

Evaluation of Ozone oil irrigation as an adjunct to SRP in the treatment of chronic periodontitis - A randomised clinical trial

Hiroj Bagde, Palak Sharma and Shailendra Chaturvedi

New Horizon Dental College and Research Institute, India

Introduction

Periodontitis is an infection-inflammatory disease characterized by progressive clinical attachment loss; recession followed by mobility and ultimately tooth's loss.

The aim of treating periodontitis is primarily focused on decreasing the virulent microbial overload and treating the subjective symptoms of inflammation i.e. pain, bleeding and mobility. The mechanism by which the ozone medicament works are many, as such they are antibiotics, analgesics, detoxification and by increasing catabolism and anabolism in body and immune activation. This study differs from other subgingival irrigational studies because of its use of ozonated olive oil which is having high substantivity in the subgingival areas by oil suspension preparations.

Material and Methods

This study is a randomized control clinical trail in which patients are taken from out-patient department of periodontology of New Horizon Dental College Bilaspur Chhattisgarh .Ethical clearance has been taken by ethical committee head of institution and written and signed informed consent were taken from the patients. Out of the selected 60 patients total of 186 sites were selected with PPD>5mm, PI>2, GI>2 were selected for study.

Inclusion Criteria

Patients above age of 30

- Systemically healthy individuals
- Clinical and radiographical evidence of patient with chronic periodontitis
- At least 4-8 sites with PPD of 5mm or more
- Patient having at least 28 teeth in dental arch

Exclusion Criteria

- Patients with systemic illness
- Patient under use of systemic antibiotics in last 12 months
- Pregnancy and lactation

Methodology

The study period of total 30 days included the recording of PI, GI, PPD, at the baseline or first visit of patients, then on the same day scaling was performed and patient was recalled after 7 days for root planning along with adjunctive ozonated olive oil irrigations was performed. Patients were followed up after 21 days' time period and again the recordings were re-checked for the results.

Results

The statistical analysis was done for probing pocket depth, plaque index and gingival index using statistical software SPSS ver 22.0 and applying paired t test of statistical significance. The mean comparison between probing pocket depth at the baseline and after ozonated olive oil therapy showed significant reductions showing the positive relation of using ozonated olive oil irrigation therapy.

The mean PPD at baseline was 6.10 ± 1.06 which reduced to 2.85 ± 1.17 after SRP+ ozonated olive oil irrigations. The mean difference between at baseline and post SRP + ozonated olive oil is 3.25 ± 0.11 the p value for this is $p=0.000$ which shows the significance in the reduction of probing pocket depth after using ozonated olive oil as an adjunct.

The base line values (mean) for plaque index recorded were 2.42 ± 0.50 by Quigely- Hein modified Turesky plaque index method which was re-recorded after SRP+ ozonated olive oil irrigation the mean value was 1.18 ± 0.39 . The result showed significant reduction of 1.24 ± 0.11 . and the p values for this was 0.000 which shows result was statistically and clinically significant

The gingival index taken at the base line was 1.30 ± 0.46 which was re-recorded after SRP+ ozonated olive oil irrigation and found to be reduced 1.27 ± 0.44 there was reduction in mean by 0.03 ± 0.02 the p value for the result is 0.424 which was not that significant although the reduction has been seen but the results were not that much reduced as expected.

Discussion

The effectiveness of ozonated olive oil as an adjunct to SRP has been proved in this study. The results of the study were in accordance with various authors who investigated for ozone therapy in periodontitis. Durga K. et al (2010) also found the similar reduction in GI, PI. The reduction in mean PI was 0.16 ± 0.33 , GI 0.34 ± 0.38 , which was similar to our study in which we found reduction of PI 1.24 ± 0.11 , GI 0.03 ± 0.02 respectively. KDhingra (2011) also conducted a similar study on gingival inflammation in orthodontic patients he also found similar reductions in clinical parameters as mean PI reduction was 1.03 ± 0.14 , GI 0.71 ± 0.14 , PPD 0.19 ± 0.04 which was similar to our study in which we found reduction of PI 1.24 ± 0.11 , GI 0.03 ± 0.02 , PPD 3.25 ± 0.11 respectively.

Francesco Carinci (2015) also found same results in reduction of clinical parameters and lesser T. forsythia count compared to SRP alone the p value was 0.021 which was significant. Sila Cagri Isler (2018) found that ozone can be used even as adjunct to regenerative therapy for peri-implantitis and has shown significant reduction in clinical parameters. The reduction in mean PI was 0.99 ± 0.17 , GI 0.016 ± 0.06 , PPD 2.75 ± 0.07 which was similar to our study in which we found reduction of PI 1.24 ± 0.11 , GI 0.03 ± 0.02 , PPD 3.25 ± 0.11 respectively.

Safinaz Saleh Mohamed Saeed (2017) found similar results of reduction in clinical parameters and P.gingivalis count on moderate to severe chronic periodontitis patients. These results were attributed because of the scavenging action of the reactive oxygen radical in ozone oil.

While there were many authors who supported for use of ozone as adjunct to SRP for chronic periodontitis there were some studies that did not yield positive results using ozone as an adjunct.

Muller P. (2007) found there was no significant reduction in use of ozone + SRP in clinical parameters i.e PPD, CAL, BI, PI also it has minimum effects on viability of bacteria. Eltas SD et al. (2018) also found there were no reductions in clinical and biochemical parameters of using ozone as compared to SRP alone. Zekeriya T. et al. (2019) had similar results he also did not found any reduction significant in clinical parameters when he used ozone as adjunct to SRP.

These results can be because of the inability of the patient for compliance to follow the oral hygiene instructions and also the period of the interventional trial for which the patients were recruited.

Conclusion

Ozonated olive oil can be used as adjunct to scaling and root planning in moderate chronic periodontitis patients. Further studies need to be conducted with larger sample size, different concentrations of ozonated olive oil. Microbial and biochemical parameters also need to be checked with use of ozonated olive oil in chronic periodontitis.

Reference

- Habashneh, R, Alsaman, W, Khader, Y. Ozone as an adjunct to conventional nonsurgical therapy in chronic periodontitis: a randomized controlled clinical trial. *J Periodont Res* 2015; 50: 37–43
- Ahu Uraz, Burcu Karaduman, Sila Çagrı Isler, Sevim Gönen and Deniz Çetiner, Ozone application as adjunctive therapy in chronic periodontitis: Clinical, microbiological and biochemical aspects. *Journal of Dental Sciences*, 2018; 7; 190 - 195.
- Bhateja S. The miscellaneous healing therapy ozone therapy in dentistry. *Indian Journal of Dentistry* 2012; 3:150-155.
- Chaudhari S, Patil V, Mali R. Comparative evaluation of ozone therapy as an adjunct to scaling and root planning with scaling and root planning alone in cases of chronic periodontitis – a clinical and microbiological study. *Int.J. current medical and pharm research* 2016; 2:539-543
- Gupta G, Mansi B. Ozone therapy in periodontics. *Journal of Medicine and Life* 2012; 5: 59-67
- Dhingra K, Vandana KL. Management of gingival inflammation in orthodontic patients with ozonated water irrigation – a pilot study. *Int J Dent Hygiene* 2011; 9: 296–302
- Carinci F, Palmeri A, Girardi A. Aqolab ozone therapy in an efficient adjunct in treatment of chronic periodontitis: A case-control study. *J of Orofacial Sci* 2015; 7: 27-32
- Isler C.S , Unsal B , Soysal F. The effects of ozone therapy as an adjunct to the surgical treatment of peri-implantitis. *J Periodontal Implant Sci.* 2018 Jun; 48(3):136-151
- Safinaz Saleh Mohamed Saeed., et al. "Clinical and Microbiological Evaluation of Oleozone Gel in the Treatment of Chronic Periodontitis". *EC Dental Science* 12.6 (2017): 227-236.
- Muller P, Guggenheim B, Schmidlin PR. Efficacy of gasiform ozone and photodynamic therapy on a multispecies oral biofilm in vitro. *Eur J Oral Sci* 2007; 115: 77–80.
- Eltas Seydanur Dengizek, Dundar Serkan, Eltas Abubekir, Karabulut Aysun Bay, Otlu Onder and Cicek Arife, Evaluating clinical and laboratory effects of ozone in non-surgical periodontal treatment: a randomized controlled trial, *Journal of Applied Oral Science*, 10.1590/1678-7757-2018-0108, 27, 0, (2019).
- Oskaybas, Arzu B. Alkan and Omer Cakmak, The effects of ozone therapy on periodontal therapy: A randomized placebo-controlled clinical trial, *Oral Diseases*, 25, 4, (1195-1202), (2019).