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Oral Manifestation Of Systemic Disease - A Review

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ABSTRACT

A thorough oral examination can uncover hidden systemic conditions, enabling early diagnosis and treatment. Oral signs such as mucosal changes, gum inflammation, and tooth condition can indicate underlying conditions like anemia, lupus, Crohn's disease, Addison's disease, diabetes, HIV, thrombocytopenia, and leukemia. Specifically, symptoms may include pale mucosa, oral ulcers, honeycomb plaques, swollen mucosa, cobblestone texture, and severe gum inflammation and bleeding. Furthermore, oral manifestations can also be seen in patients with gastroesophageal reflux disease, bulimia, and anorexia, where tooth erosion may occur due to acid exposure. In some cases, oral changes may be the first sign of a systemic disease, emphasizing the importance of regular oral examinations to detect these conditions early and facilitate prompt treatment. By recognizing the oral symptoms of systemic diseases, healthcare providers can play a crucial role in identifying and managing these conditions, ultimately improving patient outcomes.

KEYWORDS: Thrombocytopenia, Systemic Disease, Oral lesion , periodontal Disease,

INTRODUCTION:

The 2000 US Surgeon General's report "Oral Health in America" emphasized the strong link between oral health and overall well-being, highlighting numerous ways in which oral and general health are interconnected. A thorough oral examination can detect signs of various systemic diseases, including immunological disorders, endocrine and blood-related conditions, infections, and nutritional deficiencies, allowing for early diagnosis and treatment. Research has also shown significant connections between gum disease and diabetes, heart disease, stroke, and pregnancy complications, underscoring the importance of oral health in maintaining overall health. Family physicians should understand the relationship between oral and systemic health and be prepared to collaborate with specialists as needed to provide comprehensive care. This article provides a guide to recognizing oral manifestations of select systemic diseases, summarizing key findings and conditions in Table 1, and offering a valuable resource for healthcare providers seeking to improve patient outcomes through integrated care.

MUCOSAL CHANGES

MUCOSAL PALLOR AND ATROPHY

Anemia can manifest orally through various changes, including mucosal pallor, atrophic glossitis, and candidiasis. Mucosal pallor may be subtle and difficult to appreciate, but it can be an important indicator of underlying anemia. Atrophic glossitis is a more pronounced condition, characterized by bald patches on the tongue due to atrophied lingual papillae. This condition can be associated with iron deficiency anemia, vitamin B complex deficiencies, and other conditions. Atrophy can cause burning, pain, tenderness, and erythema on the tongue. In addition to atrophic glossitis, candidiasis may also be present, causing erythema, burning, and atrophy. Candidiasis can be a concurrent finding or an alternative cause of these symptoms. It's essential to examine the oral cavity carefully to diagnose and manage these conditions effectively. Furthermore, some patients with anemia may also experience angular cheilitis, a lip infection that can cause erythema, burning, and atrophy. This condition can be painful and uncomfortable, and it may require separate treatment. By recognizing these oral manifestations of anemia, healthcare providers can provide more comprehensive care and improve patient outcomes.

Table 1. Oral manifestation of select systemic conditions:

<i>Clinical presentation</i>	<i>Associated condition</i>	<i>Oral manifestation</i>	<i>Comments</i>
Mucosal pallor and atrophy	Anemia	Mucosal pallor ,Atrophic glossitis, Candidiasis,(including angular cheilitis) , mucosal burning ,pain or tenderness, erythema	Oral mucosal pallor maybe difficult to appreciate
Oral lesions (including ulcerative, erosive, or white lesions; swelling; erythema)	Lichen planus	Erosive : diffuse erythema and painful ulceration with peripheral radiating striae Reticular: white lacy striae , especially on bilateral buccal mucosa	In symptomatic patients, oral lesions may be treated with a topical corticosteroid gel or rinse
	Lupus erythematosus	Oral discoid lesions , honeycomb plaques , raised keratotic plaques , erythema , purport, petechiae, irregularly shaped ulcers , cheilitis	In discoid lupus erythematosus, oral lesions seldom occur in the absence of skin lesions

Clinical presentation	Associated condition	Oral manifestation	Comments
	Benign mucus membrane pemphigoid Pemphigus vulgaris	Diffuse and painful oral ulceration , scarring Diffuse and painful oral ulceration , positive Nikolsky sign	Intact blister formation occasionally may be seen intraorally (before rupture and ulceration) Oral lesions often are the first manifestation of disease and may precede the onset of skin lesions After initiating systemic therapy, oral lesions may take longer to resolve compared with extraoral lesions
	Crohn disease	Diffuse mucosal swelling; cobblestone mucosa; localized mucogingivitis; deep linear ulceration; fibrous tissue tags, polyps, or nodules; pyostomatitis vegetans (“snail track” ulcers on an erythematous base); possible aphthous-like ulcers	Oral lesions usually resolve with systemic treatment of underlying intestinal disease, although persistent ulcers may require application of topical corticosteroids, and persistent swelling may respond to injection of triamcinolone acetonide (Kenalog)
	Behcet syndrome	Recurrent, painful aphthous-like ulcers, usually numerous and especially involving the soft palate and oropharynx	Oral lesions are the most common lesions associated with Behçet syndrome and may be the first manifestation of disease

Clinical presentation	Associated condition	Oral manifestation	Comments
Change in mucosal pigmentation	Addison disease	Diffuse melanin pigmentation , candidiasis 9 in patients with autoimmune polyendocrinopathy - candidiasis - ectodermal dystrophy syndrome	
Periodontal bleeding and inflammation	Diabetes mellitus 	Gingivitis , periodontitis , candidiasis , generalised atrophy of the tongue papillae , taste dysfunction , salivary dysfunction , burning mouth syndrome , delayed wound healing	Patients with diabetes and associated periodontal disease may experience improved glycemic control with periodontal treatment
	HIV -Associated periodontal diseases	Linear gingival erythema: linear band of erythema along the free gingival margin Necrotizing ulcerative gingivitis: ulceration and necrosis of gingival interdental papillae, gingival bleeding and pain, halitosis Necrotizing ulcerative periodontitis: gingival ulceration, necrosis, rapid loss of periodontal attachment, edema, pain, spontaneous hemorrhage	In addition to these atypical forms of periodontal disease , patients with HIV also may exhibit more conventional forms of gingivitis and periodontitis
	Thrombocytopenia	Petechiae, purpura, ecchymosis, hemorrhagic bullae, hematomas	Heamorrhage may occur with minor trauma or spontaneously

<i>Clinical presentation</i>	<i>Associated condition</i>	<i>Oral manifestation</i>	<i>Comments</i>
	Leukemia	Mucosal bleeding, ulceration, petechiae, and diffuse or localized gingival enlargement; secondary infections (e.g., candidiasis, herpes simplex virus infection, periodontal bone loss)	Gingival infiltration by leukemic cells occurs most often in acute monocytic leukaemia and acute myelomonocytic leukaemia
Dental erosion	Gastroesophageal reflux disease	Water brash, xerostomia, burning sensation, halitosis, palatal erythema, dental erosion	Dental erosion may require dental restorative treatment. Other oral findings usually will resolve with medical management of gastroesophageal reflux disease.
	Bulimia and Anorexia	Dental erosion, xerostomia, increased caries rate, sialadenitis (especially bilateral parotid enlargement)	Dental erosion may require dental restorative treatment. Xerostomia and sialadenitis usually resolve on normalization of nutritional status; sialogogues may help.

ORAL LESIONS

In addition to ulcerative or erosive lesions, white lesions or nonspecific erythema can be indicative of systemic disease. A thorough oral examination can reveal signs of various systemic conditions, enabling early diagnosis and treatment.

Lupus Erythematosus

Oral lesions occur in 8-45% of patients with systemic lupus erythematosus and 4-25% of patients with discoid lupus erythematosus. The classic oral discoid lesion is characterized by a well-demarcated zone of erythema, atrophy, or ulceration surrounded by white, radiating striae. Other variations include honeycomb plaques, raised keratotic plaques, and nonspecific erythema. Oral lesions typically resolve with systemic immunosuppressive therapy.

Pemphigus Vulgaris

Oral lesions are the initial manifestation in 50-80% of patients with pemphigus vulgaris, preceding skin lesions by up to one year. Patients experience painful, diffuse oral ulceration, and a positive

Nikolsky sign may be elicited. Oral lesions usually resolve with systemic immunosuppressive therapy. Extraoral findings may include cutaneous blisters, crusted skin erosions, and bilateral conjunctivitis.

Crohn Disease

The reported prevalence of oral lesions in Crohn disease ranges from 0.5-20%. Oral lesions may precede abdominal symptoms and do not necessarily correlate with intestinal disease activity. Characteristic abnormalities include diffuse swelling, cobblestone appearance of the mucosa, localized mucogingivitis, and deep linear ulceration. The swelling usually is persistent, firm, and painless, and tends to involve the lips, buccal mucosa, and facial soft tissues. Oral lesions usually resolve with systemic treatment of underlying intestinal disease.

Behçet Syndrome

Recurrent, painful aphthous-like ulcers are characteristic of Behçet syndrome. These ulcers typically involve the soft palate and oropharynx. Oral lesions are the most common manifestation of Behçet syndrome and may be the first sign of disease.

CHANGES IN PIGMENTATION

Hyperpigmentation of the oral mucosa, as seen in Addison disease, can be an early indication of primary adrenal insufficiency. However, this symptom is nonspecific and can also be caused by various other conditions, including ethnic pigmentation, tobacco-related pigmentation, medication-related pigmentation, neurofibromatosis 1, McCune-Albright syndrome, and Peutz-Jeghers syndrome.

Primary adrenal insufficiency can occur in conjunction with autoimmune polyendocrinopathy-candidiasis-ectodermal dystrophy syndrome, a condition characterized by chronic mucocutaneous candidiasis, hypoparathyroidism, and other symptoms. In the oral cavity, candidiasis can manifest in different forms, including pseudomembranous (removable white plaques), hyperplastic (non-removable white plaques), and erythematous.

PERIODONTAL BLEEDING AND INFLAMMATION

Oral Manifestations Of Diabetes

There is a strong link between diabetes and periodontal diseases, including gingivitis and periodontitis. Research suggests a two-way relationship: diabetes can lead to poor periodontal health, and poor periodontal health can make it difficult to control diabetes. Patients with poorly controlled diabetes are more likely to experience periodontal attachment loss. Treating periodontitis may improve glycemic control, and severe periodontal disease may predict diabetic complications. The International Diabetes Federation recommends that primary care for diabetes should include annually inquiring about symptoms of gum disease and encouraging regular evaluation and treatment by a dental health professional.

Additional Oral Findings in Diabetes

Other oral findings may include candidiasis, sialadenosis, generalized atrophy of the tongue papillae, taste dysfunction, salivary dysfunction, burning mouth syndrome, and delayed wound healing. These findings highlight the importance of regular oral examinations for patients with diabetes. In addition, patients with diabetes may experience dry mouth, which can increase the risk of tooth decay and other oral health problems. Regular dental check-ups and good oral hygiene practices can help prevent these complications.

Thrombocytopenia and Oral Health

Thrombocytopenia may be detected due to oral lesion development. Minor trauma to the oral mucosa can cause hemorrhagic lesions, including petechiae, purpura, ecchymosis, hemorrhagic bullae, and hematoma formation. Gingival bleeding may result from minor trauma or occur spontaneously. In some cases, thrombocytopenia may be a symptom of an underlying condition, such as leukemia or lymphoma. A thorough medical history and physical examination are essential for determining the cause of thrombocytopenia.

Leukemia and Oral Health

Oral manifestations of leukemia may include mucosal bleeding, ulceration, petechiae, and diffuse or localized gingival enlargement. Gingival infiltration by leukemic cells can occur, leading to boggy and hemorrhagic gingiva. Impaired immune function can lead to secondary oral complications, such as candidiasis and periodontal bone loss. Patients with leukemia may also experience dry mouth, which can increase the risk of tooth decay and other oral health problems. Regular dental check-ups and good oral hygiene practices can help prevent these complications.

Dental Erosion and Gastroesophageal Reflux Disease

Gastroesophageal reflux disease can cause oral findings, including water brash, xerostomia, burning sensation, halitosis, palatal erythema, and dental erosion. The erosion pattern tends to favor the occlusal surfaces of the mandibular posterior teeth and the lingual surfaces of the maxillary anterior teeth. Affected teeth may exhibit worn, shiny enamel and become sensitive to temperature changes. Dental erosion is irreversible and may require dental restorative treatment depending on severity; other oral findings usually will resolve with medical management of gastroesophageal reflux disease.

Bulimia and Anorexia

Oral and Head and Neck Findings

Bulimia and anorexia can have significant oral and head and neck manifestations. Dental erosion, xerostomia, increased risk of caries, and sialadenitis are common findings. Vomiting exposes teeth to acidic gastric contents, leading to enamel erosion, particularly on the lingual surfaces of the maxillary anterior teeth and, in severe cases, the buccal surfaces of the posterior mandibular teeth.

Effects of Vomiting on Oral Health

Vomiting can cause dental sensitivity to cold or sweet stimuli. Additionally, xerostomia may occur due to medication use, vomiting, or excessive exercise. Xerostomia increases the risk of tooth decay, as saliva plays a crucial role in buffering and cleansing the teeth.

Sialadenitis and Its Prevalence

Approximately 25 percent of patients with bulimia develop sialadenitis, characterized by bilateral parotid enlargement. Dental erosion is irreversible and may require dental restorative procedures. Xerostomia and sialadenitis usually resolve after normalization of nutritional status, although sialogogues may also be helpful.

Oral Manifestations Of Mucopolysaccharidosis Type VI (Maroteaux-Lamy Syndrome)

Mucopolysaccharidosis type VI, also known as Maroteaux-Lamy syndrome, is a rare autosomal recessive disorder caused by a deficiency of the enzyme arylsulfatase B. This deficiency leads to the accumulation of dermatan sulfate in tissues and its excretion in urine, resulting in a progressive multisystem disorder.

The disease has several distinct clinical features, including coarse facies, short neck, corneal opacity, macroglossia, and skeletal abnormalities. Oral manifestations are prominent and can include severe gingival hyperplasia, delayed dental eruption, malocclusions, and condylar defects.

Importance of Awareness and Early Diagnosis

It is essential to raise awareness about the clinical characteristics of mucopolysaccharidosis type VI among dentists and the general population. Early diagnosis and management can significantly improve the quality of life for patients with this rare and debilitating disorder.

Oral Manifestations of Lipoid Proteinosis

Lipoid proteinosis (LP) is a rare genetic disorder characterized by the accumulation of abnormal protein deposits in various tissues, including the oral cavity.

The oral manifestations of LP can vary, but common findings include:

Restricted tongue movement due to the deposition of hyaline material in the tongue and surrounding tissues. Labial and buccal mucosal involvement, leading to thickening and scarring of the mucosa. Gingival enlargement, which can be generalized or localized.

Unusual Oral Features

In some cases, LP can present with unusual oral features, such as:

An unusual pattern of gingival enlargement, which can be a distinctive feature of LP. Other oral lesions, such as nodules or plaques, which can occur on the tongue, lips, or buccal mucosa.

Importance of Early Detection

Early detection and diagnosis of LP by dental practitioners are crucial for expediting proper multidisciplinary care and reducing patient morbidity and mortality.

Oral Manifestations of Jaundice

Oral manifestations of systemic diseases can provide crucial clues for diagnosis and treatment. Jaundice, for instance, can cause a yellowish discoloration of the oral tissues, particularly on the lingual frenulum and soft palate, due to elevated bilirubin levels. Similarly, excessive intake of vitamin A can lead to pigmentation of the soft palate, which may be mistaken for jaundice. Various systemic diseases, such as liver and kidney diseases, can also manifest orally, emphasizing the importance of a thorough medical history in dental diagnosis. Systemic diseases can cause changes in the oral tissues, including discoloration, ulceration, and enlargement of the gums and other tissues. Furthermore, certain systemic diseases, such as diabetes and rheumatoid arthritis, can increase the risk of dental caries, periodontal disease, and other oral health issues. Therefore, it is essential for dental professionals to be aware of the oral manifestations of systemic diseases and to work closely with medical professionals to provide comprehensive care for patients.

Oral Manifestations of Amyloidosis

Oral manifestations of amyloidosis typically occur secondary to systemic amyloidosis, with the tongue and buccal mucosa being the most commonly affected sites, and these manifestations can provide crucial clues for diagnosis and treatment. Macroglossia, characterized by an enlarged and hardened tongue, is a common presentation, and amyloid deposits can cause thickening and stiffness of the buccal mucosa, leading to difficulties with speech, swallowing, and chewing. Additionally, patients may exhibit enlarged and firm lymph nodes, petechiae or ecchymosis, xerostomia, and changes in taste, which can significantly impact their quality of life. Histopathological analysis using Congo red staining is essential for diagnosing oral amyloidosis, as it reveals characteristic green-yellow birefringence under polarized light, and immunohistochemical studies can help identify the specific type of amyloid protein. Early recognition of oral manifestations is crucial for prompt diagnosis and treatment of systemic amyloidosis, and dental professionals play a vital role in identifying these manifestations and referring patients for further evaluation and care. Furthermore, a multidisciplinary approach involving dental, medical, and other healthcare professionals is necessary to provide comprehensive care and management for patients with oral amyloidosis.

Oral Manifestation Of Vitamin D

Vitamin D plays a crucial role in tooth mineralization, and its deficiency can lead to enamel defects, dental caries, and periodontitis. The mechanisms by which vitamin D deficiency affects tooth mineralization involve hypocalcemia, hypophosphatemia, and secondary hyperparathyroidism, ultimately leading to impaired mineralization of teeth. Vitamin D also regulates immune responses, and its deficiency has been linked to increased susceptibility to infections, including dental caries. Furthermore, vitamin D receptors are present in periodontal tissues, and vitamin D has been shown to inhibit the expression of inflammatory mediators, decrease gingival inflammation, and promote bone formation. Vitamin D deficiency has also been associated with orthodontic treatment outcomes, with slower tooth movement observed in individuals with vitamin D deficiency. Additionally, vitamin D may play a role in the prevention and treatment of oral cancers, and its deficiency has been linked to an increased risk of squamous cell carcinoma of the esophagus, oral, and pharyngeal cancers. Lastly, the relationship between vitamin D deficiency and osteonecrosis of the jaw remains unclear and requires further investigation.

Oral manifestation in Growth Hormone

Hypopituitarism

1. Pituitary Dwarfism

Pituitary dwarfism is a condition characterized by short stature and low growth velocity. One of the most striking features of this condition is the underdevelopment of the maxilla and mandible, resulting in a smaller face.

The dental arches in individuals with pituitary dwarfism are also smaller than usual, leading to malocclusion. This means that the teeth do not fit properly in the jaw, causing problems with biting and chewing. Additionally, the development of permanent teeth is delayed, with teeth erupting later than usual. Another common feature of pituitary dwarfism is the delayed shedding of deciduous teeth. This can lead to a situation where permanent teeth are trying to erupt, but the deciduous teeth are still present, causing crowding and other problems. Furthermore, the roots of permanent teeth may also develop more slowly than usual. In some cases, individuals with pituitary dwarfism may be missing certain teeth, such as wisdom teeth. Rare dental anomalies, such as agenesis of the upper central incisor and amelogenesis imperfecta, have also been reported. Amelogenesis imperfecta is a condition where the enamel of the teeth does not develop properly, leading to teeth that are discolored, pitted, or otherwise abnormal. In contrast, adult hypopituitarism presents with distinct craniofacial changes, including thin eyebrows, loss of eyelashes, and sharp features. However, no specific dental changes have been described in this condition. Overall, the dental and craniofacial features of pituitary dwarfism are distinct and can have significant implications for oral health and function.

Hyperpituitarism

1. Gigantism

Gigantism, a condition caused by excess growth hormone in children, can lead to several oral manifestations. One common feature is a prognathic mandible, where the lower jaw protrudes beyond the upper jaw. This can cause dental malocclusion, making it difficult to bite and chew food properly.

Another oral manifestation of gigantism is dental crowding and spacing issues. The teeth may be spaced farther apart than usual, or they may be crowded together due to the abnormal jaw growth. This can lead to difficulties with oral hygiene and increase the risk of tooth decay and gum disease.

Intraoral radiographs may reveal hypercementosis, an abnormal thickening of the cementum layer surrounding the roots of the teeth. This can cause tooth mobility and increase the risk of tooth loss.

Regular dental check-ups and monitoring are essential to address these oral manifestations and prevent potential complications.

The oral manifestations of gigantism can have a significant impact on a child's quality of life, affecting their ability to eat, speak, and maintain good oral hygiene. Early diagnosis and treatment of gigantism are crucial to managing these oral manifestations and preventing long-term complications.

2. Acromegaly

Acromegaly, a rare systemic disease, causes various oral manifestations due to excessive growth hormone production. One of the most notable oral changes is the alteration in occlusion, which can bring the patient to the dentist's attention first.

The craniofacial changes associated with acromegaly are characteristic and involve facial skin, extraoral and intraoral soft and hard tissues. Thickening of the skin is due to deposition of glycosaminoglycan and increased collagen synthesis by the connective tissue. The lips become thick and prominent, and the facial features become coarse.

Intraoral changes are also common in acromegaly. These may include spacing between teeth, malocclusion, apertognathia (open bite), and macroglossia (enlarged tongue). The enlarged tongue can cause buccal tipping of teeth, leading to further occlusal disturbances.

Other intraoral changes associated with acromegaly include hypertrophy of palatal tissues, which can potentially cause sleep apnea. The dental radiographs may reveal large pulp chambers (taurodontism) and excessive deposition of cementum on the roots.

The oral manifestations of acromegaly can significantly impact a patient's quality of life, affecting their ability to eat, speak, and maintain good oral hygiene. Early diagnosis and treatment of acromegaly are crucial to managing these oral manifestations and preventing complications.

Dental professionals play a vital role in diagnosing and managing the oral manifestations of acromegaly. A comprehensive oral examination, including radiographs and occlusal analysis, is essential to identify the oral changes associated with this disease.

Oral Manifestation of Plummer - vision syndrome

Plummer-Vinson syndrome (PVS) is a rare disorder characterized by iron deficiency anemia, dysphagia, and esophageal webs. The oral manifestations of PVS are diverse and can be the first signs of the disease.

The oral changes associated with PVS include atrophic glossitis, angular stomatitis, dryness, and atrophic changes in the conjunctiva. The tongue may appear pale, smooth, and atrophic, with loss of filiform papillae. Angular stomatitis, characterized by fissures and ulcers at the corners of the mouth, is another common oral manifestation.

Other oral changes that may be seen in PVS include stomatitis, recurrent aphthous stomatitis, pale oral mucosa, oral candidiasis, erythematous mucositis, and burning mouth syndrome. The oral mucosa may appear thin, fragile, and prone to bleeding.

The diagnosis of PVS relies on clinical history, hematological investigations, and radiographic examination. Iron deficiency anemia is a key feature of PVS, and hematological investigations may reveal microcytic hypochromic anemia.

Dental professionals play a crucial role in diagnosing and managing PVS. Early diagnosis is essential to prevent complications, such as esophageal cancer. Regular follow-up and monitoring are necessary to ensure that the patient receives appropriate treatment and to detect any potential malignancies.

In conclusion, PVS is a rare disorder with diverse oral manifestations. Dental professionals should be familiar with the oral changes associated with PVS and should suspect the disease in patients presenting with iron deficiency anemia, dysphagia, and esophageal webs. Early diagnosis and management are crucial to preventing complications and improving patient outcomes.

Oral Manifestation of Thyroid Disorders

1. Hypothyroidism

Hypothyroidism in children, also known as cretinism, is characterized by distinct oral manifestations. These include thick lips, a large protruding tongue (macroglossia), malocclusion, and delayed eruption of teeth.

The thickening of the lips and macroglossia in hypothyroidism is due to the accumulation of subcutaneous mucopolysaccharides, specifically glycosaminoglycans. This accumulation occurs because of a decrease in the degradation of these substances.

Severe hypothyroidism can have long-term effects on craniofacial growth and dental development. One notable consequence is the impaction of the mandibular second molars. This impaction is thought to result from a dissociation of ramus growth and a failure of normal resorption of the internal aspect of the ramus.

Common oral findings in hypothyroidism include macroglossia, dysgeusia (altered taste), delayed eruption of teeth, poor periodontal health, altered tooth morphology, and delayed wound healing.

Dentists treating patients with a history of thyroid disease should obtain an accurate diagnosis and etiology of the thyroid disorder. Additionally, they should be aware of any past medical complications and current medical therapy to provide optimal care.

2. Hyperthyroidism

Hyperthyroidism, also known as thyrotoxicosis, has several oral manifestations. Individuals with this condition are more susceptible to dental caries and periodontal disease. Additionally, they may experience enlargement of extraglandular thyroid tissue, primarily on the lateral posterior tongue.

Other oral manifestations of hyperthyroidism include maxillary or mandibular osteoporosis, accelerated dental eruption, and burning mouth syndrome. Burning mouth syndrome is a condition characterized by a burning pain in the mouth, while Sjogren's syndrome causes dry mouth. Both conditions are more common in individuals with thyroid disease.

On extra-oral examination, patients with Graves' disease may present with an enlarged thyroid gland, which may be palpable. The gland may be more noticeable when the patient is in a supine position in the dental chair. In severe cases, the thyroid enlargement may be visible even when the patient is sitting upright or standing.

Oral Manifestation Of Parathyroid Hormone

The oral manifestations of hyperparathyroidism and hypoparathyroidism are diverse and can have a significant impact on the patient's quality of life. Hyperparathyroidism is characterized by an overproduction of parathyroid hormone, leading to hypercalcemia and hypophosphatemia, which can cause a range of oral manifestations including brown tumor, a characteristic lesion that develops in the mandible, decrease in bone density leading to teeth mobility and drifting, sensitive teeth due to demineralization of dental hard tissues, soft tissue calcifications, dental abnormalities such as enamel hypoplasia, dental caries, and altered dental eruption, and obliteration of pulp chamber by pulp stone, which can lead to pulp necrosis. On the other hand, hypoparathyroidism is characterized by an underproduction of parathyroid hormone, leading to hypocalcemia and hyperphosphatemia, which can cause oral manifestations such as enamel hypoplasia, delayed dental eruption, oral chronic candidiasis, tongue or lips paresthesia, and facial twitching. Early

diagnosis and treatment of these conditions are essential to prevent complications and improve the patient's quality of life. Dental professionals play a crucial role in diagnosing and managing these conditions, and a thorough understanding of the oral manifestations of hyperparathyroidism and hypoparathyroidism is essential for providing optimal care.

Oral Manifestation of Addison's Diseases

Addison's disease (AD) is a rare endocrine disorder characterized by primary adrenal insufficiency. One of the common oral manifestations of AD is mucosal hyperpigmentation, which can occur in the buccal area, palatine arches, lips, gums, and tongue. This hyperpigmentation is caused by the increased levels of adrenocorticotrophic hormone (ACTH), which stimulates the production of melanin.

The oral hyperpigmentation in AD can vary in color, ranging from dark brown to black, and can be patchy or diffuse. In some cases, the pigmentation may not regress even after glucocorticoid replacement therapy. The histological examination of these lesions reveals a high concentration of reactive melanocytes due to hormonal stimulation.

Other endocrine conditions, such as Cushing's disease and Graves' disease, can also cause mucosal hyperpigmentation, making it essential to differentiate these conditions from AD. Non-endocrine conditions, such as smoker's melanosis and Laugier-Hunziker syndrome, can also cause oral hyperpigmentation.

Tongue analysis has gained attention in recent studies, particularly in autoimmune conditions. In AD, tongue discoloration can be an early sign of adrenal involvement. The pigmented lingual patches can be single or multiple and may be accompanied by similar lesions on the lips and palatine arches.

In addition to hormonal imbalance-related pigmentation, fungiform pigmented papillae have been reported in AD individuals. Dermoscopy examination can be useful in differentiating fungal etiology, but it is not a popular method of investigation in dental and oral daily practice.

In conclusion, oral manifestations, particularly mucosal hyperpigmentation and tongue anomalies, are essential clues in the diagnosis of Addison's disease. Early recognition and adequate investigation of these oral lesions can improve the prognosis and quality of life of patients with AD.

Oral Manifestation of Cushing's Syndrome

Cushing's syndrome is a rare endocrine disorder characterized by excessive levels of glucocorticoids in the body. This condition can cause a wide range of symptoms, including various oral manifestations. One of the common oral manifestations of Cushing's syndrome is jawbone loss, which can lead to tooth loss. This is because glucocorticoid excess can lead to osteoporosis, increasing the risk of jawbone loss.

Periodontal diseases are another common oral manifestation of Cushing's syndrome. Glucocorticoid excess can increase the risk of periodontal diseases, including gingivitis and periodontitis. Periodontal diseases are characterized by inflammation and infection of the gums and bone that support the teeth. If left untreated, periodontal diseases can lead to tooth loss and other complications.

Oral infections such as candidiasis can also occur due to the immunocompromised state caused by glucocorticoid excess. Candidiasis is a fungal infection that can cause white patches on the tongue and mucous membranes. It can also cause redness, swelling, and difficulty swallowing.

Poor wound healing is also a common oral manifestation of Cushing's syndrome. Glucocorticoid excess can impair wound healing, including oral wounds. This can lead to delayed recovery from oral surgeries or injuries. Furthermore, mucosal changes such as thinning and fragility of the mucosa can occur due to glucocorticoid excess.

Other oral manifestations of Cushing's syndrome include dental caries, gingival enlargement, and an increased risk of osteoporosis, which can lead to jawbone loss and tooth loss. Systemic manifestations such as diabetes mellitus, obesity, and osteoporosis can also affect oral health.

Diabetes mellitus, for example, can increase the risk of oral infections and periodontal diseases. Obesity can also increase the risk of periodontal diseases and other oral health problems. Osteoporosis, on the other hand, can increase the risk of jawbone loss and tooth loss.

Regular dental check-ups and good oral hygiene practices are essential for patients with Cushing's syndrome. Early detection and treatment of oral manifestations can help prevent further complications and improve the patient's quality of life. Patients with Cushing's syndrome should also work closely with their endocrinologist to manage their condition and prevent oral and systemic complications.

In addition to regular dental check-ups and good oral hygiene practices, patients with Cushing's syndrome may also benefit from other preventive measures. These may include fluoride therapy to prevent dental caries, antibacterial mouthwashes to prevent oral infections, and regular cleaning and polishing of dentures to prevent denture stomatitis.

In conclusion, Cushing's syndrome can cause a wide range of oral manifestations, including jawbone loss, periodontal diseases, oral infections, poor wound healing, and mucosal changes. Regular dental check-ups and good oral hygiene practices are essential for patients with Cushing's syndrome. Early detection and treatment of oral manifestations can help prevent further complications and improve the patient's quality of life.

Oral Manifestation of Hypophosphatasia

Hypophosphatasia (HPP) is a rare inherited disorder that affects the development of bones and teeth, first identified by J. C. Rathbun in 1948.

HPP is caused by genetic mutations that disrupt the production of an enzyme called tissue-nonspecific alkaline phosphatase (TNSALP), leading to impaired bone mineralization.

The symptoms of HPP vary widely and can range from mild to severe, including early loss of primary teeth, softening of bones, and other skeletal abnormalities.

Dental problems associated with HPP include premature loss of primary teeth, abnormal tooth development, and increased risk of tooth decay.

Effective management of HPP requires a multidisciplinary approach, including guidance on oral hygiene, regular dental check-ups, and the use of dental prosthetics to replace lost teeth.

Recently introduced enzyme replacement therapy (ERT) has significantly improved the outlook for individuals with severe HPP, enhancing bone mineralization and reducing mortality rates.

Despite advances in treatment, individuals with severe HPP may still experience dental complications, including tooth decay, gum disease, and abnormal tooth development.

Oral Manifestations Of pyostomatitis Vegetans

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Oral manifestations of Uremic Stomatitis

Chronic renal failure (CRF) is a progressive clinical condition that affects the kidneys' homeostatic and excretory functions. Oral manifestations of CRF include uraemic stomatitis, xerostomia, enamel hypoplasia, osteodystrophy of the maxillary bone, halitosis, increased tartar formation, and erosions on the lingual surfaces of the teeth.

Uraemic stomatitis is an uncommon complication of uraemia, characterized by the accumulation of nitrogenous waste products in the blood. It presents as erythematous, ulcerative, hemorrhagic, or hyperkeratotic lesions in the oral cavity.

Xerostomia is a symptom of oral dryness that may be distinct from salivary gland hypofunction. Patients with CRF often report xerostomia, which can lead to glossitis, cervical caries, cracked lips, candidiasis, and pale, corrugated, and dry buccal mucosa.

Enamel hypoplasia is a condition characterized by quantitative or qualitative enamel defects. In patients with CRF, teeth may present with yellow-brown discolorations, rough or smooth surfaces, and microdontia.

Osteodystrophy of the maxillary bone is a bone pathology that occurs as a side effect of alterations in mineral metabolism in patients with CRF. It involves bone demineralization, loss of trabeculae, and thinning of the cortex.

Halitosis is a common complaint in patients with CRF, caused by the production of volatile sulfur compounds (VSCs) by Gram-negative anaerobic oral bacteria. Increased tartar formation is also observed in patients with CRF, due to the high levels of urea nitrogen in the blood and salivary production.

Erosions on the lingual surfaces of the teeth are mainly present on the lingual surface of the teeth, presenting as enamel abrasions, and may be considered consequences of reflux and frequent vomiting episodes caused by electrolyte imbalances in uraemic patients.

Dental protocols in uremic patients require special considerations, including referral to a renal specialist, collaboration between the specialist and the dentist, and careful monitoring of periodontal status. Prior to any invasive dental treatment, a complete blood count and coagulation tests must be requested and evaluated by the dentist.

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