

ORIGINAL ARTICLE

Comparative evaluation of various antibiotic therapies in diabetic patients undergoing dental surgical procedures

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ABSTRACT:

Background: The effect of clindamycin prophylaxis on the prevention of bacteremia following dental procedures has been evaluated in very few studies, and the results of those studies do not confirm the efficacy of clindamycin. Moreover, increasing resistance to CLI among streptococci isolated from the bloodstream after dental extractions has been found; this could limit its use as a prophylactic drug. **Aim:** To compare efficacy of prophylactic Amoxicillin and Clindamycin in diabetic patients. **Materials and method:** The present study was conducted in the department of oral surgery of the dental institution. For the study we selected 40 diabetic patients scheduled for extraction of molars. The patients were randomly divided into two groups, Group A and B with 20 patients in each group. The patients in Group A were given Amoxycillin 500 mg prophylactically before 1 hour of anesthesia and patients in Group B were given Clindamycin 600 mg prophylactically before 1 hour of anesthesia. The scoring of pain and inflammation was done on the follow up visit from score 0 to 4. **Results:** A total of 40 patients were included in the study. Number of male patients was 26 and number of female patients was 24. The mean age of the subjects was 42.23 + 2.1 years ranging from 21 to 65 years. We observed that number of patients with Score 0 was 15 in Group A and 10 in Group B. Number of patients with Score 1 was 2 in Group A and 5 in Group B. Number of patients with Score 2 was 2 in Group A and 3 in Group B. Number of patients with Score 3 was 1 in Group A and 2 in Group B. Number of patients with Score 4 was 0 in both the groups. On comparing the results we observed statistically non-significant results. **Conclusion:** Within the limitations of the present study, we conclude that Amoxicillin and Clindamycin can be prescribed as prophylactic antibiotics for diabetic patients with positive results.

Keywords: Amoxycillin, Clindamycin, Diabetes, Prophylaxis

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INTRODUCTION

The controversy over bacterial endocarditis (BE) of oral origin has intensified during the past decade, based principally on estimates of the incidence and on case-control studies which exclude dental treatment as a risk factor.^{1, 2} Concerning bacteremia following dental manipulations, the small size of the bacterial inoculum, its transient nature, and the concept of cumulative exposure associated with “everyday” events have also been discussed.³ As a consequence, Durack suggested that the indications for the administration of antibiotic prophylaxis (AP) for BE should be restricted.⁴ Furthermore, as there is no evidence of the efficacy of AP for the prevention of BE related to dental manipulations in patients “at risk”, some experts are starting to question whether the routine use of AP is necessary and whether the guidelines should be updated.⁵ However, the use of AP in patients “at risk” of BE who undergo “at-risk” dental procedures is a relatively widely accepted practice.⁷ In accordance with the latest AP guidelines drawn up by expert committees, amoxicillin

continues to be the antibiotic of choice for patients “at risk” of BE and who are to undergo certain dental procedures; for patients allergic or intolerant to penicillin (PEN), the antibiotic of choice is clindamycin.^{8, 9} The effect of clindamycin prophylaxis on the prevention of bacteremia following dental procedures has been evaluated in very few studies, and the results of those studies do not confirm the efficacy of clindamycin.¹⁰ Moreover, increasing resistance to CLI among streptococci isolated from the bloodstream after dental extractions has been found; this could limit its use as a prophylactic drug. Hence, the present is planned to compare efficacy of prophylactic Amoxicillin and Clindamycin in diabetic patients.

Materials and method:

The present study was conducted in the department of oral surgery of the dental institution. The ethical clearance for the protocol of study was obtained from ethical committee of the institution. An informed written consent was obtained from the subjects after verbally

explaining them the protocol of study. For the study we selected 40 diabetic patients scheduled for extraction of molars. The patients were randomly divided into two groups, Group A and B with 20 patients in each group. The patients in Group A were given Amoxicillin 500 mg prophylactically before 1 hour of anesthesia and patients in Group B were given Clindamycin 600 mg prophylactically before 1 hour of anesthesia. Patients were recalled to the department after 1, 3 and 7 days and clinical symptoms were assessed. The scoring of pain and inflammation was done on the follow up visit from score 0 to 4. Score 0 represents no inflammation and score 4 represents no improvement in inflammation. The results were tabulated for further management.

The statistical analysis of the data was done using SPSS program for windows. Student's t-test and Chi-square test were used for statistical significance of the data. A p-value less than 0.05 were predefined as statistically significant.

Results:

A total of 40 patients were included in the study. Number of male patients was 26 and number of female patients was 24. The mean age of the subjects was 42.23 + 2.1 years ranging from 21 to 65 years. **Table 1** shows number of patients with different scoring of inflammation for Group A and B. We observed that number of patients with Score 0 was 15 in Group A and 10 in Group B. Number of patients with Score 1 was 2 in Group A and 5 in Group B. Number of patients with Score 2 was 2 in Group A and 3 in Group B. Number of patients with Score 3 was 1 in Group A and 2 in Group B. Number of patients with Score 4 was 0 in both the groups. On comparing the results we observed statistically non-significant results (p<0.05) [Fig 1].

Table 1: Number of patients with different scoring of inflammation for Group A and B

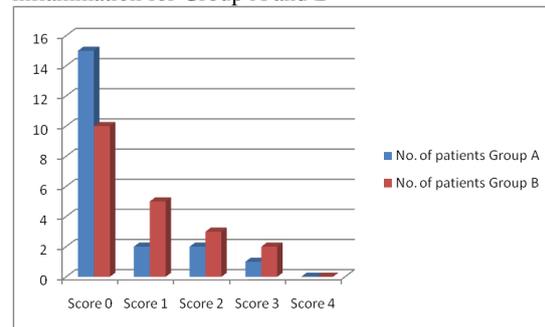
Scoring for inflammation	No. of patients		p-value
	Group A	Group B	
Score 0	15	10	0.81
Score 1	2	5	
Score 2	2	3	
Score 3	1	2	
Score 4	0	0	
Total	20	20	

Discussion:

The present study was conducted to compare the efficacy of amoxicillin 500 mg and clindamycin 600 mg for prophylactic antibiotic in diabetic patients. We observed that both the drugs are efficient for resolving space infections but Amoxicillin was more efficient for space infection. The results were non-significant. The results were compared to other studies. Segura-Egea JJ et al identified antibiotic prescription practices in the treatment of endodontic infections amongst Spanish oral surgeons. Members of the Spanish Oral Surgery Society (SECIB) were surveyed on antibiotic prescription on six different pulpal and periapical diagnoses. A total of 200 questionnaires were delivered with 127 returned. The

average duration of antibiotic therapy was 7.0 +/- 1.0 days. Ninety five percent of respondents selected amoxicillin as the first choice antibiotic in patients with no medical allergies, alone (34%) or associated to clavulanate (61%). The first drug of choice for patients with an allergy to penicillins was clindamycin 300 mg (65%), followed by azithromycin (15%) and metronidazole-spiramycin (13%). For cases of irreversible pulpitis, 86% of respondents prescribed antibiotics. For the scenario of a necrotic pulp, acute apical periodontitis and no swelling, 71% prescribed antibiotics.

Fig 1: Showing number of patients with different scoring of inflammation for Group A and B



Almost 60% of respondents prescribed antibiotics for necrotic pulps with chronic apical periodontitis and a sinus tract; in this clinical situation, odontologists prescribed more frequently antibiotics compared to stomatologists. The majority of the members of the SECIB were selecting the appropriate antibiotic for use in endodontic infections, but there are still many who are prescribing antibiotics inappropriately. The use of antibiotics for minor infections, or in some cases in patients without infections, could be a major contributor to the world problem of antimicrobial resistance. Mainjot A et al assessed the types and frequency of antibiotic prescriptions by Belgian dentists, the indications for antibiotic prescription, and dentists' knowledge about recommended practice in antibiotic use. In this cross-sectional survey, dental practitioners were asked to record information about all antibiotics prescribed to their patients during a 2-week period. The dental practitioners were also asked to complete a self-administered questionnaire regarding demographic data, prescribing practices, and knowledge about antibiotic use. A random sample of 268 Belgian dentists participated in the survey. During the 2-week period, 24 421 patient encounters were recorded; 1033 patients were prescribed an antibiotic (4.2%). The median number of prescriptions per dentist for the 2 weeks was 3. Broad spectrum antibiotics were most commonly prescribed: 82% of all prescriptions were for amoxicillin, amoxicillin-clavulanic acid and clindamycin. Antibiotics were often prescribed in the absence of fever (92.2%) and without any local treatment (54.2%). The most frequent diagnosis for which antibiotics were prescribed was periapical abscess (51.9%). Antibiotics were prescribed to 63.3% of patients with periapical abscess and 4.3% of patients with

pulpitis. Patterns of prescriptions were confirmed by the data from the self-reported practice. It was concluded that discrepancies between observed and recommended practice support the need for educational initiatives to promote rational use of antibiotics in dentistry in Belgium.^{11, 12}

Konde S et al compared the antibiotic prescription pattern and the awareness of antibiotic resistance among Bachelor of Dental Surgery (BDS) practitioners and pediatric dentists. A hundred BDS practitioners and 100 pediatric dentists included in the study were given a questionnaire containing both open-ended and closed-ended questions. The questionnaire comprised information pertaining to antibiotic prescription for most common oral conditions, commonly prescribed antibiotics, their dosage, etc. The majority of the practitioners prescribed antibiotics for managing oral diseases. On comparing the prescription patterns between the BDS practitioners and pediatric dentists, there was an overprescription in the BDS group for many conditions, which was statistically significant. Amoxicillin was the most commonly prescribed drug in both the groups. In the presence of an anaerobic infection, the most preferred drug was a combination of amoxicillin and clavulanic acid with metronidazole. With regard to the duration of antibiotic prescription, 74% BDS practitioners prescribed antibiotics as a 3-day course and 60% pediatric dentists resorted to a 5-day course, which was statistically significant. The awareness regarding antibiotic prophylaxis and antibiotic resistance was found to be adequate in both the groups. However, there was a general lack of awareness with regard to the guidelines for antibiotic prescribing in both the groups. Authors concluded that practitioners should prescribe antibiotics in accordance with the guidelines to curb antibiotic resistance, an emerging public health problem. Lauber C et al conducted a survey to determine prescribing practices of general dental and medical practitioners regarding the use of antibiotics for prophylaxis. A questionnaire with an accompanying letter was designed to investigate prescribing practices of general dentists and physicians. The survey encompassed demographic data, mechanisms to keep current with prophylactic practice, first- and second-line drugs prescribed with doses and directions, applicable medical conditions and dental procedures warranting antibiotic prophylaxis. Names were chosen randomly from provincial lists and ethics approval was granted. Responses were compared with 1997 American Heart Association (AHA) guidelines. In all, 1,500 surveys were sent to each group, with a response rate of 32% of dentists and 17% of physicians. There was a significant difference between dentists (95%) and physicians (71%) in selecting the correct first-line antibiotic, amoxicillin, and in choosing the correct dose of amoxicillin (i.e., 2 g, 1 hour before treatment): 88% of dentists and 48% of physicians. Appropriate second-line drugs were correctly selected by 84% of dentists and 67% of physicians--a significant difference with clindamycin chosen most often (82% and 49%, respectively). Over 90% of respondents in both professions correctly

identified conditions, such as prosthetic heart valve and endocarditis, requiring antibiotic prophylaxis. They concluded that clinicians are not always aware of current clinical guidelines, and dentists and physicians exhibit different patterns regarding antibiotic prescribing. Dentists are more familiar than physicians with current protocols of the AHA.^{13, 14}

Conclusion:

Within the limitations of the present study, we conclude that Amoxicillin and Clindamycin can be prescribed as prophylactic antibiotics for diabetic patients with positive results.

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