

MEDICINAL CLAY AS AN ADJUVANT IN SUPPORTIVE THERAPY IN CHRONIC PERIODONTITIS

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Abstract

Medicinal clays can be used in the pharmaceutical products as an active ingredients, excipients or additives. The aim of this study is to assess the effects of the medicinal clay as an adjuvant in scaling and root planing in a non-surgical treatment of chronic periodontitis. Thirty subjects, aged between 25-60 were randomly distributed in two groups (test group and control group) according the inclusion and exclusion criteria. All the subjects received scaling and root planing. The test group received local instillation of the medicinal clay after scaling and root planing. The control group received no treatment with medicinal clay after scaling and root planing. The clinical parameters, probing depth and clinical attachment level were assessed baseline (one day) and three months after the treatment protocol. The results showed significant improvement in clinical parameters. The results showed that in test group at baseline, the mean PD was 3.26 mm and CAL was 4.45, which decreased to 1.87 mm and 3.31 mm respectively (statistically significant $p \leq 0.05$). In conclusion, the effect of a medicinal clay used as an adjuvant in scaling and root planing has been proved.

Keywords: Medicinal clay, scaling and root planing

Introduction

Lately, several dental studies have evidenced that periodontal disease can be kept under control and treated with non-surgical methods. Medicinal plants and clays are used since prehistoric times for various diseases and are preferred especially due to their minimal side-effects.

Most uses and research emphasis on healing clays has focused on the physical characteristics of clay minerals that benefit digestion or protect and

cleanse the skin (Carratero, 2002). The adsorptive and absorptive properties of clay minerals have historically been the driving force behind the traditional use of healing and therapeutic clays. In present, medicinal clays can be used in the pharmaceutically products as an active ingredients, excipients or additives (Wang et al., 2005; Serefoglou et al., 2008).

Medicinal clay have been used efficiently for a very long time knowledge about their action mechanism and their composition is still limited (Sanchez-Espejo, Aguzzi et al., 2014). They are discussed as therapeutic agents in diarrhea (Vermeer and Ferrell, 1985). In oral formulation they are in part widely used, however their use should be discouraged in pregnant women because of the high content of lead and arsenic (Reeuwijk, Talidda et al., 2013). Antibacterial activity of clays seems to be associated with low pH and oxidation state (Williams and Haydel, 2010). It has a very good effect against *Candida Albicans*, and can be used topically or as an intern cure in numerous other disorders.

Periodontal diseases represent de most frequent conditions of the human body, affecting it irrespective of sex, age or geographical area.

Periodontal diseases are induced by determinant factors such as microbes associated with local factors (scale, caries, edentations, dental-maxillary abnormalities, parafunctions, smoking, iatrogenics, etc) and general factors (diabetes, cardiovascular, haematological and hepatic conditions, immune dysfunctions, nutrition deficiencies, endocrine dysfunctions, nervous system related diseases).

The conservative periodontal therapy can lead to predictable pocket reduction and stop further disease progression. However, the therapy is usually associated with an increase in soft tissue recession and bone loss. Conventional periodontal treatments such as scaling and root planning are generally followed by healing of the tooth attachment apparatus, and are often associated with the formation of a long junctional epithelium.

So far there are no study on the effect of medicinal clay as an adjunct to scaling and root planing in the treatment of chronic periodontitis.

The aim of this study is to assess the effects of the medicinal clay as an adjuvant in scaling and root planning in a non-surgical treatment of chronic periodontitis.

Material and methods

Subjects

Thirty subjects, aged between 25-60 were randomly distributed in two groups (test group and control group) according to the following inclusion criteria: diagnosed with moderate or chronic periodontitis, a minimum of four sites with probing depth ≥ 4 mm (PD), presence of ≥ 16 gradable teeth, no systematic periodontitis treatment within the last 12

months, smoking ≤ 10 cigarettes/day, good general condition.

Subjects were excluded from both groups (test and control) on the following criteria: need for periodontal surgery during the study, intake of medication known to affect periodontal status, pregnancy, and other chronic diseases.

Informed consent was obtained from all subjects.

Clinical examinations

The periodontal status was recorded the Ramfjord teeth, which include the maxillary right first molar, the maxillary left central incisor, the maxillary left first premolar, the mandibular left first molar, the mandibular right central incisor, and the mandibular right first premolar.

The following parameters were assessed: bleeding on probing by using a probe, probing depths (PD), and clinical attachment level (CAL). The presence or absence of plaque was evaluated with plaque index (O'Leary et al.1972). Gingival inflammation was assessed by the gingival index (Loe and Silness, 1963).

Treatment protocol

The subjects were randomized in two groups.

Test group: fifteen subjects were treated with scaling and root planing and subgingival application of medicinal clay.

Control group: fifteen subjects were treated with scaling and root planing; received no treatment with medicinal clay.

The scaling and root planing was performed with manual and ultrasonic devices. All the subjects were received oral hygiene instruction.

The clinical parameters, probing depth and clinical attachment level were assessed baseline (one day) and three months after the treatment protocol.

Statistical analyses

The Statistical Package for Social Sciences (SPSS) was used for data processing and statistical analysis between baseline and after 3 months for periodontal status.

Results

The initial results showed significant changes after treatment, with a difference in the test group regarding the plaque index .

The plaque index showed significantly higher changes in the test group as compared with the control group. Prior the treatment, the control group had an average plaque index in all subjects of 1.333, and after treatment it decreased to 1.211, which represents merely 9,25% ($p < 0.05$).

The difference could be due to the higher attention to oral hygiene during the study. The test group showed a decrease in the plaque index of 31,5%, from 1.388 before treatment to 0.966 after the treatment ($p<0.05$) (Figure 1).

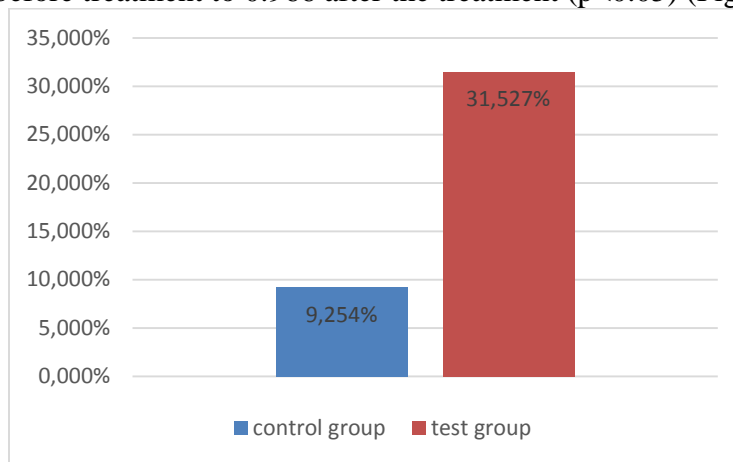


Figure 1. Percentages changes of PI at baseline and after three months

The results showed that in test group at baseline, the mean PD was 3.26 mm and CAL was 4.45, which decreased to 1.87 mm and 3.31 mm respectively (statistically significant $p\leq 0.05$). (Fig.2).

PD - group	Baseline	After 3 months	p-value
PD-control group	3.35	2.45	0.001
PD-test group	3.26	1.87	0.001

Figure 2. PD value (mean) for control group and test group at baseline and after three months

In the control, the mean PD was 3.35 mm and CAL was 4.43 mm at baseline, which decreased to 3.35 mm and 3.84 mm respectively, after three months (statistically significant $p\leq 0.05$). (Fig.3).

CAL - group	Baseline	After 3 months	p-value
CAL-control group	4.43	3.79	0.001
CAL-test group	4.45	3.29	0.001

Figure 3. CAL value (mean) for control group and test group at baseline and after three months

Discussions

Numerous studies have shown that conventional mechanical debridement cannot eradicate all periodontopathic bacteris from the sub-gingival environment, especially those inhabiting inaccessible areas such as furcations, grooves, concavities and deep pockets (Greenstein, 2000). Local drug delivery systems have the ability to deliver the antimicrobial agents to the target sites (Francetti, 2005). Treatment of periodontal diseases by different types of local delivery systems has been investigated. The non-

surgical therapy has covered a new dimension by addition of herbs and plant extracts to the family of local drug delivery systems.

In their study, Mahendra et al.(2013) showed there was a significant improvement in the clinical parameters such as clinical attachment levels and probing pocket depth in the experimental group treated with spirulina gel. This was similar to the study performed by Bhat et al. (2011). Who used aloe vera gel as local drug delivery in chronic periodontitis patients.

Our study is the first study which was performed to introduce mineral clay as supportive therapy in chronic periodontitis patients. However, further longitudinal studies are needed to argue the positive effects of medicinal clay in periodontitis.

Conclusion

With all the limitations regarding the number of patients and the follow up period, the results showed an increased of all the clinical parameters followed by scaling and root planing with additional medicinal clay in supportive periodontal treatment of chronic periodontitis.

The present study improve by using a larger of number of patient and a longer a period of treatment and also by including antibacterian substances with benefic effect on periodontitis in the future.

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