

“The Oxygen Prescription” Ozonated win Management of Aggressive Periodontitis

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Abstract: Periodontal disease have been associated with several oral anaerobes such as *P. gingivalis*, *A. actinomycetemcomitans* etc. A number of adjuncts have been used to improve the outcome of mechanical & surgical periodontal therapy example chemical plaque control agents & systemic antibiotics, but these have certain side effects. Currently Ozone is gaining popularity in various treatment modalities in field of medicine & dentistry. Ozone has a broad spectrum action which has presently been researched in managing in various oral infections. The objective of this study is to evaluate the efficacy of ozonized water in management of patients with Aggressive periodontitis.

I. Introduction

Oral diseases continue to be a major health problem worldwide. The link between oral diseases and the activities of microbial species that form part of the microbiota of the oral cavity is well established.¹ Periodontal diseases are associated with large number of anaerobic Gram-negative bacteria such as *Porphyromonas gingivalis*, *Actinobacillus* sp., *Prevotella* sp. and *Fusobacterium* sp.² Aggressive forms of periodontitis are currently considered to be multifactorial diseases that develop as a result of complex interactions between specific host genes and the environment. Various risk factors includes - familial aggregation, neutrophil functional defects, antibodies to specific bacteria, herpes virus infection, smoking and stress.³

Therefore, several systemic antibiotics and chemotherapeutic agents such as triclosan, essential oils and chlorhexidine have been developed to control bacterial plaque, aiming at improving the efficacy of daily hygiene control measures.⁴ Despite several agents being commercially available, these chemicals can alter oral microbiota and have undesirable side-effects such as antibiotic resistance, vomiting, diarrhoea and tooth staining etc.⁵

Currently Ozone is gaining popularity in various treatment modalities in field of medicine & dentistry. Ozone has a broad spectrum action which has presently been researched in treating in various oral infections. The objective of this paper is to evaluate the efficacy of ozonized water in management of subjects with Aggressive periodontitis.

II. Materials And Methods

5 systemically healthy subjects aged between 25-35 years diagnosed with generalized aggressive periodontitis were selected for the study (figure – 1,2) Patients who had periodontal therapy in the past six months, patients on medications such as antibiotics, anticoagulants, steroids or on hormonal therapy, pregnant women and lactating mothers were excluded. The study was a split mouth design. Quadrants were randomly assigned in either of the groups using coin – toss method to –

1. **Test (Ozone) group** – following scaling and root planing the sites were irrigated with 450 ml of ozonated water at 350 kpa pressure for 2min 30 sec was used for each cycle. (Figure -3)
2. **Control group** – scaling and root planing alone

Kent Ozone Dental Jet system (figure -4) was used for ozone irrigation. Microbiological analysis was done at baseline and after one month. Samples were collected using paper points. CFU'S (colony forming units) were counted using colony counter for both test and control group. Columbia agar was used for aerobic culture and blood agar for anaerobic culture (figure – 5,6) Oral hygiene instructions were given to the patients and were asked not to use chlorhexidine or any other anti-plaque formulations during the period of the study.



Figure 1



figure 2



Figure 3



figure 4

III. Results

There was significant ($P > 0.05$) reduction in both aerobic and anaerobic colony forming units in ozone group as compared to control group after one month. (Graph- 1,2)



Control



ozone group

Aerobic culture (figure 5)

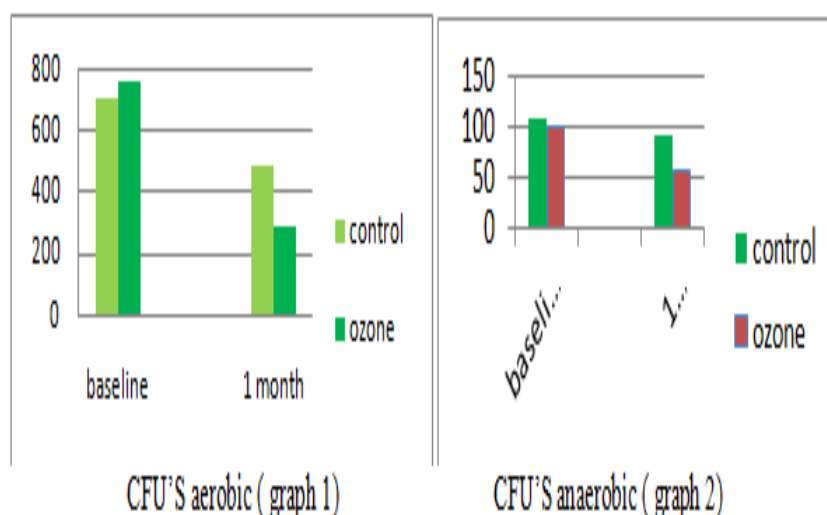


Control



ozone group

Anaerobic culture (figure 6)



IV. Discussion

Periodontitis is a infectious disease. Current concept for treating periodontitis is primarily found on eliminating the infection. Aggressive periodontitis is a progressive periodontal disease characterized by loss of bone and periodontal support for special teeth in adolescents and young adults. The initiation and progression of periodontitis is caused by different bacterial accumulations in the subgingival pockets.⁶ Systemic antibiotic therapy in aggressive periodontitis is used to eliminate or suppress specific pathogens that are capable of causing the periodontal attachment apparatus to break down.⁸

In the present study Kent dental ozone jet was used for delivery of ozonated water for management of aggressive periodontitis. Ozone in gaseous or aqueous form can kill bacteria, fungi and viruses. It is highly effective in killing gram positive and gram negative microorganisms. The advantages of ozone in the aqueous phase are its potency, ease of handling, lack of mutagenicity, rapid microbicidal effects, oxidation due to ozone induces the

destruction of cell walls and cytoplasmic membranes of microorganisms, also free radical mediated reaction may be involved in destruction of microorganisms.⁹ 450 ml of ozonated water at 350 kpa pressure for 2min 30 sec was used for each cycle in test ie ozone site. Samples for microbiological analysis were obtained using paper points at baseline and one month interval. There was significant reduction in levels of both aerobic and anaerobic colony forming units in ozone group as compared to control group at one month interval this may be attributed to the antimicrobial action of ozone on periodontal microorganisms.

V. Conclusion

From the results of the present study it can be concluded that the ozonized water may be effectively used in the maintenance phase of Aggressive Periodontitis without any toxicity or side effects .

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