Clinical Efficacy of Local Delivered Minocycline in the Treatment of Chronic Periodontitis Smoker Patients

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Abstract

Aim: The aim of this study was to evaluate the efficacy of a locally delivered 2% minocycline as an adjunct to scaling and root planing plus oral hygiene measures in treating chronic periodontitis smoker patients.

Materials and Methods: This was a randomized controlled trial using a split-mouth study design. Twenty pairs of sites in twenty smoker patients with similar deep probing depths were randomly allocated to test and control groups. The test sites received minocycline after root debridement. The clinical parameters included the plaque index, probing pocket depths, attachment levels, and bleeding upon probing. They were evaluated at the baseline, and after 3 and 6 months.

Results: Both the test and control sites showed statistically significant improvements in the clinical periodontal parameters over the baseline measurements during the study period (P<.05). In follow-up, the intervals sites that received minocycline showed more favorable results manifested by probing depth reduction. This improvement was constant at 3 and 6 months and the difference between the two groups was statistically significant (P<.05).

Conclusion: The study results show that patient motivation to maintain meticulous oral hygiene self-care with adjunctive professional dental care using local delivery 2% minocycline can significantly enhance treatment outcome of deep periodontal pockets in chronic periodontitis smoker patients.

Keywords: Minocycline; Local delivery; Smoking; Chronic periodontitis

Introduction

Local delivery of antimicrobial agents in treating periodontitis patients is becoming more prevalent since it leads to higher concentration of the drug at the intended site of action using a lower dose with an associated reduction in side effects relative to systemic administration [1,2]. However, despite many studies in the periodontal literature on the local delivery concepts, surprisingly there are few studies that demonstrate the clinical efficacy using intra-pocket delivery systems [3-5]. Moreover, several studies have failed to show clinically important effects provided by the intra-pocket drug delivery systems when used as individual mono-therapy. Other studies have demonstrated that these systems have beneficial effects in terms of probing depth reduction; however, the statistical significance reached in these studies was not always clinically significant [6,7]. Smoking is known as a major risk factor for increasing the prevalence and severity of periodontal destruction. In general, studies have shown that smoking increases the risk for developing periodontal disease by two to five folds, and these effects seem to be dose dependent. Also, smoking accelerates the progression of periodontitis and jeopardizes the healing