Original Article

Treatment of Apical Periodontitis

Clinical Effect of Augmentin as Intracanal Medicament Compared with no any Medication on Endodontic Flare-Up in Cases of Symptomatic Apical Periodontitis- A Pilot Study

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ABSTRACT

Objective: To assess the clinical effect of Augmentin as intracanal medicament on endodontic flare-up in comparison with no any intracanal medicament in cases of symptomatic apical periodontitis.
Study Design: Comparative study
Place and Duration of Study: This study was conducted at the Operative Dentistry Department, Dental OPD Liaquat University of Medical and Health Sciences, Jamshoro from June to October 2015.
Materials and Methods: Total 50 patients requiring endodontic treatment were selected in this study. The patients were assigned into two groups by lottery method .The teeth of patients in group I were treated with Augmentin as ICM after cleaning and shaping and temporarily restored. In group II, the teeth were left with empty canals after complete cleaning and shaping and restored with temporary filling. Next appointment was given to patients after 24 hour and after one week to assess the level of inter-appointment pain.
Results: The mean age of the patients was 30.42±7.754. The males and females were 42% and 58% respectively. The types of teeth were anterior and posterior 58% and 42% respectively. Teeth with pulpal status with irreversible pulpitis and pulp necrosis were 46% and 54% respectively. The mean value of preoperative pain level was 8.24±0.797, pain after 24 hours was 4.54±1.606 and after 7 days was 1.10±0.931. The association of study group and effectiveness on pain (control of pain) showed that in group I 70% effective and 25% not effective, as compared to group II 30% effective and 75% not effective with P value 0.001.
Conclusion: It is concluded that "The patients in which Augmentin was used as intracanal medicaments showed a greater decrease in pain levels over the observation period when compared to the control group."
Key Words: Augmentin, Intracanal Medicaments, Endodontic flare-up, Symptomatic Apical Periodontitis

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INTRODUCTION

The occurrence of post treatment pain of mild or moderate intensity during and after endodontic treatment is not uncommon event, even the treatment has followed standard protocols. But occurrence of one of such unusual and unpleasant event is called endodontic "flare-up", characterized as acute exacerbation of pain and swelling, occurring after few hours or days, during or after endodontic treatment.[1, 2] There are many factors responsible for flare-up, including microbial, chemical and mechanical. Microbial injury accompanied with procedural mishaps such as over-instrumentation of the root canal, extrusion of the canal irrigants and filling materials are amongst the main reasons of postoperative pain.[3] In addition to these factors, patients complaining moderate to severe pain preoperatively are at more risk of having five times more moderate to severe pain post operatively.[4] Also demographic factors (age, gender) and general health like (presence of any allergy) also may influence the occurrence of flare-up.[5, 6]

It is well known that bacteria play an important role in the growth and establishment as well as progression of endodontic disease. Endodontic infection is caused by population of mixed microorganisms but predominantly involved organisms are gram negative rods.[7] Because of the complex anatomy of the root canal system, chemical and mechanical shaping is often not enough to decrease the count of microorganisms in the complex root canal system.[8] The use of antimicrobial intracanal medicaments (ICM) has been recommended during root canal treatment to decrease or eliminate existing bacterial populations, particularly in cases of pulp necrosis and symptomatic apical periodontitis thereby decreasing postoperative pain.[9]

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Microorganisms which remain after chemomechanical preparation and disinfection involve rottenlyin failure of endodontic treatment. Various strategies have been recommended in literature to decrease or eliminate the root canal bacterial load, including the use of various advanced instrumentation techniques, irrigation methods and intra-canal medicaments.[10]Several different intracanal medicaments are in use since last many decades. Common were formocresol, camphoratedpara-chlorophenol, eugenol, iodine potassium iodide, beachwood creosote, calcium hydroxide, eugenol, and a combination of various. Among all these calcium hydroxide has still been widely used as a choice of material but it is not effective against all microorganisms responsible for persistent endodontic infections.[7, 8]

The systemic use of Augmentin (combination of amoxicillin and calvunic acid)is an adjunct to endodontic treatment is not uncommon among dentists. However, studies on its local applications as intracanal medicaments have not been conducted. Therefore the purpose of this pilot study is to assess the local effect of Augmentin as intracanal medicament on endodontic flare-up. This study will help us to conduct further studies on use of Augmentin on a broader scale. If local application of Augmentin will be found effective then its unnecessary systemic uses and adverse effects will also be avoided.

MATERIALS AND METHODS

This study was conducted at operative dentistry dental OPD Liaquat University of Medical and Health Sciences Jamshoro, from 1st June to 1st October 2015. 50 patients were selected for this pilot study and divided in two groups of 25 each, by lottery method as Group A (Augmentin as ICM) and Group B (No Any ICM) . All teeth either anterior or posterior which diagnosed as having symptomatic apical periodontitis, with or without apical radiolucency and with pulp necrosis, of either gender, between 15 to 60 years of age were included in study. Exclusion criteria for the study were teeth with immature root development (open apex), severe periodontal disease and patients with any systemic medical conditions. Before start of the treatment, preoperative pain was recorded on proforma by using Visual analogue scale (VAS). In all teeth after access preparation, rubber dam appliedand canal were negotiated with 15 K-file and working length taken with apex locater and confirmed on radiograph. Cleaning and shaping performed with protaper rotary instrumentation with simultaneous irrigation of sodium hypochlorite (NaOCl). In group A canals were dried with paper points and paste of Augmentin (375 mg mixed with 1ml of normal saline) inserted with lentulospiral up to working length and rest of the cavity is sealed with cotton pledged and temporary cement(cavit). In group B the canals were left empty and restored temporarily.

The patients were informed for revisit to record the level of pain after 24 hours and after one week. The effect of both the groups compared and taken as effective if teeth became asymptomatic.

Data were analyzed in statistical software SPSS 16. Frequency and percentage were computed of categorical variables like gender, group of study, type of tooth and pulpal status,while mean and standard deviation were calculated for quantitative variables like age and pain. Chi-square test was used to compare proportion difference between groups of study and effectiveness of medicaments used to control pain. Repeated measure ANOVA test was applied to compare mean difference between study groups and pain level (pre-operative and post-operative i.e after 24 hours and after 7 days). P value ≤ 0.05 was considered significant at 95% confidence interval.

RESULTS

Fifty patients were selected in this study and equally divided into two groups by lottery method. Twenty five patients in group I were treated with Augmentin as ICM and twenty five in group II were left with no any ICM. The mean age of patients was 30.42+7.754 and

Frequency and percentages of gender, type of tooth, pulpal status is shown in Table-1.

Table No. 1: Age, Gender, Type of Tooth and Pulpal Status

Base line characteristics of patients	N (%) /50	Mean±SD
Age		30.42±7.754
Gender		
Male	21 (42)	
Female	29 (58)	
Type of tooth		
Anterior	29 (58)	
Posterior	21 (42)	
Pulpal status		
Irreversible pulpitis	23 (46)	
Pulp necrosis	27 (54)	

Table No. 2: Association between group of study and effectiveness (control of pain).

	Control of Pain		Total	P-Value
Groups of Study	Effective	Not Effective		
case group=1 augmentin	21	5	26	
	70.0%	25.0%	52.0%	0.001
Control Group=2 No Medicaments	9	15	24	
	30.0%	75.0%	48.0%	
Total	30	20	50	
	100.0%	100.0%	100.0%	

When the association was checked between groupof study and effectiveness (control of pain), the results have shown that there was 70% reduction in pain in Augmentin group while 30% effectiveness observed in no medicament group, which is statistically significant P value is 0.001. Table-2.

When Augmentin was used as intracanal medicament, it was effective in reducing postoperative pain to 60% of cases.

Pain level checked preoperatively and post operatively (i.e. after 24hours and after 7 days) as give in (Table-3)

Table No.3: Pain level pre-operatively and postoperatively (i.e. after 24hours and after 7 days)

	Mean	Std. Deviation	N	P-Value
Pre-operative pain level	8.24	.797	50	
Pain level after 24 hours	4.54	1.606	50	0.001
Pain level after 7 days	1.10	.931	50	

DISCUSSION

Endodontic Flare-up is a complication that a dentist frequently encounters during endodontic treatment. The main presenting characteristic of flare up is the pain which is most commonly associated with micro flora of root canal. [11]and also withother mechanical or chemical factors related with treatment. Pharmacologically it is treated oftenby the use of analgesic and systemic antibiotics. The most commonly used antibiotic prophylactically as well as therapeutically among dentist is Augmentin these days due to its broad spectrum antimicrobial action against many endodontic pathogens. The systemic use of Augmentin is not without various adverse effects, one of such is gastrointestinal upsets, also the patient's compliance is utmost important for taking the drug.

Torabinejad et al [9] have proposed that the use of antimicrobial intracanal dressing may prevent occurrence post treatment pain, thus the use of intracanal medicament during root canal treatment can noticeably remove microorganism from the root canal system and theoretically may prevent occurrence of post treatment pain, if the antimicrobials are not cytotoxic to the tissues when extruded periapically.

In this study Augmentin is used locally as intracanal medicaments to reduce or eliminate the bacterial count in the pulp canal and to remove the microorganisms from the areas such as canal ramification, fins, and isthmuses, where conventional instrumentation and irrigation has no access. The results of the present study suggest that the proposed incorporation of Augmentin as intracanal medicament can reduce post-operative pain level in comparison to the control group. Group 1 (Augmentin group) have shown the decrease of pain 70% as compared to control group (No Medicament) in which pain reduced to 30%. At baseline, the mean pain level was slightly higher for the experimental group than for the control group.

In the present study, patients having preoperative pain level with mean value 8.24±0.797. After 24 hour of intracanal medicaments pain reduces to 4.54±1.606 and after 7 days it reduces to 1.10±0.931.

In the present study, the pain status was high on VAS preoperatively and postoperatively after 24 hours and after 7 days it decreases gradually with time.In this study the gender of patient had no significant influence on post treatment pain.There was statistically significant difference between experimental group (Augmentin Group) and control group regarding the intensity of postoperative pain. This result is in agreement with some previous studies[13]Previous studies described the occurrence of postoperative pain reduced gradually with time, pain levels showed an even reduction in the successive days of Augmentin group.[14]

The findings of this study are encouraging. The patients in which Augmentin was used as intracanal medicament appeared to showed a greater decrease in pain levels over the observation period when compared to the control group. Furthermore use of Augmentin systemically has been decreased during this study which ultimately reduces the adverse effects of the drug. A larger study is necessary to allow a more precise assessment of Augmentin as intracanal medicament and itscomparison with commonly used intracanal dressing materials.

CONCLUSION

Reduction of the microbial count from the root canalsystem is an indispensible criteria for the successful result of endodontic treatment. The literature reports that mechanical and chemicalinstrumentation, irrigation protocols, and use of intracanal inter appointment antimicrobial dressings are all important for this purpose. However, allof the available materials for rootcanal irrigation and medication have limitations, and therange of researchis still continuingin the search of ideal materials. The results of this study strongly hold up the recommendation of intracanal use of Augmentin for the relief of endodontic flare-up.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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