

A Modality in the Diagnosis and Treatment of Oral Candidiasis

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ABSTRACT

Candidiasis as an infection spread all over the oral cavity finds the appropriate conditions to show the clinical appearance, mainly in patients with reduced immune status. For the purpose of facilitating the case diagnosis of case studies, supported also in literature, the study aims at the application of blue methylene as an indicator of *Candida* colonies in various areas of oral cavity mucosa. Identification with blue methylene is a simple procedure that reduces the microbiological stages of planting and testing the candidate's candidacy, shortening the timing of diagnosis, and performing this procedure at the dental chair. Based on the literature, though few, in number, the references indicate Lugol's application, the 2% iodine solution as a candidate for treatment of candidiasis previously detected with blue methylene in the patients involved in the studies referred to in the literature. Iodine delivery in patients is progressively carried out, ranging from 1 drop to day, 2.5 mg, to a maximum of 5 drops/day, 12.5 mg, proportionally divided by day. Patients involved declare for lack of iodine allergies, and during subtype in this therapy, were kept under control for systemic sensations previously unpublished but based on literature, as sleeping disturbances, worries in the nutritional constituents of the individual diet, or any other concern.

Key words: Blue methylene, candidiasis, Lugol's solution

INTRODUCTION

Candidiasis as an infection spread all over the oral cavity finds the appropriate conditions to show the clinical appearance, mainly in patients with reduced immune status.

CANDIDIASIS – CLINICAL PRESENTATIONS

Candida is one of the most common opportunistic fungal infections in the oral cavity, where finds appropriate conditions to show its clinical appearance, mainly in patients with reduced immune status.^[1] *Candida albicans* is a type of infection, yeast found in the mouth, intestinal tract and vagina, but can migrate through blood and into vital organs such as the brain, heart, liver, and kidneys. *C. albicans* may be one of the major

constituents of normal oral flora, where over 30–50% of people carry no clinical signs. Other members of the genus *Candida* are *Candida tropicalis*, *Candida krusei*, *Candida parapsilosis*, and *Candida guilliermondii* found also in the oral cavity. The candidiasis may appear in its acute and chronic form.^[1,2]

The acute appearance is divided according to the following classification:

1. Acute (thrush)
2. Pseudomembranous
3. Painful erythematous plaques.

Figure 1 shows the clinical appearance of candidiasis in its most ordinary forms.^[3,4]

The chronic appearance is as follows:^[1,2]

1. Atrophic erythematous plate
2. Dry mouth from dentures

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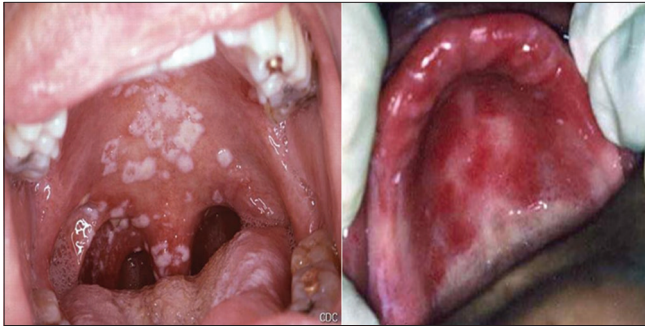


Figure 1: Clinical appearance of acute pseudomembranous and chronic erythematous atrophic candidiasis^[3,4]

3. Rhomboid median glossitis
4. Angular cheilitis (other cause *Staphylococcus aureus*)
5. Hyperkeratosis of the mucous membrane
6. Adjuvant of diabetes mellitus.

Differentiation for candidiasis is performed between allergic or irritant stomatitis and atrophic form of lichen planus. *Candida*'s predisposing factors are classified as systemic and local. Primary systemic factors are compromised immunity, medication therapy, which includes the following medications: Antibiotics, corticosteroids, and oral contraceptives.^[5] The high amount of blood glucose and endocrine disorders are elements of the immune system that affects the appearance of oral candidiasis. Disturbance of electrolytic balance associated with xerostomia is element that stimulates the appearance of candidiasis. This clinical appearance is typically seen especially in diabetic patients. Patients undergoing radiotherapy and chemotherapy are first consulted and are informed about the consequences of this treatment. The candidiasis also overlaps the pruritus that accompanies these treatments, resulting from the desquamation of the epithelial layers.^[6]

The presence of alcohol affects the appearance of oral candidiasis. pH fluctuations in the mouth are expressions of this effect. Local factors include epithelial changes, poor oral hygiene, loss of vertical dimension, hypercalcemia, salivary pH change, old prostheses, oral bacterial flora, smoking, steroid inhalers, local trauma, and epithelial changes.^[5]

The proper diagnosis and treatment of oral candidiasis presents today's difficulties and challenges due to these factors:^[6,7]

- Increasing numbers of patients with compromised immunity
- A global aging society
- Most antifungal tests have low specific sensitivity, and because acute titer required measurement cannot be used to guide initial therapy
- Antifungal therapies last for a considerable period of the time, increasing the toxicity of liver, as bilirubin in the blood
- One of the side effects of antimycotics is the significant reduction in the efficacy of other drugs, such as

benzodiazepines, cyanamide, phenytoin, theophylline, tricyclic antidepressants, and zidovudine bringing the patient into a vicious cycle of immune response.

Thus, there is a need to seek new medication alternatives for the efficient treatment of oral candidiasis.

TREATMENT OF ORAL CANDIDIASIS: BLUE METHYLENE AND LUGOL'S

With the purpose to facilitate the procedure of diagnosis, the aim of authors is the application blue methylene as an indicator of the cremated colonies in various areas of the oral mucosa. Blue methylene identification is a simple procedure that reduces the microbiological stages of planting and testing the candidiasis, shortening the timing and diagnosis of this procedure near the dental pulp.^[6]

1. Patients involved in the study will declare themselves for lack of allergy to iodine, and when submitting to this therapy will be kept under control for systemic sensations. Previously unpublished, but based on literature, the side effect as sleeping disturbances, worries nutritional constituents of personal diet, or any other concern, are the main problems to deal with.
2. Lugol's solution, topical use, is contraindicated in pregnant or lactating patients.^[6]

BLUE METHYLENE

In addition to detecting candidiasis through coloration, blue methylene has powerful antifungal properties. According to a study published in 2016 at PubMed, a group of microbiologists concluded that:^[7]

- It is a specific antifungal to *C. albicans*, where with three independent methods the sensitivity of *C. albicans* to blue methylene is observed
- Blue methylene has similar effects on other types of *Candida*: *C. tropicalis* and *C. krusei*
- Blue methylene causes mitochondrial dysfunction and redox reaction at *C. albicans*.
- In the presence of blue methylene is terminated the homeostasis of *C. albicans* membrane, by lowering ergosterol level, by 66%
- Blue methylene inhibits the morphogenetic change of *C. albicans*. In *in vivo* studies, it is seen that blue methylene is an active inhibitor of morphological change that destroys completely the cell's filamentation.

LUGOL'S

Lugol's iodine was first prepared in 1829 by a French physician, Jean Lugol. It is on the list of essential medicines of the World

Health Organization, the most effective and safe medicines needed in the health system.^[7] Oral administration is used to treat thyrotoxicosis, until the operation is performed. It protects the thyroid gland from radioactivity, treating iodine deficiency. It is applied in the cervix to help identify cervical cancer. A small amount can also be used for emergency disinfection of drinking water. Many published studies show that Lugol's has many benefits in developing the immune system, hormone balance, and alleviating symptoms in HIV/AIDS patients in Africa.^[8,9]

Based on the literature, though few in number, the references indicate Lugol's application, the 2% iodine solution as a candidate for the treatment of candidiasis previously detected with blue methylene in the patients involved in the studies referred in the literature. Iodine delivery in patients is progressively carried out, ranging from 1 dropper day, 2.5 mg, to a maximum of 5 drops/day, 12.5 mg, proportionally divided by day.^[5] Patients involved in study, declare for lack of iodine allergies, and during subtype in this therapy, were kept under control for systemic sensations previously unpublished but based on literature, as sleeping disturbances, worries in the nutritional constituents of the individual diet, or any other concern.^[9,10]

CONCLUSION

To conclude the theoretical overview of the study, we should be looking for shorter-term ways of diagnosing candidiasis, possibly near the dental chair. The shorter duration of diagnosis makes it possible for the treatment to start as soon as possible. Under fungal resistance conditions, the application of the whole methods and medications for the treatment of candidiasis, is a new field of research in dentistry.

REFERENCES

1. Ansari MA Fatima Z, Hameed S. Antifungal action of methylene blue involves mitochondrial dysfunction and disruption of redox and membrane homeostasis in *C. albicans*. *Open Microbiol J* 2016;10:12-22.
2. Ghannoum MA, Jurevic RJ, Mukherjee PK, Cui F, Sikaroodi M, Naqvi A, *et al.* Characterization of the oral fungal microbiome (mycobiome) in healthy individuals. *PLoS Pathog* 2010;6:e1000713.
3. Available from: <https://www.commons.wikimedia.org/wiki/Category:Candidiasis>.
4. Dangi YS, Soni ML, Namdeo KP. Oral candidiasis: A review. *Int J Pharm Pharm Sci* 2010;2:36-41.
5. Available from: <https://www.draxe.com/candida-symptoms>.
6. Buchacz K, Lau B, Jing Y, Bosch R, Abraham AG, Gill MJ, *et al.* Incidence of AIDS-defining opportunistic infections in a multicohort analysis of HIV-infected persons in the United States and Canada, 2000-2010. *J Infect Dis* 2016;214:862-72.
7. Taranu T, Constantin M, Toader P, Esanu I, Mocanu M. The benefits of using the iodine solution in the treatment of acne in pregnant women. *Rev Chim* 2018;69:2343-5.
8. Bertozzi S, Padian NS, Wegbreit J, DeMaria LM, Feldman B, Gayle H, *et al.* HIV/AIDS prevention and treatment. *Disease Control Priorities in Developing Countries*. 2nd ed. Ch. 18. New York: World Bank; 1993.
9. Puchalski AR, Chopra IJ. Radioiodine treatment of differentiated thyroid cancer despite history of 'iodine allergy'. *Endocrinol Diabetes Metab Case Rep* 2014;2014:130084.
10. Sitheque MA, Lanka LS, Samaranyake P. Chronic hyperplastic candidiasis; oral biosciences. *Crit Rev Oral Biol Med* 2003;14:253-67.

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