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Research Article

ORAL MANIFESTATIONS OF ENDOCRINE DISORDERS

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ABSTRACT

The endocrine system is made up of several endocrine glands that are located in different parts of the human body. Endocrine glands are sometimes called —ductless glands because they secrete their products directly into the blood or into the interstitial space. Endocrine disorders, apart from diabetes mellitus and thyroid diseases are uncommon. They are rare causes of oral disease, but occasionally oral changes can lead to their diagnosis. Patients with Addison's disease, diabetes mellitus and thyrotoxicosis, in particular, may also need special care for dental surgery. This article reviews the important oral manifestations of endocrine disorders which help dental surgeons to diagnose and treat the patients appropriately.

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INTRODUCTION

The endocrine system is made up of several endocrine glands that are located in different parts of the human body. Unlike other body systems, the endocrine system does not consist of organs that are anatomically connected. Instead, the endocrine glands communicate with each other through chemicals called hormones.¹ Hormones are made and stored in the endocrine glands and are released from these glands to exert their effects on neighboring or distant target organs. Endocrine glands are sometimes called —ductless glands because they secrete their products directly into the blood or into the interstitial space.

Endocrine disorders, apart from diabetes mellitus and thyroid disease are uncommon. They are rare causes of oral disease but occasionally, oral changes can lead to their diagnosis. Patients with Addison's disease, diabetes mellitus and thyrotoxicosis in particular, may also need special care for dental surgery.

This is especially important in dentistry because many of the patients attending the dental clinics face stressful situations. Awareness and therefore, necessary regarding the risks and difficulties that may arise during the dental management of patients with endocrine disorders. This review will be discussing the various endocrine disorders and their oral manifestations.

Objectives

The objectives of this article was as follows

1. To review the various oral and perioral manifestations of endocrine disorders.

2. To list the important oral and perioral features of endocrines disorders

MATERIALS AND METHODS

Literatures were searched from the library and renowned database like Pubmed, Medline, scribd etc. Following words were used for the search. “oral manifestation of thyroid disorders, parathyroid disorders, pituitary disorders, diabetes mellitus, Addison’s disease, Cushing’s syndrome, gonads”, A total of 21 articles were reviewed including original studies, case studies, reviews and textbooks.

RESULTS AND DISCUSSION

Disorders of Pituitary gland

Hyperpituitarism

In edentulous patients enlargement of the alveolus may cause discomfort while wearing complete dentures. Teeth in gigantism are proportional to the size of the jaw and the rest of the body and root may be longer than normal.²

The teeth become spaced partly because of enlargement of the tongue and partly because upper teeth are situated on the inner aspect of the lower dental arch. The prominent growth of mandibular condyles will be present. Overgrowth of mandible may lead to prognathism. Mandible may be extraordinary in proportions creating a major discrepancy between the upper and lower jaws and results in a pronounced class III malocclusion

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Palatal vault is usually flattened and the tongue increases in size and may cause crenations on its lateral border. Soft tissue growth may produce uniform macroglossia in patients. Lips are found thick.

Hypopituitarism

Marked failure of development of maxilla and mandible with the lack of condylar growth and short ramus are seen. This can lead to severe malocclusion and crowding of the teeth.

Two important hormones are secreted by this gland- the somatotrophic and thyrotrophic hormones which are responsible for the normal eruption of teeth and the alveolar bone growth.

Hypopituitarism may hamper normal tooth eruption. Dental arches will be smaller than normal. Clinical dental crown may appear smaller than normal.^{3,4}

Disorders of Thyroid gland

Hyperthyroidism

The accelerated dental eruption in children is seen in this condition. Maxillary or mandibular osteoporosis, high index of caries and periodontal diseases, burning sensation of tongue, incidence of Sjogren's syndrome and systemic lupus erythematosus are also reported.⁵

Hypothyroidism

In juvenile patients, dysgeusia is a common finding in a hypothyroid patient. Patients report foul taste or metallic taste. Lips will be puffy, thickened and protruding.

In adults with Myxedema, macroglossia and enlarged lips are seen as a result of the deposition of water and protein.

Facial swelling of non-pitting type may be seen. Mandible will be underdeveloped. There is greater tendency to periodontal diseases.^{6,7}

Disorders of Parathyroid gland

Hyperparathyroidism

The brown tumor may develop peripherally or centrally. This can be presented as swelling which may appear intraorally or extraorally.^{8,9}

Gradual loosening, drifting and loss of teeth are features of hyperparathyroidism. Widening of tooth pulp chamber, malocclusions, loss of bone density are the other features seen in these patients. Soft tissue calcifications may be also seen.

Hypoparathyroidism

Dental abnormalities like enamel hypoplasia, widened pulp chambers, dental pulp calcifications, shortened tooth roots, hypodontia etc are the common features in hypoparathyroid patients. Delay or cessation of dental development, mandibular tori and fungal infections like chronic candidiasis may be present. paresthesia of the tongue or lips are also reported.¹⁰

A sharp tap over the facial nerve in front of the ear which causes muscle twitching of facial muscle around the mouth can be noticed. This is called as Chvostek sign.

Disorders of adrenal gland

Addison's Disease

Pale brown or deep chocolate pigmentation of the oral mucosa, spreading over the buccal mucosa from the angle of the mouth and/or developing on the gingiva, tongue and lips may be first evidence of disease.^{11,12}

Cushing's Syndrome

In children, growth and development including skeletal and dental age may be retarded.^{12,13}

Reduced bone density may lead to pathological fractures. Loss of lamina dura is also seen.

Disorders of Pancreas

Diabetes Mellitus (DM)

DM has a great influence in periodontal diseases. It leads to the onset and progression of periodontal diseases.¹⁴

DM does not cause periodontal disease directly, but it alters the response of the periodontal lesion to local irritants, fastening bone loss and retarding post surgical healing of the periodontal lesions.^{15,16}

Gingival fluid in DM patients has more glucose level which favors the growth of microflora.

Patient may exhibit a fulminating Periodontitis with periodontal abscess formation.¹⁷

Insulin dependent diabetic children tend to have more destruction around the first molars and incisors than elsewhere. Abnormal blood sugar level in diabetes is related to the occurrence of median rhomboidal glossitis.^{18,19}

Uncontrolled DM may cause oral candidiasis. It is a fungal infection which occurs due to the encouragement of local multiplication of *Candida albicans*.

Burning mouth and reduced salivation (Xerostomia) is a common finding. Neuropathy of trigeminal nerve has been reported in advanced cases of DM. Non-inflammatory swelling of parotid gland (sialadenosis) is a feature of DM.

Diabetic Insipidus

Infiltrative lesions of neurohypophysis as a result of langerhans cell histiocytes have implication for dental treatment.³⁴ Osseous infiltrates are typically seen in skull and jaws. In addition to jaw lesions, one might observe loosening of teeth.

Disorders of Gonads

Hypergonadism

Bilateral brown facial pigmentations are seen in pregnant women, which disappears after delivery. Susceptibility to periodontal diseases and gingival hyperplasias are common.²¹

Hypogonadism

Following are the features seen in hypogonadism. Decreased salivary flow, dental caries, unpleasant metallic taste, oral candidiasis, atrophy of gingival tissues, the higher tendency for plaque accumulation, increased risk of gingivitis and Periodontitis rapid resorption of edentulous ridge.

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