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Clinical, microbiological and immunological evaluation of low level laser therapy versus Nystatin on oral candidiasis

A Thesis

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Abstract

Back ground: Oral candidiasis remains the most frequent form of oral mucosal infection. The infection involves the oral mucosa with different clinical forms. *Candida albicans* is the most microorganism species related to denture induced stomatitis. Chronic atrophic candidiasis (denture stomatitis) represent 23-65% of oral candidiasis in denture wearers. It is a relatively harmless condition in healthy individuals. The infection may spread in susceptible immunocompromised individuals. If this infection untreated would lead to poor nutrition and prolonged recovery and in extreme cases can be fatal. Candida associated denture stomatitis, even if asymptomatic, should be treated promptly as it may act as reservoir for chronic infections.

Topical Nystatin is considered the first line of treatment for oral candidiasis. Despite advances in antifungal therapies, many problems remain unsolved for most antifungal drugs. This study was conducted to provide other resource of anticandidal therapy rather than medication. Photomedicine using low level laser therapy (LLLT) has shown as an effective method in the management of oral infection.

Aims of the study: To determine the effect of LLLT against *Candida albicans* in patients with oral candidiasis, on clinical and microbiological status by using mucosa and salivary colony counting technique with Immunological measurements of IL-6, IL-10 and IgA. And compare with Nystatin therapy.

Patients, materials and methods: This study was performed on 42 patients, however, only 37 had valid result. The age range was 30-75 years. These patients had fulfilled the clinical selection criteria of candidiasis and entered the trial *Candida albicans* positive culture in either mucosa or saliva. The sample was divided into 2 groups; Nystatin group, given Nystatin oral suspension 100 000 U (N=20), and laser group (N=22) subjected to 60 mW, energy density 10 J/cm², diode laser at 660 nm, continuous mode in alternating days for 5 sessions. The severity of inflammation was evaluated using clinical criteria in each visit.

Microbiologically, one pre and two times post treatment mucosal and salivary swab samples were taken for colony counting and colony forming unit during course of treatment. Salivary IL-6, IL-10 and IgA were evaluated by ELISA methods.

Results: Clinical findings at base line, the erythema type was the most common. There was no significant difference between clinical grade and Candida colony counting of (mucosa and saliva and colony forming unit). Immunologically, there was no statistical significant difference between clinical grade and salivary IL-6, IL-10 and IgA concentrations.

Following treatment with 5 doses of laser radiation for 11 days, the inflammation was diminished with high response rate (the response rate was 100%). With no significant difference compared with Nystatin group. Microbiologically, only the mucosal colony counting was reduced during the follow up in laser treatment group, but this difference was statistically not significant. The same with Nystatin group, there was no significant difference. The levels of IL-6, IL-10 and IgA were not followed ascertain way after LLLT. And there was no significant difference in comparison with Nystatin group.

Conclusions: LLLT may be valuable in the treatment of oral candidiasis despite its statistically non significant effect on mucosal Candida colony counting between pre and post therapy. Immunologically, LLLT has decreased IL-6 and IL-10, and increased IgA release after 5 exposure sessions. However, the difference was no significant difference for these three markers pre and post radiation and when compared with Nystatin therapy.