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REVIEW ARTICLE

CANDIDIASIS- REVIEW OF RISK FACTORS AND DIAGNOSTIC APPROACHES

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ABSTRACT

Candida is one the most common fungi species of the normal oral flora consisting more than 150 species. Although, Candida exists harmlessly in mucus membranes-It is also considered as a common opportunistic organism- when marked imbalance in the oral flora. Candida infection have high prevalence with the increasing age and is also considered as most commonly encountered oral condition. Hence, knowing its risk factors and lab investigation is very essential for a dental physician. This review article will enlighten the brief knowledge of candidiasis, its risk factors and diagnostic methods which are realistic for the basic clinical setups.

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INTRODUCTION

Fungi are free- living, eukaryotic organism- showcasing dimorphism. Candidiasis is one of the common fungal infection, affecting the mucosa bearing body cavity. Most common site is Oral and Vaginal cavity. The incidence has been more observed in the patients with increasing age.1Although the most species involved are albicans, C. glabrata, C. guillermondii, C. krusei, C. parapsilosis, C. pseudotropicalis, C. stellatoidea, C. tropicalis, 2 but the species most frequently involved is C.albicans. In literature- we have seen many articles that describes new tests and treatment- but eventually those are not used that effectively due to multiple reason- the most important inhibitor is reach of technology and cost which is quite abnoxious for a dental physician to offer and patient to bare. This review intends to bring light for physicians who can use this review to get enough knowledge about oral candidiasis and its diagnostic approach.

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Risk factors

The risk factors are mentioned in a simpler form under two titles

- Systemic factors
- local factors.

Systemic Factors

Marked reduction in immunity is one of the predisposition for candidiasis. The immunity has been hampered due to frequent use of broad spectrum antibiotics- these antibiotics lter the local oral flora creating a suitable environment for candida to proliferate. Some immunosuppressive drugs have shown higher incidence of oral candidiasis. The patho-phyisiology is by altering the oral flora, disrupting the mucosal surface and altering the character of the saliva. The other factors influence this condition is diabetes, AIDS, malignances, cushing's syndrome, HIV infections and nutritional deficiencies.

Local factors

Saliva- is the local factor that plays a key role in this condition. Impaired salivary gland function has been mentioned in the literature as a predisposing factor for Oral candidiasis. Antimicrobial proteinsnamely-sialoperoxidase, lactoferrin, lysozyme, histidine-rich polypeptides and specific anti-candida antibodies, interact with the oral mucosa and inhibit the growth of candida. Inhaled steroids have concluded to have an increase risk of oral candidiasis as it suppresses the cellular immunity of the patient. Long term dentures wearers have high predisposition to this infection. The pathophysiology of this is-production of a microenvironment that is conducive for the growth of candida in lower oxygen and lower Ph. The other reason is hygiene and fitting of denture in long term wearers- if not maintained leads to the growth of candida and hence leads to Oral candidiasis. Additional factors like oral malignancy, oral precancer and a high carbohydrate diet also predisposes the condition.

Realistic lab investigation for clinical setups

The first and foremost thing is the collection of the specimen. The following are the points mentioned which should be kept in mind.15

- The specimen should be always collected from an active site of the lesion, as the old lesions often do not contain viable organisms.
- Collection of the specimen should be under aseptic conditions with sterile devices and container.
- Sufficient specimen should be collected to avoid recollection and revisits.
- Labeling of the specimen is an important- these specimens are biohazards and shall be considered and handled with care using universal precautions.
- Specimen should be kept moist or in a transport medium with storage in a refrigerator at 4ºC. 16)
- The collection can be done using a smear or swabs in the initial site. Non- responsive may need to go for biopsy.

Smear: Smears are taken from the infected oral mucosa, rhagades and the fitting side of the denture, preferably with wooden spatulas. Smears are fixed immediately in ether/alcohol 1:1 or with spray fix. Dry preparations may be examined by Gram stain method and periodic acid Schiff (PAS) method.

Swabs: Swabs are seeded on Sabouraud's agar (25ºC or room temperature), on blood agar (35ºC), on Pagano-Levin medium (35ºC) or on Littmann's substrate (25ºC). Incubation at 25ºC is done to ensure recovery of species growing badly at 35ºC. Sabouraud's dextrose agar is frequently used as a primary culture medium. Since mixed yeast infections are seen in the oral cavity more frequently than previously thought, particularly in immunocompromised or debilitated patients, Pagano-Levin agar or Littmann's substrate, are useful supplements, because they enable distinction of yeasts on the basis of difference in colony color.

Saliva collection: This simple technique involves requesting the patient to expectorate 2 ml of mixed unstimulated saliva into a sterile, universal container, which is then vibrated for 30 seconds on a bench vibrator for optimal disaggregation.

The number of Candida expressed as CFU/ml of saliva is estimated by counting the resultant growth on Sabouraud's agar using either the spiral plating or Miles and Misra surface viable counting technique. Patients who display clinical signs of oral candidiasis usually have more than 400 CFU/mL.

Biopsy: Biopsy specimen should in addition be sent for histopathological examination when chronic hyperplastic candidosis is suspected.

Some other techniques which have shown promising result but is still not fair to be used at clinical setup due to its Complexity and cost are

- Imprint culture techniques 17
- Oral rinse techniques 20
- Paper Points
- Commercial identification kits (21)
- Physiological tests (22)
- Bio-typing
- Protein typing
- Genetic methods
- Serological tests for invasive candidiasis
    - Latex agglutination
    - Immunobloting
    - Cell Wall Components
    - Cell Wall Mannoprotein (CWMP)
    - b-(1,3)-D-glucan
    - Coelectosynersis
    - Immunoprecipitation
    - A and B immunofluorescence
    - Nonspecific Candida Antigens
    - Candida Enolase Antigen testing.
    - Detection of antibodies
    - Slide agglutination
    - Immunodiffusion
    - Phytohemagglutination

Conclusion

The sole purpose of this review is to enlighten the dental physician working at the small clinical setup- who can diagnose candidiasis with less recourses without any panic. The mentioned diagnosis and risk factors hold importance in clinical understanding.

REFERENCES

Budtz-Jorgensen, E. 1978. Clinical aspects of Candida infection in denture wearers. *J Am Dent Assoc.,* 96:474–9. (PubMed)

Cutler, J.E., Friedman, L. and Milner, K.C. 1972. Biological and chemical characteristics of toxic substances from Candida albicans. Infect Immun. 6:616–27. (PMC free article) (Pub Med).

Dangi, Y.S., Soni, M.S. and Namdeo, K.P. 2010. Oral candidiasis: A review. *Int J Pharm Pharm Sci.,* 2:36–41.

Epstein, J.B., Pearsall, N.N. and Truelove, E.L. 1981. Oral candidosis: Effects of antifungal therapy upon clinical signs and symptoms, salivary antibody, and mucosal adherence of Candida albicans. *Oral Surg Oral Med Oral Pathol.,* 51:32–6. (PubMed)

McCullough, M.J., Ross, B.C. and Reade, P.C. 1996. Candida albicans: A review of its history, taxonomy, epidemiology, virulence attributes, and methods of strain differentiation. *Int J Oral Maxillofac Surg*., 25:136–44. (PubMed)

Olsen, I. and Stenderup, A. 1990. Clinical – mycologic diagnosis of oral yeast infections. *Acta Odontol Scand*., 48:11–8. (PubMed)

Prasanna, KR. 2012. Oral candidiasis – A review. *Scholarly J Med.,* 2:6–30.

Sandven, P. 1990. Laboratory identification and sensitivity testing of yeast isolates. *Acta Odontal Scand.,* 48:27–36. (PubMed)

Silverman, S., Jr. 1990. Laboratory diagnosis of oral candidosis. In: Samaranayake LP, MacFarlane TW, editors. *Oral Candidosis*., 1st ed. Cambridge: Butterwort; pp. 213–37.

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