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Role of Oral Physician in the Diagnosis of Occult Disease

Vibhuti Kaul[1]* and Rudra Kaul[2]

[1]Department of Oral Medicine and Radiology, Government Dental College, Srinagar, India
[2]Department of Conservative Dentistry and Endodontics, Indira Gandhi Government Dental College, Jammu, India

Abstract

The oral cavity is like a natural speculum that lets one peek into what lurks underneath the integument. It is a portal to the inside of the body. Impossible it is to fathom a healthy mouth in a diseased body. It is frequently involved in conditions affecting the skin or other multiorgan diseases. Oral involvement precedes the appearance of other symptoms or lesions at other locations. This review discusses how this strategic location offers a valuable role in diagnosing occult diseases to the oral physician.

Keywords: Occult disease; Oral physician; Systemic diseases

Introduction

Thousands of years ago the ancient Indians were already aware of and documented the importance of the oral cavity as an integral part of human body. Existence of scriptures such as the Shalakya tantra and Ayurveda further lay credibility to this gospel [1]. Fast forwarding the timeline to about a century back, Sir William Osler, the Father of Modern Medicine [2] famously quoted:

"Failure to examine the throat is a glaring sin of omission" [3]

Digging deep to the bottom of things requires beginning at the surface. What was Sir Osler trying to convey to the future physicians through this aphorism of his? One of the pioneers of our noble profession, he was a visionary, a keen observer who through his knowledge, observation and documentation identified innumerable diseases and clinical signs. Within his simple statement lays a dogma encompassing exabytes of data which all boils down to the fact that "the oral cavity is in fact the mirror of the body".

The oral cavity is like a natural speculum that lets one peek into what lurks underneath the integument. It is a portal to the inside of the body. Impossible it is to fathom a healthy mouth in a diseased body. Like an 'oracle' who tells fortune, the 'oral cavity' too reflects the inner homeostasis whether in harmony or deranged. The stomatognathic system represents a principal anatomical site where a multitude of critical physiologic functions intersect. Digestion, respiration, mastication, gestation, oration- to name a few. The oral cavity is made up of derivatives of all the three germ layers. Furthermore, it is unique because of the presence of hard tissues surrounded by mucosa. Therefore it may be agreed upon that this strategic location offers a vantage point to the vigilante in looking for signs which may apprise one against an existing disease or those which herald a new disease process.

The word "occult" conjures up an image of diabolical sorcery to the layman. Derived in the late 15th century from Latin *occultare* 'secrete', frequentative of *occulere* 'conceal', based on *celare* 'to hide', the Dorland's medical dictionary define occult /oc·cult/ (ŏ-kult´) as being obscure or hidden from view. Occult *disease* is defined as one not accompanied by readily discernible signs or symptoms [4]. The mouth being square one on the gameboard of most physiologic process is not excluded from manifestations of conditions affecting rest of the body. In 1999, Nash bluntly pointed out that there is no reason to believe that the first twenty centimeters of the alimentary canal is or should be treated conceptually or practically as different from the rest of the human body [5]. Oral health is intimately related to general health and well-being.

Moses Maimonides, the 12th century physician made a memorable statement that "The physician should not treat the disease but the patient who is suffering from it". This citation lends further credibility to that fact that a healer whether medical, dental or paramedical should follow a holistic approach in managing a diseased patient. An oral physician is identified by the medical community as a dentist who is adequately trained in the field of Medicine, Radiology and Applied Oral pathology in order to manage variety of stomatological diseases that fall outside the scope of routine dentistry [6]. He/she is expected to have an in depth knowledge of the vast ocean of stomatological diseases which otherwise would fall in the twilight zone between Medicine and Dentistry. It is through this very knowledge that the oral physician is empowered to perceive occult diseases, thereby distinguishing him/her from the rest of the allied specialists.

The oral cavity is frequently involved in conditions affecting the skin or other multiorgan diseases. Oral involvement precedes the appearance of other symptoms or lesions at other locations. When discussing the role of an oral physician in the diagnoses of occult diseases, the words "occult diseases" clearly become an umbrella term requiring disambiguation. In order to bypass the unnecessary tautology of presenting a disorganized list of systemic diseases with oral manifestations as primary/early signs and symptoms, the authors wish to deal with each system as a separate entity in order to be more lucid.

Oral cancer

In the vernacular, what could be more "occult" a disease than oral cancer. On 23rd September 1939, the world lost one of the pioneers of psychoanalysis to oral cancer. Despite mammoth efforts over a course of 30 operations, the cancer progressed [7]. When he could no longer endure the pain, he pleaded for euthanasia [8]. Today, Sigmund Freud

***Corresponding author:** Vibhuti Kaul, Department of Oral Medicine and Radiology, Government Dental College, Bikram Nagar, Sarwal, Jammu-180005, India, Tel: +91-9697503051; E-mail: kaulvibhuti@yahoo.com

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would have been treated differently. But despite monumental advances in treatment modalities, cancer survival rate has not improved significantly today either. Oral cancer is the 11th most common cancer in the world [9]. More than 90% of the Oral cancers are Squamous Cell Carcinoma (OSCC), which arises from the epithelial lining of the oral cavity. For the past three decades, the five-year survival rate of oral cancer has been improved some but remains in the range of 53% to 60%, which is one of the lowest five-year survival rates of all the major cancer types [9,10]. Despite the fact that oral cavity is easily accessible for direct visual examination, most OSCC is not diagnosed until an advanced stage, which has been suggested to be one of the major reasons for a minimally improved survival rate.

In the only randomized controlled oral cancer screening trial conducted in India and involving over 130,000 individuals, it was concluded that visual examination was useful as a method of screening for oral cancer only in high risk cases like chronic smokers or alcoholics [11]. This finding clearly highlights the dire need to train more oral physicians in detecting oral cancer.

Various adjuncts such as vital tissue staining with tolonium chloride (toluidine blue), brush cytology and visualization adjuncts based on tissue reflectance/auto-fluorescence or both (Identafi 3000) may be used. The field of salivary diagnostics and confocal microscopy are further being explored with newer discoveries being made every day [12]. However; visual examination remains the poor man's best bet for detection and survival of such cases in developing countries. It is the oral physician who eyes suspicious premalignant lesions, recognizing the mouth as a fertile field where macroscopically undetectable but genetically altered cells could be on the brink of causing a life-threatening disease.

Gastrointestinal diseases

Oral cavity may be taken as the gatekeeper of the GI tract. Various GI diseases may present first or concurrently with oral lesions

Crohn disease

Crohn disease is an idiopathic disorder that can involve the entire GI tract with transmural inflammation, noncaseating granulomas, and fissures. Although more common in the West, an oral physician must be on the lookout for such cases. Intraoral involvement in Crohn disease occurs in 8-29% of patients and may precede intestinal involvement. Oral manifestations can prove crucial in diagnosis and usually parallel the intestinal disease course [13]. Orofacial symptoms of Crohn disease include (1) diffuse labial, gingival, or mucosal swelling; (2) cobblestoning of the buccal mucosa and gingiva; (3) aphthous ulcers; (4) mucosal tags; and (5) angular cheilitis.

Ulcerative colitis

Ulcerative colitis is an inflammatory condition restricted to the colon and is limited to the mucosa and submucosa, sparing the muscularis. Lesions may manifest in the oral cavity as aphthous ulcerations or superficial hemorrhagic ulcers which coincide with exacerbations of the colonic disease. Aphthous ulcers or angular stomatitis occurs in as many as 5-10% of patients [14].

Celiac disease

This is a chronic intestinal disease caused by intolerance to gluten associated with poor digestion and malabsorption. Enamel hypoplasia is the most common manifestation in untreated celiac children and adolescents. The main oral signs associated with celiac disease are angular cheilitis, glossitis, depapillated tongue and dry mouth. Increased awareness of this disorder, along with careful questioning about other symptoms, family history, serologic screening tests (Ig A-tissue transglutaminase) and appropriate referral can help establish a timely diagnosis and prevent complications of untreated celiac disease. An oral physician may diagnose celiac disease simply from a smile! [15].

Liver disease

Because they are thinner, the mucosae on the soft palate and in the sublingual region are often first to reveal a yellow hue. With time, the yellow changes can be visible at any mucosal site. Furthermore, a well attuned oral physician may discover a covert case of hepatitis C in oral lichen planus patients.

Hematological diseases

The mouth may be the site of the earliest signs of blood dyscrasias. The manifestations may include hemorrhage, infections, and cellular infiltration of tissues. Gingival bleeding or accumulation of blood in tissues may occur secondary to thrombocytopenia. Pallor of the oral mucosa, loss of lingual papillae and nonspecific complaints including pain and burning sensation may occur secondary to anemia.

The acute leukemias tend to produce more obvious oral manifestations, characteristically the diffuse gingival hypertrophy. Oral complications of leukemia frequently include gingival hypertrophy, petechiae, ecchymosis, mucosal ulcers, and hemorrhage. Less frequently, mental nerve neuropathy, called "numb chin syndrome," may be the presenting complaint [16].

Langerhans cell histiocytosis has replaced the term histiocytosis X, a condition of unknown etiology and pathogenesis characterized by abnormal proliferation of histiocytes and eosinophils. Oral swellings or ulcerations resulting from mandibular or maxillary bone involvement [17] are common. Oral ulcerations may develop on the gingiva, palate, and floor of the mouth, along with a necrotizing gingivitis. Oral lesions may occur without underlying bone destruction. In these rare cases, ulceration of the palate or gingiva may be the *primary oral sign*. Solitary oral lesions may be part of a multisystem disease, and oral/periodontal disease may also be an early sign of disease reactivation [18].

Connective tissue disease- kawasaki disease

Kawasaki disease, or muco-cutaneous lymph node syndrome, is a vasculitis that affects medium and large arteries with a corresponding cutaneous lymph node syndrome. Children younger than 5 years are most commonly affected. Patients present acutely with edema, erythema of the hands and feet, fever, oral erythema, and rash. 4 out 5 diagnostic criteria should be met of which presence of erythema and strawberry tongue in the oral cavity is one [19].

Pulmonary disease

Wegener granulomatosis: Correct identification of the pathognomonic finding termed "strawberry gingivitis," may lead to the diagnosis prior to manifestation of other symptoms [20]. Oral and skin manifestations may correlate with disease progression, thereby providing prognostic value.

Sarcoidosis: Oral involvement in sarcoidosis usually manifests after systemic symptoms develop. In rare cases, involvement of the tongue maybe a presenting signs of the disease [21].

Multisystem condition- amyloidosis

The most common protein type deposited in the oral cavity is amyloid. The most common oral manifestation of amyloidosis is macroglossia, which occurs in 20% of patients. The enlarged tongue demonstrates lateral ridging due to teeth indentation [22].

HIV disease and AIDS

Although a number of oral and cutaneous entities have been recognized to be associated with HIV disease, no unique condition specific to it has been identified in the oral cavity. Oral candidiasis is often the first presenting sign of HIV infection, and it may occur in as many as 90% of patients infected with HIV [23]. Other such as HSV infection, hairy leukoplakia, CMV and HPV infection manifest later when the disease no longer maybe categorized as occult. It is the discretion of the oral physician which will help identify and timely manage such cases. Off-late home testing for HIV through the salivary test ORAQUICK has been made possible. It is the only oral fluid test approved for use in a health-care setting by the US FDA [24].

Cutaneous disease- malignancy- associated acanthosis nigricans

Oral manifestations are most common with MAN, but not the benign type of AN. They are present in 25-50% of patients with MAN. MAN may present with 3 other findings, which are cutaneous and oral papillomatosis, hyperkeratosis of the palms and soles, and a sudden eruption of seborrheic keratosis termed the Leser-Trelat sign. Recognition of these lesions could be vital in the early diagnosis of a potentially fatal adenocarcinoma of the GI tract [25].

Psychiatric disorders

The observant oral physician may be the first health care providers to assess the physical and oral effects of anorexia nervosa and bulimia nervosa. Self-induced vomiting may cause perimylolysis, trauma to the soft palate and pharynx. Soft tissue lesions such as angular cheilitis, candidosis, glossitis, and oral mucosal ulceration may also occur, stemming from nutritional deficiencies [16].

Metabolic and endocrine disorders

Hypofunction of the adrenal cortex, resulting in Addison's disease, may present in accumulation of brownish melanotic pigment in a general fashion, or as blotches in the oral soft tissue [16].

Others

Lesions of the oral cavity could be metastasis from distant organs such as choriocarcinoma of the testicle [26]. Paresthesia of the perioral region was eventually found to be the first manifestation of multiple sclerosis in a report of four cases [27].

Oral cavity has also been report to be a molecular mirror for lung carconigenesis [28]. Bhutani et al. [29] concluded that results in oral brushings were an effective surrogate for smoking-induced molecular changes (DNA methylation) in the proximal airways of the lung, where the brushings were taken.

Conclusion

The field of evidence-based medicine is continuously expanding and engulfing the realm of the oral physician as a prime health care provider who actively participates in recognizing and managing newer cases.

To conclude,

"For most diagnoses all that is needed is an ounce of knowledge, an ounce of intelligence and a pound of thoroughness." (Arabic proverb)

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