

Knowledge, attitude, and practice survey on usage of antibiotics among dental practitioners in southern region of India

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ABSTRACT

A cross-sectional survey was done across the southern part of India regarding the usage of antibiotics. Antibiotics are prescribed by dentists for treatment and as well as prevention of infection. Indications for the use of systemic antibiotics in dentistry are limited since most dental and periodontal diseases are best managed by operative intervention and oral hygiene measures. However, the literature provides evidence of inadequate knowledge in prescribing antibiotics by dentists. Here, we do survey that investigated the pattern of antibiotic use by dentists. The main defects in the knowledge of antibiotic prescribing are outlined. The main conclusion is that the usage of antibiotics by dentists is inadequate and this is manifested by overprescribing. Recommending the medicine by dental practitioners can be improvised by increasing awareness among dental practitioners of the recommended guidelines.

Keywords: Overprescribing, antimicrobial resistance, recommended practice

Introduction

Dentists generally prescribe medication for the management of the infected oral condition.^[1] Prescription of antibiotics by dental practitioners has become an important aspect of dental practice. For this reason, antibiotics account for the vast majority of medicines prescribed by dentists.^[2] Dentists prescribe between 7% and 11% of all common antibiotics (beta-lactams, macrolides, tetracyclines, clindamycin, and metronidazole). Antibiotic prescribing may be associated with unfavorable side effects ranging from gastrointestinal disturbances to fatal anaphylactic shock and development of resistance. The increasing resistance problems of recent years are probably related to over or misuse of broad-spectrum agents such as cephalosporins and fluoroquinolones.^[3] We have now entered a stage where some bacterial species are resistant to the full range of antibiotics presently available, with the methicillin-resistant *Staphylococcus aureus* being the most widely known example of extensive resistance.^[3] Therefore, the aim of the study was to survey the dental practitioner about the usage of antibiotics in the clinical practice.

Materials and Methods

This cross-sectional survey was conducted in the month of September 2015. The participants were categorized into endodontists (Group A) and nonendodontists (Group B), so the institutional review board approval was not required for the same. In this study, endodontists were 44% and nonendodontists were 56%. A specially designed questionnaire consisting of 20 questions for the purpose of collecting data was used in this survey. 345 questionnaires were handed over to various dental practitioners across Chennai city, out of which 315 filled questionnaire forms were returned. All the responses were recorded on individual survey forms for each practitioner. If the response was not the same, then, the individual details were collected from the practitioners. An initial approach to the selected practices was made by telephone or a visit to their practice. Recourse was made to the practitioner only if clarification was required. For both the endodontists and general dentists, the survey responses to each question were summarized and expressed as relevant proportions. Comparisons between the nonendodontists and endodontists were made.

Result

Responses were obtained from all the 152 endodontists. Of the 193 nonendodontists surveyed, only 30 did not respond, giving a response rate of 84.45% for this group.

Antibiotic prophylaxis

The prescription of antibiotics to the patients prior, and during the interappointment has a greater impact in the successful root

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canal therapy. The (Group A) endodontist has awareness about the prescription of antibiotics of about 94.21% and (Group B) nonendodontist has an awareness of about 89.73%. Whereas when it comes to the dosage and duration of antibiotics (Group A) endodontist has an awareness of about the biological half-life period of antibiotic regimen for about 88.14% and among (Group B) nonendodontist for about 76.89%.

Antibiotics as intracanal medicament

About the usage of antibiotics as an intracanal medicament among the endodontist and nonendodontist creates a greater influence about the successful root canal therapy. The awareness about the selection and usage of antibiotic as intracanal medicament among the (Group A) endodontist was 94.25% and among nonendodontist Group B was 48%.

Antibiotics in systemic diseases

The awareness of the usage of antibiotics in the systemic diseases (i.e.) about the contraindication and about the prior medication among the endodontist was 64.26% and among nonendodontist was about 36.13%.

Discussion

Most oral diseases presented to the dentist are of primarily inflammatory conditions that are associated with pain. A considerable percentage of dental pain originates from acute and chronic infections of pulpal origin, which necessitates operative intervention,^[4] rather than antibiotics. Recommending the antibiotics which are not indicated include acute periapical infection, dry socket, and pulpitis. Chronic inflammatory periodontal conditions are also not indicated for antibiotics; systemic antimicrobials should only be used in acute periodontal conditions where drainage or debridement is impossible.^[5]

Recommending the antibiotics when not required results in several side effects which are ranging from gastrointestinal disturbances to fatal anaphylactic shock and development of resistance. The increasing resistance problems of recent years are probably related to over- or misuse of broad-spectrum agents such as cephalosporins and fluoroquinolones.^[2] We have now entered an era where some bacterial species are resistant to the full range of antibiotics presently available, with the methicillin-resistant *S. aureus* being the most widely known example of extensive resistance.^[3]

The most commonly used antibiotic in dental practice, penicillins in general, was found to be the most commonly prescribed antibiotics by dentists, the most popular one being amoxicillin followed by penicillin V metronidazole^[6] and amoxicillin and clavulanate.^[7]

Penicillin is still the gold standard in treating dental infections.^[8] Among the group of penicillins, penicillin V, amoxicillin,^[9] and amoxicillin and clavulanate^[10] have been advocated for the treatment of odontogenic infections. Kuriyama *et al.* found no difference in clinical outcome between penicillin V, amoxicillin, or amoxicillin and clavulanate.^[11]

Frequency of prescribing is usually mentioned in the known resources for antibiotic prescribing, whereas duration of treatment recommended in therapeutic guidelines is most commonly based on expert opinion.^[12] A survey in Canada found that the average duration of antibiotic use prescribed by dentists is 6.92 days. Another survey which was performed in the USA found that endodontists prescribe antibiotic use for an average of about 7.58 days.^[13] Recent studies on the attitudes of dentists in the Eastern Mediterranean region showed that dentists preferred to prescribe a lower dosage of an antibiotic over a longer period.^[14]

In summary, antibiotics should be prescribed at the correct frequency, dose, and duration so that the minimal inhibitory concentration is exceeded, and so that side effects and the selection of resistant bacteria are prevented.^[3,15-17] Prolonged courses of antibiotics destroy the commensal flora. In addition, longer duration of up to 21 days may result in the selection of resistant strains and a reduction in the ability of the oral flora to resist the colonization by harmful microorganisms that are not normal residents, leading to superimposed infections by multiresistant bacteria and yeasts.^[14] The patients are also consuming the antibiotics as a self-medication in various developing countries which were recorded in the surveys taken,^[18-23] this could also lead to various complications.

Conclusion

Recommending the antibiotics by a dentists can be improved by increasing awareness among dental practitioners of the recommended guidelines. Furthermore, the importance of initiating awareness programs among the general public should be carried on.

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