DISEASES (COPD)

Smoking is considered as significant risk factors for copd as well as periodontal abnormalities. As per the study conducted by Katancik et al in 2005, they noted a remarkable relationship between periodontal disorders and airway obstruction⁸. Another study were conducted by Prasanna in 2011 to check the relationship between periodontal diseases and copd. He proposed that periodontitis is important risk factors for copd⁹. In the year 2014, Oztekin et al in their study noted that there is association between the periodontal diseases and copd¹⁰.

(ii) ASTHMA

According to Thomas MS, most common oral conditions which is related with asthma are periodontal diseases, dental cavities, oral candidiasis and erosions¹¹. principally asthmatic patients possess habit of breathing from mouth. As

Received: May. 26, 2024; Accepted: June. 20, 2024

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a result, gingival inflammation occurs because of alveolar mucosa dryness¹²

(iii) TUBERCULOSIS

Pulmonary tuberculosis shows oral lesions in primary as well as secondary stages. According to Mignogna et al, 0.05%-5 % of the tb patients shows oral lesions¹³. Oral manifestations of tuberculosis can be seen in the form of ulcers, fissures, nodules present on the lips, palate or tongue, along with cervical lymphadenopathy^{14,13}

(iv) SARCOIDOSIS

Sarcoidosis is an acquired systemic disease. Being a granulomatous disease, it shows the occupancy of granulomas in lungs. Sarcoidosis shows some oral manifestations in the forms of local swellings, palatal ulceration, inflamed gingiva, labial as well as buccal mucosal ulcerations¹⁵.

(v) WEGENER GRANULOMATOSIS

Wegener granulomatosis is considered as a systemic disease categorized as necrotizing granulomatous inflammation of small to medium vessels. The oral manifestations are expressed as oral mucosal ulceration or palatal ulceration and mobile tooth. "strawberry gingivitis" can be seen^{16,17}.

(vi) PNEUMONIA

Limeback¹⁸ observed in his study that a patient who is suffering from aspiration pneumonia should have poor oral hygiene. In another study done by Loesche and Lopatin¹⁹, they noted that patients who are suffering from aspiration pneumonia have more chances of having periodontitis.

(B) GASTROINTESTINAL DISORDER AND ORAL MANIFESTATION

(i) CROHN'S DISEASES

Oral manifestations noted in Crohn's diseases are commonly seen in young patients with 20 %-50% prevalence range²⁰. The oral manifestations include papules, ulcers and edema with most common location like gingiva, lips and vestibular sulci^{21,22}. In their study, Dupuy et al observed that 0.5 % of the patient suffering from Crohn's diseases shows oral manifestations. Oral lesions are nodular or linear or have diffuse mucosal thickenings. They

are generally firm and painless while examined. But, if they are ulcers, they possess severe pain on pressing. These ulcers are constant and deep²³

(ii) ULCERATIVE COLITIS

Pelicer et al²⁴ stated that ulcerative colitis shows oral manifestations in the form of superficial hemorrhagic ulcers, aphthous ulcers or angular cheilitis. A study was conducted by Maryam elahi²⁵ and they observed that patients having ulcerative colitis show higher frequency of tongue coating, oral ulceration, acidic taste, halitosis and dry mouth.

Celiac disease shows various oral manifestations. Patients having celiac disease exhibit increased possibility of developmental enamel defects mainly enamel hypoplasia²⁶. Because of the celiac disease, there is decreased rate of flow of saliva which in turn results in dry mouth²⁷

In a study done by Avsar²⁸, he observed that the children with celiac disease have increased risk of enamel defects and these enamel defects are responsible for occurrence of caries.

(iii) GASTRO-ESOPHAGEAL REFLUX DISEASES (GERD)

A study was conducted by Fede²⁹ et al in which he noted the significant relationship between GERD and erythema of palatal mucosa as well as uvula. Wang³⁰ in their study observed a significant relationship between GERD and dental erosions.

Schroeder³¹ in their study also observed that dental erosion is usually seen in GERD patients. Another oral manifestation seen in GERD is halitosis. Moshkowitz conducted a study to analyze the association between GERD and halitosis. They observed that halitosis is a routine manifestation of GERD³²

(C) HEMATOLOGIC DISORDER AND ORAL MANIFESTATION

(i) ANAEMIA

Most frequent hematologic disorder is anemia. Iron deficiency anemia shows oral manifestation in the form of mucosal pallor, atrophic glossitis and angular cheilitis³³. Sickle cell anemia shows mandibular salmonella osteomyelitis, pulpal necrosis, mandibular nerve paresthesia as oral

manifestations. Also, they shows enamel hypomineralization, orofacial pain as well as diastema^{34,35,36}

(ii) LEUKEMIA

Leukemia shows various forms of oral manifestation which includes petechiae, gingival hypertrophy, ecchymosis, hemorrhage and mucosal ulcers³⁷. Numb chin syndrome may be seen occasionally³⁸. In case of acute myeloid leukemia, most common oral features seen are oral ulceration, gingival bleeding and gingival hyperplasia. Also, spontaneous bleeding can be seen in palate, gingiva, lips or tongue. Oral ulcerations can be noted very common^{39,40,41}. In those patients which are suffering from acute lymphoblastic leukemia, oral features includes gingival bleeding, ecchymoses alongwith lymphadenopathy which is persistent sign⁴². Additionally, in case of chronic lymphocytic leukemia, oral features seen includes localized swelling with pain and ulcers. Gingival bleeding as well as purpura can be noted^{43,41}. Some features like gingival leukemic infiltration and palatal enlargement are linked with chronic lymphocytic leukemia^{44,45}

(D) LIVER DISEASES AND ORAL MANIFESTATION

In liver malfunctioning, the oral cavity display some manifestations in the form of gingivitis, gingival bleeding, mucosal membrane jaundice, petechiae, foetor hepaticus, xerostomia, and atrophic tongue. Chronic periodontal diseases is most commonly seen in these patients^{46,47,48}. Some manifestations like gingivitis, angular cheilitis, glossitis can be seen in patients suffering from alcoholic hepatitis^{49,46}. A study were conducted by Bagan et al⁵⁰ to check the dental status in patients having cirrhosis of liver. He noted the remarkable number of missing teeth and carious teeth in patients with cirrhosis of liver and he concluded that substandard dental status were seen.

(E) RENAL DISEASES AND ORAL MANIFESTATION

Renal diseases may show various oral manifestations. These includes mucositis, stomatitis and glossitis which in turn leads to inflammation along with pain of oral mucosa and tongue. Also, some other manifestations, like dysgeusia, candidal

infection and altered taste sensations is established because of renal diseases⁵¹.

In a study done by Martins⁵², they observed that those chronic renal failure patients (children and adolescents) undergoing hemodialysis, may show oral manifestations which includes delayed tooth eruption, dry mouth, dental stains and calculus. Koch⁵³ in their study noted that cases of chronic renal failure may influence the development of enamel in primary teeth which results in enamel hypoplasia.

Galili⁵⁴ in 1991 conducted a study to compare the dental pulp size in chronic renal diseases with healthy controls. He observed the significant relationship between renal diseases and narrowing of pulp in premolar as well as molar teeth. Jaffe⁵⁵ in their study concluded that children suffering from chronic renal failure shows delay in dental maturation.

(F) ENDOCRINE DISORDERS AND ORAL MANIFESTATION

(i) DIABETES MELLITUS

It shows number of oral manifestations. Most number of patients suffering from diabetes shows xerostomia because of restricted salivary flow and rise in salivary glucose level. Other factors which contribute to oral manifestations includes increased vulnerability to infections, collection of plaque and food debris, poor healing etc⁵⁶.

Falk⁵⁷ has observed the high frequency of dental caries in poorly controlled diabetic patients. Also these patients shows occurrence of loss of periodontal attachment⁵⁸.

(ii) HYPERPARATHYROIDISM

Most common oral manifestations seen in oral cavity includes mobility of teeth, loss of bone density, variations in tooth eruption calcifications of soft tissue. Also, loss of lamina dura with changes in jaw trabecular pattern can be seen^{59,60,61,62}

(iii) HYPOPARATHYROIDISM

Most common manifestation seen in hypoparathyroidism is enamel hypoplasia and delayed eruption⁶³. Some teeth shows root malformation alongwith interruption in the dental

development and growth⁶⁴. Facial twitching with lip or tongue paresthesia can also occur. Radiographic features like wide root canal, large pulp chambers, thickened lamina dura are some other oral manifestations^{65,66}.

(iv) HYPERTHYROIDISM

Variety of oral manifestations are seen in cases of hyperthyroidism. Periodontal diseases, osteoporosis of maxillary or mandibular portion of jaw, increased vulnerability to dental caries and expedited dental growth⁶⁷

(v) HYPOTHYROIDISM

Hypothyroidism shows various oral manifestations which appears in the form of dysgeusia, substandard periodontal conditions, enlarged tongue, delayed healing of wound⁶⁸

CONCLUSION

The consequence of systemic diseases on oral cavity is well noted and it includes various soft tissue and hard tissue abnormality as well as pathology. Oral manifestation is the first sign of systemic diseases. General physicians and dentist need to be mindful of understanding the oral complaints.

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