Klebsiella revisited!

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ABSTRACT

Microbial infection of the dental pulp, often the result of dental caries is the most common prelude to endodontic treatment. It has been demonstrated that exposed pulp tissues become necrotic in presence of bacterial contamination, chronic inflammation and eventually periapical granuloma develops. In the oral cavity of healthy persons Klebsiella may occur sporadically and in small numbers without producing pathologic changes, serious pathologic state of oral structures involving K. pneumoniae often in mixed culture may develop under suitable conditions such as lack of oral hygiene......it is of paramount importance that endodontist should have knowledge about specific bacterial species to administer correct drug regimen.

Key words: Dental caries, endodontic treatment, Klebsiella pneumoniae, culture, drug administration & resistance.

INTRODUCTION

It has been known for more than a century that bacteria may colonize in the root canal. The importance of bacteria as an etiological factor for pulpal and periapical inflammation as expressed in the literature has varied over the years. However, striking evidence for the role of infection came in the 1960’s when it was shown that pulp necrosis and apical periodontitis would not develop in germ free animals when the pulp was exposed to the oral cavity1.

A variety of bacteria has been isolated from Endodontic infections in the past. This diversity is best seen in untreated root canals with a necrotic pulp, of symptomatic or non-symptomatic teeth. The microbial composition of the Endodontic infection resembles that of the subgingival flora of marginal periodontitis and most of the microorganisms recovered are also involved. Similar to the etiology of marginal periodontitis, the etiopathological role of various root canal organisms is not well known but the microbial specificity in apical periodontitis seems to be low. However, there are reasons to believe that some species or groups of micro organisms are more significant than others. This is indicated by their expression of various virulence factors.2.

CASE REPORT

A 67 year old male patient reported to the clinics. The patient complained of pain and swelling in the lower front tooth region since 4-6 months. The patient had undergone treatment previously with a dentist. The medical history was, patient had undergone angioplasty and was under medication, allergic to sulpha drugs and also patient was exposed to antibiotics like, amoxicillin and tetracycline previously. Clinical examination revealed that, generalized wear facets, attrition, calculus ++, stains+. Also swelling was present which was soft and fluctuant in lower anterior
vestibular region. Signs of pulp space therapy was evident in relation to 31, 32 and 41 with open dressing present, when the patient reported to the clinic. After thorough isolation dressing was removed under rubber dam application and pus discharge was noticed. Culture was taken using a #20 sterile paper point and swab that was obtained from the laboratory. Cleaning and shaping was done with warm saline irrigation. After which intracanal medicament of calcium hydroxide and iodoform was placed in the first two dressings at 72 hours intervals. After 72 hours, patient reported back with increased pain and swelling, temporary restorations were removed, it was observed that there was copious, persistent drainage present. Again warm saline irrigation was done and canals dried. At this visit ciprofloxacin and metronidazole, were mixed in a steroid paste and was introduced into the canal using lentilo spiral and paper point. And patient was prescribed oral antibiotics ciprofloxacin and tinidazole twice daily for 5 days. After 3 days culture report was obtained from laboratory as Klebsiella. Further micro investigations was done using PCR and the report obtained was Klebsiella pnuemoniae.

In relation 31 obtaining dry canal was not possible. Patient was contraindicated for extraction or surgical procedure because of his cardiac condition. Finally an attempt was made for I & D and curettage of the area under medical supervision because the signs and symptoms persisted even after the repeated intracanal medicament placement was done.

**DISCUSSION**

Certain bacterial infections now defy all antibiotics, the resistance problem may be reversible, but only if society begins to consider how the drugs affect “good” bacteria as well as “bad”.

Klebsiella is non motile, gram negative, non sporulating, facultative anaerobic bacilli which is 0.3-0.5µ by width and 2-5µ in length. It has large irregular capsule. The most prominent among Klebsiella is K. pnuemoniae. In the oral cavity of healthy persons Klebsiella may occur sporadically and in small numbers. In oral infections K. pnuemoniae, may develop under conditions, such as: 1. nasocomial infection, 2. Poor oral hygiene, 3. Extensive dental caries, 4. High alcoholic intake, 5. Leukemia and 6. Immuno compromised patients.

In teeth where endodontic therapy has been compromised or grossly inadequate for instance: repeated but inadequate antibiotic treatment, multiple openings of root canal, inadequate periapical surgical treatment, in such instances Klebsiella species and yeast are recovered. The presence of these and other mainly non oral microorganisms suggests that blood-borne infection of the periapical lesion may take place. Antibiotic resistance has developed in almost all classes of bacteria of pathogenic potential. Resistance in organisms of low virulence can emerge as important pathogens. Use of these in turn, has fueled the appearance of bacteria with newer modes of resistance. The factors which promote the development and spread of infection may be

- Alteration of normal flora,
- Practices contributing to misuse of antibiotics,
CONCLUSION

Finally we would like to conclude that,

1. In recent trend in health care the expectancy of patient life has increased with subsequent hospitalization and nosocomial infection.

2. Patient history and unyielding drainage should always put dentist under extra vigilance for culture and antibiotic resistance.

REFERENCES
2. Ingar Oslen, Gunnar Dahlen: Salient virulence factors in anaerobic bacteria, with emphasis on their importance in endodontic infections. Endodontic Topics 2004, 9, 15-26
4. Topley & Wilson’s, Principles of Bacteriology, Virology and Immunity- 8 Edn 1990 vol-II
5. Tronstad L, Sunde PT The evolving new understanding of endodontic infections 2 Edn 2003
6. TDH CA – MRSA conference september  2004