

Dentistry & Oral Care

April 18-20, 2016 Dubai, UAE

Antimicrobial photodynamic therapy in periodontal patients

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The antimicrobial approach to periodontal therapy has been used for many years, recognizing that the prevalence and severity of these diseases can be reduced by mechanical plaque removal or by the use of a variety of systemic or topically applied antimicrobial agents aimed at inhibiting pathogenic bacteria. In this era of scientific explosion, there is increasing awareness about microbial resistance-related phenomena. Resistance development may be the consequence of injudicious use of antibiotics in common bacterial or viral infections. Following insufficient drug concentrations within the sulcus fluid or biofilm, there might be lack of efficacy. Periodontal sulcus concentrations of antibiotic drugs may remain below the minimum inhibitory concentration of the target organisms. It is known that local and systemic antibiotics may lead to bacterial resistance, allergies, gastro-intestinal disorders and others along with reducing patient compliance. However, in future more difficulties with antibiotic therapy can emerge because of an increased resistance to most antibiotics used in periodontics and increase in the number of immune-suppressed patients. For these reasons, antimicrobial photodynamic therapy has been proposed as a novel treatment option in controlling the sub-gingival microorganisms as it was found to be effective in killing microbes in localized topical infections. Photodynamic therapy (PDT) is a laser-initiated photochemical reaction, involving the use of a photosensitizer (PS) activated by light of a specific wavelength in the presence of oxygen. This leads to the formation of toxic oxygen species which can damage proteins, lipids, nucleic acids and other cellular components. Applications of photodynamic therapy in dentistry are growing rapidly for the treatment of oral cancer, bacterial and fungal infections and photodynamic diagnosis of malignant transformation of oral lesions. Photodynamic therapy has been efficacious in the management of peri-implantitis, endodontic infections and oral biofilms such as plaque. Redox properties of photosensitizers for the reduction of bacterial burden in periodontitis patients have been studied earlier. Most of the subgingival plaque samples were successfully destroyed by photodynamic means in vitro. Photosensitization of *P. gingivalis* and *F. Nucleatum* has been reported in some in vitro and animal studies. The absence of genotoxic and mutagenic effects, no risk of developing resistance to its antimicrobial action and increased healing process favors its long-term safety and use. Thus, aPDT represents a novel therapeutic approach in the management of various dental conditions. Clinical trials to evaluate the effects of antimicrobial photodynamic therapy (aPDT) as an adjunct in the management of chronic and aggressive periodontitis patients are being conducted. Of these, many studies report additional clinical benefits when aPDT and SRP were given in combination to patients with periodontitis. This talk elaborates this novel treatment in the management of periodontal infections.

Biography

Presanthila Janam is a Life member of Indian Society of Periodontology and Indian Dental Association. Secretary of Dental College & Hospital Development Society and executive member of Kerala Dental Council. Guest lecturer for MPH students and Guest lecturer for Kerala state health service Doctors. Dental Council inspector of various Dental Colleges in India. Attended training programmes on stress management, Training for doctors in Dental/Medical Colleges on HIV/AIDS by AIDS control Society of Kerala, refresher course in "Biostatistics & Research Methods", Training on E-governance etc. Attended so many workshops & conferences on Piezo Ultra sonic in Surgery", Lasers in Periodontics, post graduate teachers training programme and Research workshop organised by Oral B at Chennai. More than 50 international, national & state publications. Organised Indian Society of Periodontology post graduate workshops and ISP national conferences. Organized CDE's conducted in the Department and in the Dental Colleges. Co-ordinator, organising secretary, Scientific chairperson of CDE programmes and Organised ISP Listerine lecture. About 30 scientific papers were presented in conferences, workshop & training centres. More than 50 Research works were completed. Conducted and organised many community Dental Health Programmes and camps. Health talks were given through media like radio & television. Recipient of Best Scientific paper award of IDA Kerala State in 2006, 2007 and 2009. Recipient of the State Best Doctor Award of Modern Medicine in 2010. Author of "Text Book of Periodontology" for BDS students to be published by Jaypee. PhD guide of Kerala University and Kerala University of Health Science and One student was awarded PhD by Kerala University in 2015.

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