

Original Research

ANTIBIOTICS- A DOUBLE EDGED SWORD

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ABSTRACT:

Background: Antibiotic treatment is a double-edged sword that alters the natural balance of organisms. Each time an antibiotic is used to eliminate bacteria, other pathogens gain strength. The circulation within the pulp is compromised in the presence of inflammation or infection. Because an antibiotic is carried by the vascular system, its ability to reach bacteria in a therapeutic concentration will be limited. This environment diminishes the efficacy of the antibiotic. The aim of this study was to evaluate the role of antibiotics in patients with irreversible pulpitis. **Materials & methods:** Patients were divided into two groups. First group- endodontic treatment with antibiotic-analgesic regimen. Second group- endodontic treatment without antibiotic analgesic regimen. The results were subjected to statistical analysis. **Results:** No significant differences were obtained between two groups. **Conclusion:** An infection must either be persistent or systemic to justify the need for antibiotics. Pain alone or localized swelling donot require antibiotic treatment. Although the incidence of bacteremia is low with root canal procedures, antibiotics may be recommended prophylactically for some medically compromised patients.

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INTRODUCTION

Antibiotics are life saving therapeutic agents of inestimable value. The first antibiotic, Penicillin, was discovered by Alexander Fleming in 1928. Florey, in 1940, introduced the use of antibiotics to clinical practice. Since then, antibiotics have been used extensively in dentistry. However, the scientific community grossly underestimated the remarkable genetic plasticity of these organisms and their ability, through mutations and genetic transfer, to develop resistance to antibiotics. Infectious diseases are now the world's major cause of death. The cause of bacterial reemergence as a threat to human health and life is the abuse of the "miracle drugs"². A study was carried out in Department of Conservative dentistry and

Endodontics, Dasmesh Institute of research and dental sciences, Faridkot to evaluate the role of antibiotics in patients with irreversible pulpitis.

MATERIALS & METHODS

A Prospective, randomized, double-blind, placebo-controlled trial was carried out. All the patients attending the department were assessed for symptoms and signs of dull, continuous pain, hot and cold sensitivity and unusually low readings of electric pulp vitality testing. A total of fifty patients undergoing endodontic treatment due to acute irreversible pulpitis were randomly divided into two groups. Patients with systemic disease, those taking antibiotics for the last one month, Symptomatic necrotic teeth, teeth tender to

percussion and non-restorable teeth were not included in the study.

Treatment Protocol

First appointment:

Access opening was established followed by working length determination and biomechanical preparation. In the first group, antibiotics were prescribed and patients were advised to take analgesics as and when required while in the second group, Placebo drugs were prescribed instead of antibiotics and patients were advised to take analgesics as and when required.

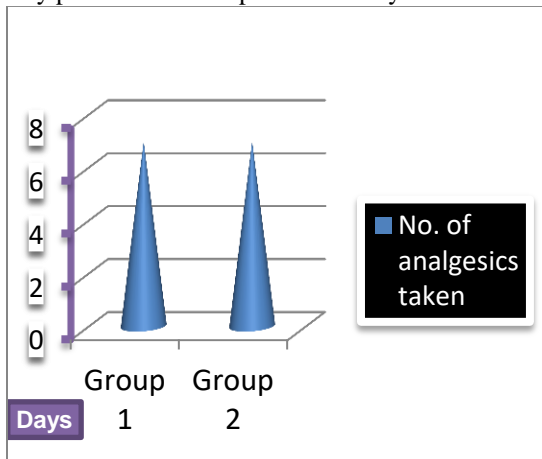
Second appointment : After a period of 7 days

Obturation of concerned tooth was done. The number of analgesic medications taken by patients was recorded. Secondly history of spontaneous pain and percussion pain was assessed. The data obtained was compiled and statistically analyzed .

RESULTS

No statistically significant difference ($p > 0.05$) in pain relief was found between two groups.

Graph 1: showing the number of analgesic medications taken by patients over the period of 7 days.



DISCUSSION

Endodontic disease is caused by polymicrobial infections but endodontic disease differs from other microbial infections. Bacteria cause inflammatory reaction in pulp. Toxins and waste products reach periapical tissues whereas bacteria do not reach the periapical tissues. In case of acute pulpitis, the bulk of the bacterial load is located in the coronal pulp. Antibiotics cannot reach the bacteria within the canal system. The apical lesion only contains bacteria if there is a sinus tract present, an acute exacerbation or extra radicular infection. There is a need to delineate the actual indications for use of antibiotics in endodontics. The only indications are:

- Active microbial infections with local and systemic manifestations.
- High risk patients: According to ADA guidelines³, the high risk patients are those with Prosthetic Joint infection and Infective Endocarditis.
 - Patients with prosthetic cardiac valve or prosthetic material used for cardiac valve repair, those with the history of infective endocarditis, a cardiac transplant that develops cardiac valvulopathy and patients with unrepaired cyanotic congenital heart disease, a completely repaired congenital heart defect during the first six months after the procedure or any repaired congenital heart defect with residual defect that can inhibit endothelialisation are the ones prone to develop infective endocarditis.

The discovery of safe, systemic antibiotics has been a major factor in the control of infectious diseases, increased the life expectancy and the quality of life for millions of people. However, we are currently at a watershed point as we face a growing crisis of antibiotic resistance (Fig-1) among diverse pathogens. Widespread inappropriate use of antibiotics has led to the development of bacterial resistance^{4,5}.

Figure 1: Bacterial resistance

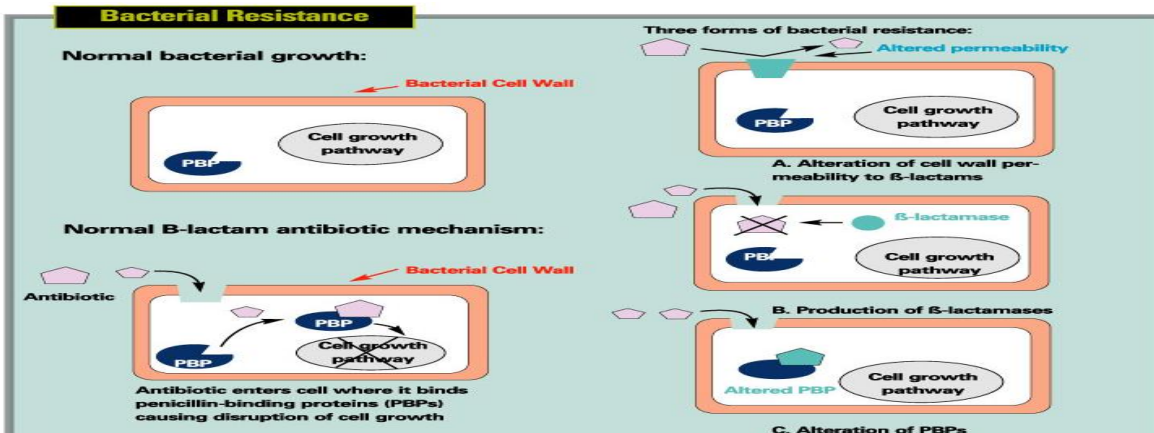
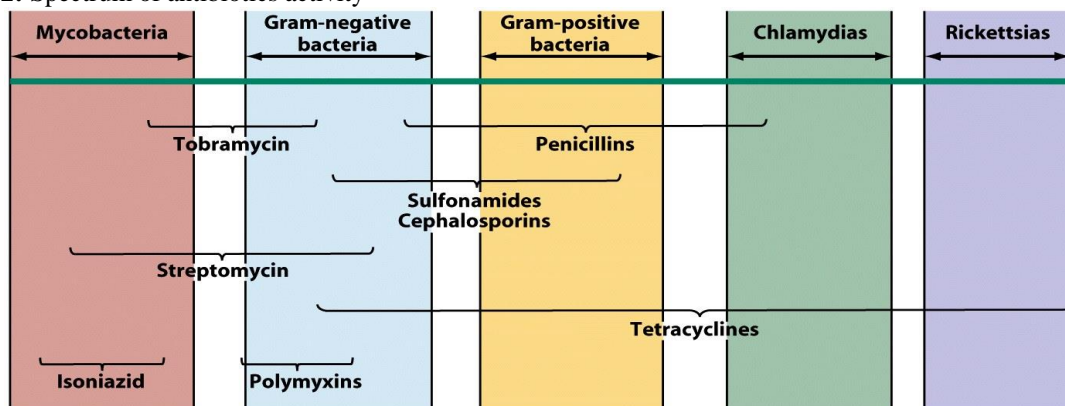


Figure 2: Spectrum of antibiotics activity

Owing to the injudicious use of antibiotics, bacteria are developing resistance and these superdrugs are turning into superbugs. Studies have shown that 74% of people with pulpitis are being prescribed antibiotics. A sound knowledge of antibiotic spectrum of activity (Fig-2) is necessary to overcome this situation. Broad spectrum antibiotics should be limited to severe bacterial infections.

CONCLUSION

Systemic antibiotics should be used with caution because of the possibility of toxicity, side effects, the development of resistant strains of microbes, and allergic reactions. It is important for clinicians to know, given the side-effects of antibiotics, whether the benefits of prescribing antibiotics in conjunction with standard endodontic treatment methods outweigh the risks involved. Local root canal instrumentation procedures, combined with analgesic medications are sufficient for management of the vast majority of endodontic cases. Systemic antibiotic administration should be considered if there is a spreading infection that signals failure of local host responses in abating the advancing bacterial irritants, or if the patient's medical history includes conditions or diseases known to reduce the host defense mechanisms or expose the patient to higher systemic risks⁴.

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