

Demonstrator's Knowledge Regarding the Prescription of Antibiotics for Endodontic Treatment



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Abstract

Background: Since the discovery of antibiotics, they have been in use broadly for the treatment of odontogenic infections. Prescription is a dynamic, custom-sized clinical process, and is considered as a vital determinant of good doctor/clinician. Aim of this study was to assess & evaluate the knowledge regarding the prescription of antibiotic during endodontic treatment and errors made by the house officers at Multan Dental College.

Methods: This survey-based study was conducted among 40 house officers working at Multan Dental College. A survey form was designed, about the pattern of antibiotics prescription and the situations for which they were recommended by the House officers. The questionnaire investigated house officer's knowledge regarding the indications of prescription of antibiotics for different clinical signs that may well be related to the infections of the oral cavity.

Results: The medication of choice was mostly Amoxicillin + clavulanic acid (52.6%) and Amoxicillin alone (47.3%). The greatest number of antibiotic prescriptions was written for acute apical abscess (62.8%) and patient with fever and malaise (62%). Overall, 12% of respondents always prescribed antibiotics after root canal therapy. In this study the greatest numbers of antibiotics prescribed were prophylactically for congenital heart diseases 69.7%, and uncontrolled diabetes mellitus 62.8%. Prosthetic joint in past 2 years 46.5% & Mitral valve prolapsed 34.9%.

Conclusion: We conclude that here is a deficiency of knowledge & information about the proper indication, kind, and dose of antibiotics in the dental practice.

Keywords: Antibiotics, endodontics, prescription writing, prophylaxis, root canal treatment (RCT)

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Introduction

Since discovery of antibiotics, they have been widely used to treat dental infections. The introduction of antibiotics has significantly reduced the incidence of fatal infectious ailments, and a new era has arrived in the treatment of infectious illnesses (1). Medical therapy is an important tool that healthcare workers use for the betterment of their patients. Prescribing medicines is a dynamic process (2,3). In recent years, the resistance of microbial species to almost all identified antibiotics has been noticed. Both the misuse and abuse of antibiotics are believed to be the main reasons for the emergence of multidrug-resistant bacteria. Resistance to an antibiotic amongst obligatory anaerobic microbes is surging, with fight to penicillin, cephalosporin and clindamycin has been observed at main community hospitals and medicinal centers (4-6). Before recommending antibiotics, one should always consider the risk-benefit ratio. Appropriately certain patients will get benefit from systemically administered antibiotics. Limited use of antibiotics

is strongly recommended in clinical practice of endodontics, but non-discriminatory use (including cases of non-infectious pulpitis) is contrary to sound medical practice. This causes selective pressure and the consequent overgrowth of inherently resistant bacteria, making patients more susceptible to hyper- and secondary infections and making drug ineffective against possibly deadly contagious illnesses (1,7).

Prescription is determined by patient needs and physician knowledge of experience (8). Medicine prescription is an important part of graduation curriculum and make a good impact on clinical practice of physicians and surgeons. It is also an essential skill for doctors in all disciplines (10).

Dentists prescribe different medicines for different situations. If these drugs are not properly recommended, they can harm the patient. Adverse drug events have been reported to be associated with prescribing mistakes or inappropriately written prescription (11,12). These events may not be fatal, but they can still cause the pathological condition of a particular individual. Recently, recommendations

have gradually become an issue for several reasons. Prescription errors can be broadly divided into prescription writing and decision-making errors. The latter may consist of errors such as under-prescription, over-prescription, irrational prescription, improper prescription etc., while the former focuses on the errors that occurred during prescription writing (13,14). Inadequate prescribing by students and young doctors has been identified in various studies partially due to knowledge-based or information-based errors (15,16). Objective of this current study was to assess as well as evaluate demonstrator's knowledge regarding the prescription of antibiotics for endodontic treatment at Multan Dental College.

Methodology

This questionnaire-based study was conducted with 40 demonstrators at Multan Dental College. A study form was created that included information about the pattern of antibiotic prescription as well as the various situations in which they were recommended. Our questionnaire investigated demonstrators' knowledge of recommended indications for the prescription of those antibiotics for various clinical signs that may be associated with oral cavity infections. A few clinical signs were chosen: malaise and fever, diffused inflammation, evidence of systemic spread, and difficulty swallowing. Participants were also asked whether certain clinical situations require antibiotics and, if so, what treatment they should receive. Chronic apical periodontitis, acute pulpitis, acute apical abscess, and long-term swelling of the apical region with sinus tract were all considered clinical conditions. Antibiotic prescription factors were also investigated. This questionnaire asked if a patient's expectations about an antibiotic prescription, root canal treatments in two sittings, RCT in a single visit, and re-treatment could be considered a reason for prescribing various antibiotics. Other sections of the form evaluated/assessed knowledge on various medical situations other than oral procedures that may require prophylactic antibiotics. Oral/dental procedures were RCT's, post as well as pre-endodontic surgeries; following medicinal conditions were incorporated: hepatitis B, HIV+, mitral valve prolapse, uncontrolled diabetes, congenital heart diseases, and patients having prosthetic joint in preceding 2 years or those giving a history of radio-therapy and cancer. Collected statistics/data was tabularized and then analyzed.

Results

In forty participants sixteen (16) were males and while twenty four (24) were females. (Table 1). The medication of choice was mostly Amoxicillin+clavulanic acid (52.6%) and Amoxicillin alone (47.3%) Table 2. The greatest number of antibiotic prescriptions was written for acute apical abscess (62.8%) and patient with fever and malaise (62%). Chronic apical abscess with sinus tract (58%), Chronic apical abscess with periodontitis (55%), Patients with swelling & difficulty in swallowing (58%) while 33% was reported during prolonged root canal treatment. About, 12% of respondents said antibiotics were always prescribed after root canal therapy. For chronic periapical lesions and chronic periapical abscess plus sinus tracts, 55% and 58%,

respectively. (Table 3).

In this study the greatest numbers of antibiotics prescribed were prophylactically for congenital heart diseases 69.7%, and uncontrolled diabetes mellitus 62.8%. Prosthetic joint in past 2 years 46.5% & Mitral valve prolapsed 34.9%.

Table 4

Table 1: Gender Distribution

Male	Female	Total
16(40%)	24(60%)	40

Table 2: Percentage of Antibiotics that were prescribed by respondents

Prescribed Antibiotics	Percentage
Amoxicillin	47.3
Amoxicillin+clavulanic acid	52.6
Clindamycin	10.52
Cephalosporin	10.52

Table 3. Conditions and percentage of antibiotic prescription

Conditions	Prescribed Antibiotics
Acute Pulpitis	25.5%
Apical Abscess (Acute)	62.8%
Chronic apical abscess with sinus tract	58%
Ch. apical abscess with periodontitis	55
Patients with swelling	44%
Patients with malaise & fever	62%
Patients with swelling & difficulty in swallowing	58%
If patients insist	14%
In retreatment	18.5%
During prolong root canal treatment	33%
Post RCT	12%

Table 4: Conditions and percentage of Prophylactic antibiotic prescription

Conditions in which Prophylactic Antibiotics were prescribed	Percentage
Before RCT	13.9
Diabetes	62.8
Mitral valve prolapse	34.9
Congenital heart disease	69.7
Chemotherapy/Radiotherapy	25.6
Prosthetic Joint	46.5
HIV+ Patients	41.9
HBS+ Patients	18.6

Discussion

Inflammatory problems in dentistry are common, which can be associated with ache/toothache. In a wide spread range of instances oral pain is both because of continual or acute infections of pulp origin, which compels operative interference, rather than antibiotics. Sometimes the illnesses of endodontic area can be dealt with out antibiotics. In this research drug of choice was Amoxicillin + clavulanic acid (52.6%) and Amoxicillin alone (47.3%) and these findings are in line with previous research which suggests that Amoxicillin is the drug of choice for the treatment of bacterial infections 46.47% and Amoxicillin + clavulanic acid was 57% (17,18). Clindamycin was the last drug we chose for our research. These results also line up with the research conducted by Fahad et al. and Jain A et al.,

which found that clindamycin was rarely prescribed in favor of amoxicillin. (18,19).

In our survey, antibiotic prescription for an acute apical abscess was (62.8%) that's in evaluation with the study of M Reza & Fahad et al wherein 74% & 71% contributors make use of antibiotics for abscess of dental/apical origin (17,19). This outcome is just like other investigators wherein 62.6% contributors prescribed antibiotics in the instances of peri-apical abscess (20). In current study 62% participants with malaise and fever had been prescribed the antibiotic which is almost just like other research wherein 57% participants had been given the antibiotics for the patient of endodontic disease with fever (19). In this investigation, 25.5% members counseled antibiotics for acute pulpal infection that's twofold as stated by Palmer et al wherein 12.5% GDPs of U.K prescribed various antibiotics for acute pulpitis²¹ and that is threefold in comparison to one more survey(8.2%) (20). When there are instances without signs or symptoms of a localised or systemic infection or involvement, antibiotics are no longer recommended and no longer help critical pulp cases (22). Contrary to what was found in our survey, the majority of respondents had used antibiotics for pulpal conditions.

Debridement of the root canal space is the appropriate treatment for irreversible pulpitis. Apical periodontitis, irreversible pulpitis, draining sinus region, and acute pulpitis are frequently treatable with root canal therapy (non-surgical) without antibiotics. When that happens, pulpal circulation and flow are typically impaired, making it impossible for systemic antibiotics to reach the pulp where they are most needed for healing (23). A thorough nonsurgical root canal procedure could get rid of the infection's cause and frequently promote healing of the peri-radicular lesion. However, analgesics are recommended for peri-apical conditions and pain associated with pulpitis (17).

Fifty-eight percent of the participants in this study reported the use of antibiotics for chronic apical abscesses with sinus tracts. This is twice as much as reported in one more study. Fifty-five percent participants in this study reported the use of antibiotics for chronic apical abscesses with periodontitis. This is much more than that reported by Salvadori et al (24). Outcomes of our research showed that 33% of doctors used antibiotics during RCT. This is consistent with the findings of Yousufi and colleagues in which 35.2% of participants wrote antibiotics throughout RCT²⁰. Overall, 11.6% respondents always endorsed antibiotics after root canal treatment. For chronic periapical lesions and chronic periapical abscesses having sinus canal, 58% and 55% of respondents recommended antibiotics, respectively. This is similar to the results of Nabavezadeh et al. (58% and 73.1%, respectively) (14). Our investigation exposed that 55% of subjects gave antibiotics in an apical abscess with periodontitis which is identical to result of one more survey where 58% contributors wrote antibiotics as an adjunct (19).

In our study 13.9% of participants were advised to take medication prior to the RCT, which is comparable to another study's 11.4%. Antibiotics for HIV+ patients were recommended by 41.9% of our test takers. This is consistent with another survey, in which 58% of dentists/dental surgeons indicated prescribing antibiotics. In this study,

25.6% of participants confirmed prescribing antibiotics to patients with a history of chemo/radiotherapy and carcinoma. This percentage is lower than that of Yousufi (40.6%) (20). According to our survey, 69.7% of subjects used prophylactic antibiotics for congenital heart disease. This is slightly higher than the percentage reported in another study, which was sixty percent. (19). Prophylactic antibiotics were prescribed by 34.9% of participants to patients with mitral valve prolapse. This is comparable to the figure reported by Fahad et al (35%) (19). Our study found that 14% of subjects gave antibiotics when the patient requested them, which is significantly lower than the 70% reported by Liaquat et al. (25).

Prophylactic antibiotics coverage is recommended only for patients at high risk and prone to infective endocarditis after bacteriaemia. The use of prophylactic antibiotics in these folks prevents blood-derived microbes from colonizing shunts and prostheses and growing in depressed systems. Patients with artificial mitral valve prolapse, congenital heart sickness and uncontrolled diabetes are at increased risk of infection during endodontic treatment and require prophylactic antibiotics (1). Antibiotic prophylaxis before endodontic treatment is not routinely prescribed for healthy patients after joint replacement, but antibiotic prophylaxis is fully considered during the first 3 months after joint surgery (26,27). As per our study, some subjects use antibiotics improperly, which can certainly lead to problems such as resistant microbes, drug resistance, and other side effects. This study reveals that knowledge of how to use antibiotics is far away from ideal. This was also shown in a study by Wali A (28).

The use of systemic or topical antibiotics on a daily basis in endodontics is still debatable (29). According to one study, dentists should only use antibiotics in accordance with those guidelines if therapies or treatments require it (30). Misuse of antibiotics is a serious global issue (31). Rational prescribing based on extensive evidence-based data is required. Healthcare workers, including dentists, must be aware of various aspects of prescribed drugs in order to effectively treat the infection to which that drug has been administered (32). Evidence suggests that antibiotics for specific situations may cause harm as well as benefit (33). Antibiotics, specifically broad spectrum antibiotics, are commonly used in dentistry (34). Many studies in dentistry on antibiotic prescription revealed that over-prescribing is a worldwide problem (35). Antibiotic use in endodontics may be increasing day by day (36).

Publication of commending protocols & guidelines may well aid to accomplish better results. Additionally, right educational intercession may equally be effective. Usage of computers & clinical audits along with extra tools to upsurge antibiotic prescription knowledge and expand and increased a care of patients should continuously be considered.

Conclusion

Here is a deficit of knowledge & information concerning proper indication, kind, and antibiotics dose in dental setup. Some of partakers needlessly prescribed antibiotic. Efforts must always do to surge level of an education and other education related initiatives on skills of antibiotic prescription. Curriculum must offer great importance on

prescribing, as well as good prescription practice sought to be imparted in clinical rotations, using imaginary or an actual case.

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