Iraqi Dental Journal Volume:34 Issue:1; 2012

The Effect of Augmentin as Adjunctive therapy in the Treatment of Aggressive Periodontitis

Ala'a Omran. B.D.S., M.Sc.
Periodontics Dept, College of Dentistry, University of Baghdad.

ABSTRACT

This research was conducted to investigate the effect of combined therapy of systemic Augmentin , compared to conventional periodontal treatment on clinical parameters of periodontal health and subgingival microflora- Thirty patients have aggressive periodontitis were examined and divided to control (15 patients), and test group (15 patients). The results revealed that, using antibiotics in periodontal treatment suppress the relative proportion of subgibgival microflora and decreases the mean probing pocket depth, gingival index if compared to base line values.

INTRODUCTION

It is well known that dental plaque plays a major role in periodontal disease, and periodontitis is the result of an interaction between bacterial plaque with it's products and the resultant inflammatory and immunological changes within the periodontal tissues. The recognition, that destructive periodontal disease may be caused by specific micro-organism, has led to an increased interest and usage of anti¬microbial agents (ABS) alone or as an adjuncts in periodontal therapy [9]. Their therapeutic success could be attributed to their ability to eliminate the bacteria that escaped root planing [6], or those that infiltrate the adjacent connective tissue [7]. Amoxicillin (AMO) in particular has been used for this purpose, on the other hand Metronidazole (MET) has a specific action against anaerobic bacteria. Combination as AMO + MET produces a synergistic effect against most of periodontal pathogen as Actinobacillus Actinomycetem comitans (Aa) [4]. This research was carried out to:

1-Determine the effect of a combined therapy of systemic AMO+MET on the microfloras as subgingival plaque.

2-Compare the effectiveness of combination periodontal therapy, i.e. scaling and root planing and the same plus combined MET, AMO on the following clinical parameters: probing depth & the gingival index.

MATERIALS AND METHODS

Thirty patients with aggressive periodontitis were selected, using the criteria of page and Schroeder (1983) from the Dental Polly-clinic. College of Dentistry, University of Baghdad.

The Patient age ranged between 25-30 years, all subjects were healthy, none had antibiotic therapy for one month prior to the commencement of the study and they should possess a minimum of two multi rooted teeth and three signal rooted teeth in every quadrant, these teeth and should exhibit pocket of <=5mm pregnant women were excluded from this study. The sample was equally divided one group served as an experimental group, i.e. receiving the antibiotic therapy plus the conventional treatment only. The allocation of the subjects was randomly performed.

Experimental Design: Prior to the study each individual was motivated and instructed in oral hygiene measures, plaque was measured using the plaque index pi .1 [8], till mean reached 0.5 , then the subject is included in the study and allocated either to the control or experimental group.

At this stage each subject had a clinical examination in which the following clinical parameters were recorded, this is regarded as base line data: -

a) Gingival index GI.I [2].

b) Probing pocket depth (PPD) to the nearest millimeter at each site.

The same parameters were recorded at the end of each two weeks in another word there were 4 clinical recording, with two week in between each.

Plaque Sample:

At the base line and at the end of two months, samples (from three approximal sites) of sub gingival plaque were taken, the deepest pockets were selected. After removal of supra gingival plaque, the sites were isolated from saliva by the application of cotton rolls and were gently dried with compressed air [5]. Three sterile medium paper points were transferred into a screw capped vial containing thioglycolate medium. After doing scaling and root planing the subjects of the test group were instructed to take augmentin capsule 625mg/three times daily for one week.

Culture technique:

Thioglycolate broth were incubated in an anaerobic jar or Gaspack Jar [12], for 48 h at 37°C and tested by taking a smear that was stained on a slide to reveal types and relative number of micro-organisms present. The cultures were also done on trypticase soy agar plates supplemented with 5% human blood and incubated an-aerobically for 48 h at 37°C. The plates were examined with a hand lens (8x), and a colony description was recorded, this include: size, shape, edge, profile, color, opacity, haemolysis, pigments, catalase, indol test, antibiotic sensitivity; 20% Bile test, urease, nitrate, sugars fermentation, gelatin liquefaction, milk reaction and Esculin hydrolysis.

RESULTS

Clinical parameters:

The results of the effect of the treatment on clinical parameters revealed that, a non significant decrease was noted in the mean PPD for the test group at the Ia,2nd&3fd visits compared to the base line values, but the significant difference was noted at the last visit (table 1) $p<0.05$ using t-test. While for the control group a non- significant difference was noted on PPD at all recall visits compared to base line value using I* test (table 2). In respect to the G.I when the test group and the control group was compared a decrease in the mean G.I was noted. This proved to be significant [$p<0.05$] (table 3).

Table 1: The mean PPD for the test group.

Visits	Probing pocket depth				
	4	6	8	= 10	X±S.D
Base line	34	71	88	32	56 ±27
2nd visit	66	64	70	25	56 ±20
3rd visit	79	63	63	20	56 ±25
4th visit	98	82	40	5	68 ±26*

* significant difference $p<0.05$

Table (2) The mean PPD for the test group.

Visits	Probing pocket depth				
	4	6	8	*10	XiS.D
Base line	35	77	82	31	56 ±26
2nd visit	49	71	80	25	56 ±24
3rd visit	53	69	78	25	56 ±23
4* visit	51	63	84	26	68 ±23

Table 3: Difference in mean G.I between test & control group at all recall visits

Visits	Test group	Control group
Base line	2.5	2.9
VI	2.45	2.6
V2	1.9	2.4
V3	1.5	1.96
V4	0.5	1-7
X±S.D	1.78 ±0.7	2.36 * 0.4*

* significant difference V = visits

Culture data:

Table (4) describes the types of bacteria isolated from the two cultures in the test and control groups, these types, are expressed as percentage. From this table a general decrease in all types of bacteria was seen in both the test and the control groups, however, this decrease is more obvious in the control group.

Iraqi Dental Journal Volume:34 Issue:1; 2012

Table 4: Percentage proportion of subgingival microflora before anil after treatment.

Type of bacteria	Test group		Control Group	
	1st culture	2nd culture	1st culture	2nd culture
B.Fragilis	26%	13%	40%	33%
B.Melaninogenicus	13%		13%	6%
Fuso bact.	6%		20%	
Actinomyces	6%		6%	
Pepto Coccus	20%	6%	13%	
Veillonella	20%	6%	6%	
Candida	6%	6%		

DISCUSSION

The use of Augmentin in this research protocol used as adjunctive therapy in addition to conventional, non-surgical treatment of periodontal disease seems to have a profound influence on PPD seen at the end of the experimental period, (his is in agreement with Van Winkelhoff ct al. 1989, and Pavicic et al. 1999. These investigators, correlated this improvement with the elimination or reduction in A. a. In our study A. a was not isolated, for this reason definitive comparison is not feasible.

The decrease in clinical parameters of the test group also may be due to the synergistic effect of Augmentin and that some bacteria have the ability to invade the adjacent connective tissues, so the antibiotics reach these sites. The combined treatment of scaling, root planing and antibiotics cause a significant decrease in G.l for the test group and this could be attributed to a good control of subragingival plaque through both self performed oral hygiene measure, and this in agreement with the finding of Tagge et al. 1975, Ismail 1996. It will remain to determine if the organisms that were mostly affected by the antibiotic therapy namely B.Fragilis & B.Melaninogenicus, that were reduced by 50% do carry an important pathologic potential. Some of the organisms did not show any variation, when cultured from sites that were taken from test patients or the control. The significance of such organisms is difficult to establish especially when one is dealing with a mixed flora and complicated by a variety of factors such as present in plaque.

Indeed this research is not designed to answer this question. In conclusion from our results: it appears that Augmentin therapy has a beneficial effect, at least for a limited period of time.

REFERENCES

1. Ismail KM. (1996): Clinical effectiveness of systemic Amoxicillin plus Metronidazole as adjunct therapy in the treatment of adult periodontitis. MSc thesis, College of Dentistry, University of Baghdad.

2. Loe H, Silness J.(1963): Periodontal disease in pregnancy. Acta Odontol Scand; 21: 533-5J.

3. Page RC, Schroeder HE. (1981): Current status of host response in chronic marginal periodontitis. J Periodontal; 59(9): 477-81.

4. Pavicic MJ. Van-WinkelhoffAJ, Dougue NH, Steures RW. Degroaff J. (1994): Microbiological and clinical effect of Metronidazole and Amoxicillin in Actinobacillus Actinomycetem comitans associated periodontitis. A 2-years evaluation. J Clin Periodont; 21(2): 107-12.

5. Quirynen M, Pollen OML, Van-Dekerchove BN, Pekeyser C, Papaioannon IV, Eyssen 11 (1995): Full-Vs Partial mouth dis¬infection in the treatment of periodontal infection. Short term clinical and microbiological observation. J Dent Res. Ang; 74(8): 1959-67.

6. Renvert S, Wikstrom M. Egelberg J. (1990): On the in ability of root debridement and periodontal surgery to eliminate A.afrom periodontal pocket. J Clin Periodont: 17: 351-5.

7. Silverstein LH, Schuster GS. GarnickJ, Singn B. (1990): Bacterial penetration of gingiva in the adult beagle dog with periodontitis. J Periodontal: 61: 36-41.

8. Silness J. Loe H. (1964): Periodontal disease in pregnancy. Acta Odontol Scand; 22: 121.

9. Slots J, Rosling BG. (1983): Suppression of the periodontopathic microflora in localized juvenile periodontitis by systemic tetracyclic J Clin Periodont: 10: 465-86.

10. W Sagge DLO, Leary TJ. Kafrawy EL. (1975): The clinical and histological response of periodontal pocket to root planing and oral hygiene. J Periodontal; 46: 527-33.

11. Van-Winkelhoff AJ, RodenburgJP, Goene RJ, Abbas F. (1989); Metronidazole plus Amoxicillin in the treatment of Actinobacillus Actinomycetem comitans associated periodontitis. J Clin Periodont; 16: 128-31.

12. Vandsvorth. (1986); Manual of anaerobic bacteriology- 4”1 ed