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"Monday Morning Pearls of Practice by Bobby Baig"

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Antibiotics Usage: Management of Odontogenic Infections: Part B:

Use of Antibiotics in Other Dental (odontogenic infection) Situations will continue in this newsletter.

Salivary gland infections:

1. For suspected salivary gland infections, it must first be determined if the infection is of bacterial etiology.
2. A thorough history and examination must be performed.
3. Swellings in the gland may be secondary to sialoliths, nonbacterial organisms like viruses (mumps, HIV), mycobacteria (e.g., tuberculosis), fungus or, rarely, parasites. They may even autoimmune etiology and neoplasm.
4. Patients with dehydration or hyposalivation are at risk. This includes the elderly and patients on certain medications (e.g., antihistamines diuretics, anticholinergics, chemotherapeutics).
5. Associated medical conditions such as diabetes, Sjogren's syndrome, malnutrition, anorexia/ bulimia, vomiting/diarrhea, HIV/AIDS, renal failure, liver failure or patients who have received head and neck radiation
therapy increase the risk of sialadenitis.

Clinical Manifestation and Assessment;

1. Clinically, patients will present with salivary gland enlargement that may or may not be painful.
2. Any purulence should be cultured and antibiotic sensitivities obtained.
3. If the condition worsens while eating, it is suggestive but not pathognomonic of sialolithiasis.

Antibiotic therapy:

1. Acute salivary gland infections of bacterial origin respond to antibiotic therapy. Empirically, these

conditions can be treated with broad-spectrum penicillins (amoxicillin, amoxicillin clavulanate), first-generation cephalosporins (cephalexin, cefadroxil), clindamycin or a macrolide (erythromycin, azithromycin, clarithromycin).
2. Depending on the severity of the infection, hospitalization with incision and drainage and intravenous antibiotics may be indicated.

Periodontal disease:

1. Not only is there a bacterial component to periodontal disease, there are also inflammatory mediators (e.g., cytokines, interleukin-1 β, tumor necrosis factor a , prostaglandin E2, IgG 2) that are involved in periodontal disease. It is these inflammatory mediators that are responsible for most of the periodontal tissue destruction.
2. Concomitant systemic diseases, along with the patient's own dental and osseous deformities, also affect the progression of periodontal disease.
3. In addition, factors like smoking and stress have an impact.

Treatment & Management:

1. Scaling and root planning (SRP) have been shown to be the most effective way of managing periodontal disease
2. The goal of SRP is to disrupt the biofilm and eliminate the inflammation.
3. However, SRP is not as effective deep in periodontal pockets where bacteria can invade the epithelium and where there are architectural barriers (e.g., furcation, grooves, dentinal tubules).
4. For this reason, systemic combination drug therapy has been advocated for patients who have specific microbiological profiles in their subgingival biofilm.
5. There is support for the use of systemic antibiotic in the treatment of periodontal disease that progresses in spite of conventional mechanical treatment. These drugs enter the periodontal tissues and the sulcus via the bloodstream to areas that cannot be reached by instrumentation.
6. Unfortunately, the subgingival biofilm may be protective as the matrix can act as a barrier to antibiotics and facilitate horizontal resistance gene transfer.

Antibiotic Therapy:

1. The American Academy of Periodontology (AAP) addressed the issue of the use of systemic antibiotics in the treatment of periodontal disease in a position paper.
2. In that report, the AAP stated that the use of systemic antibiotics in the treatment of periodontal disease is to reinforce mechanical treatment and to support host defenses. The AAP recommended that consideration should
3. be given to single or combination drug.
4. In the position paper, the AAP provided clinicians with a list of frequently prescribed antibiotics for the treatment of aggressive periodontal disease.

Common antibiotic therapies in the treatment of Periodontitis:

Antibiotic	Adult Dosage
Metronidazole	500mg / TID / 8 days
Clindamycin	300mg / TID / 8 days
Doxycycline or minocycline	100mg-200mg / QD / 21 days
Ciprofloxacin	500mg / TID / 8 days
Azithromycin	500mg / QD / 4-7 days
Metronidazole +Amoxicillin	250mg / TID / 8 days of each drug
Metronidazole + Ciprofloxacin	500mg / BID / 8 days of each drug

The antibiotic regimens listed do not represent recommendations of the American Academy of Periodontology. Adapted from Position Paper Systemic Antibiotics in Periodontics. J Periodontol 2004:1553–1565.

5. The AAP report stated that the optimum dosage of the antibiotics remains unclear and that most antibiotic regimens for the management of aggressive periodontal disease have been developed empirically.

6. It has been suggested that microbiological analysis and antibiotic susceptibility testing to determine antibiotic sensitivities and the minimal inhibitory concentration (MIC) be conducted when systemic antibiotics are being considered.
7. There is no evidence that systemic antibiotics are effective as monotherapy without SRP in treating periodontal disease.
8. A panel of experts was assembled by the Council on Scientific Affairs of the ADA to review the literature and develop clinical practice guidelines on nonsurgical treatments for patients with chronic periodontitis with and without adjuncts. The panel found that for patients with chronic periodontitis, SRP showed a moderate benefit as the initial nonsurgical treatment of this condition. They suggested the use of systemic sub antimicrobial-dose doxycycline (SDD), 20 mg twice a day for six to nine months, as an adjunct to treatment with SRP resulted in a small net benefit (0.35 mm net gaining clinical attachment).
9. The panel felt that there were negligible adverse effects and that the risk of antimicrobial resistance was not a factor. The use of systemic antimicrobials like amoxicillin, metronidazole, azithromycin, clarithromycin, moxifloxacin and the tetracyclines at higher doses was also reviewed. Even though the net benefit was the same as the use of SDD (mean 0.35 mm gain in clinical attachment),
10. The panel felt that these higher doses were not justified because of the increased risk of adverse effects and antibiotic resistance. The panel recommended that these drugs at higher doses should be reserved for short-term (less than 21 days) use only.

Extraction of Teeth

1. There are many indications for the extraction of teeth. Some of these extractions may or may not be associated with infection.
2. Some examples are the extraction of impacted teeth, supernumerary teeth or because of acute fractures of roots or coronal portions. Teeth are also extracted for prosthodontic purposes, cosmetic concerns or as indicated by orthodontic treatment. These extraction sites are considered contaminated by virtue of their exposure to the oral cavity. Because the microorganisms involved are part of the host's normal oral flora, pre- or postsurgical antibiotics are not indicated.
3. The use of prophylactic antibiotics prior to tooth extraction has been suggested if the patient's immune status is compromised (e.g., poorly controlled diabetes, end-stage renal disease, alcoholism, immune compromising diseases).
4. The literature does not necessarily support the need for antibiotic prophylaxis in these situations. Studies have shown that there are no differences in healing after routine extractions between well-controlled and poorly controlled diabetics.
5. In addition, studies have shown that patients with either alcoholic liver disease, renal disease or patients who are HIV positive with CD4 counts greater than 200 are at low risk for postsurgical infections for routine extractions.[36] With respect to the extraction of teeth in the presence of infection, early extraction is associated with faster clinical and biologic resolution of infection. Delay in the extraction of necrotic teeth risks the spread of the infection.

Extraction of Impacted Third Molars

1. Postsurgical surgical site infection (SSI) related to third molar surgery occurs at a frequency of between 1.2 to 27 percent with the most reported frequency at 5 percent.
2. In spite of numerous clinical studies, the indications for the use of prophylactic antibiotics for the extraction of third molar teeth remains unclear.
3. Most of the studies were not performed in the typical outpatient oral surgery setting. There is some evidence that prophylactic antibiotics reduced the risk of infection, dry socket and pain following third molar extraction.
4. The estimated adverse effect (diarrhea, nausea, rashes, vomiting, vaginitis) rate was 1 to 3 percent.
5. Because of the risk of adverse effects and antibiotic resistance it may not be appropriate to treat healthy people with antibiotics in order to prevent infection.

Implants

1. The placement of dental implants has become a predictable method of replacing teeth. The question is whether antibiotic prophylaxis is indicated for implant placement to reduce the chance of implant failure or postsurgical infection.
1. Esposito et al. performed systemic reviews and analysis of randomized control trials of healthy participants given preoperative amoxicillin versus placebo prior to implant placement. Their last report was an analysis that included six trials that showed that there was a statistically signifycant higher percentage of implant failures in the placebo group versus the antibiotic group. They reported that there was no statistically significant difference for postsurgical infections.
2. Another independent systemic review and meta-analyses had similar findings in a study of 2,973 implants, the Dental Implant Clinical Research Group found significantly higher survival rates for dental implants if patients were given presurgical antibiotics.
3. There are also studies that do not support presurgical antibiotics prior to implant placement. These clinical trials found that there was no significant difference in postoperative infections, adverse events or implant failures in patients given preoperative antibiotics.
4. The effectiveness of postsurgical antibiotics on implant survival rates has also been questioned when single-dose preoperative antibiotics was compared with one week of postoperative antibiotics.
5. In practice, there is significant confusion concerning the effectiveness of antibiotic therapy in dental implant success. So much so that a study of 217 oral and maxillofacial surgeons found no consensus concerning the use of preoperative antibiotics. Though most studies only support the use of presurgical antibiotic prophylaxis prior to implant placement to reduce failures, a significant number prescribed postsurgical antibiotics.

Health Care-Associated Infections

1. Health care-associated infections refer to infections associated with health care delivery in any setting (e.g., hospitals, long-term care facilities, ambulatory settings, home care).
2. Organisms (bacteria, fungi and viruses) can be spread from patient to patient from contaminated health care workers. Close attention should be paid to asepsis and infection control. This includes standard precautions like hand hygiene, surface disinfection and sterilization procedures, the possibility of cross-contamination and following strict surgical protocols.
3. Policies should be in place for handling and processing patient care equipment and devices contaminated with blood or body fluids. Staff members must have the appropriate personal protective equipment (gloves, gowns, face and eye protection) and protocols for prevention of sharps injury. Antibiotics should not be used as an excuse for inadequate infection control procedures.

Conclusions

1. In treating infections, an accurate diagnosis needs to be made to determine if there is a need for antibiotic therapy.
2. The acute or chronic stage of the infection may dictate whether antibiotics are indicated.
3. Antibiotics cannot be a substitute for conventional therapy including indicated surgical procedures.
4. Patient host factors and immune status need to be determined.
5. Antibiotics should only be used to support the patient's immune system in controlling infection.
6. The use of antibiotics should only be considered if there is an inadequate host immune response with systemic signs or progression of the infection beyond the source to adjacent tissues or spaces.
7. The use of these drugs is not indicated to control pain in the absence of signs and symptoms of a progressive infection.
8. Dentists are fortunate in that most odontogenic infections requiring treatment with antibiotics respond well to penicillin.
9. Recommendations and antibiotic prophylaxis guidelines can change rapidly. It is important that dentists keep abreast of the literature and any changes in guidelines and should work cooperatively with their medical colleagues concerning the most appropriate antibiotic therapy for the individual patient.

Reference:

1. Carlson ER. Diagnosis and management of salivary gland infections. Oral Maxillofac Surg Clin N Am 2009;21(3):293–312.
2. Socransky SS, Haff ajee AD, Cugini MA, et al. Microbial complexes in subgingival plaque. J Clin Periodontol 1998;25:134–44.
3. Slots J, van Winkelfoff AJ. Antimicrobial therapy in periodontics. J Calif Dent Assoc 1993 Nov:21(11):51–6.
4. Slots J, van Winkelfoff AJ, Rams TE, Slots J. Systemic antibiotic therapy in periodontics. Periodontol 2000. 1996; 10:45–78. Systemic antibiotics in the treatment of periodontal disease. Slots J, Ting M. Periodontol 2000 2002:28:106–76.
5. Herrera D, Sanz M, Jepsen S, Needleman I, Roldan S. A systemic review on the eff ect of systemic antimicrobials as an adjunct to scaling and root planing in periodontitis patients. J Clin Periodontol 2002; 29 (suppl 3): 136–162.
6. The use of two antibiotic regimens in aggressive periodontitis: Comparison of changes and clinical parameters and gingival crevicular fl uid bile markers. Quintessence Int 2008; 39:811–819.
7. Systemic antibiotics in the treatment of aggressive periodontitis. A systematic review and a Bayesian Network meta-analysis. Rabelo CC , Feres M, Goncalves C, Figueiredo LC, Faveri M, Tu Y-K, Chambrone L. J Clin Periodontol 2015; 42: 647–657. doi: 10.1111/jcpe.12427.
8. Jolivet-Gougeon A, Bonnaure-Mallet M. Biofi lms as a mechanism of bacterial resistance. Drug Disc Today: Technol vol. 11, March 2014, pp 49–56.
9. Position Paper Systemic Antibiotics in Periodontics. J Periodontol 2004:1553–1565.
10. Bonito AJ, Lohr KN, Lux L, Sutton S, Jackman A, Whitener L, Evensen C. Eff ectiveness of Antimicrobial Adjuncts to Scaling and Root Planing Therapy for Periodontitis vol. 2. Evidence Tables. Evidence Report/Technology Assessment No. 88 (Prepared by RTI International-University of North Carolina Evidence-Based Practice Center under Contract No. 290-97-0011) AHRQ Publication No. 04-E014-3. Rockville, Md.: Agency for Healthcare Research and Quality. March 2004.
11. Bonito AJ, Lux L, Lohr KN. Impact of Local Adjuncts to Scaling and Root Planing in Periodontal Disease Therapy: A Systematic Review. J Peridontol 2005 Aug 76(8):1227–36.
12. Rams TE, Degener JE, van Winkelhoff AJ. Antibiotic resistance in human chronic periodontitis microbiota. J Periodontol 2014 Jan;85(1):160–9. doi: 10.1902/ jop.2013.130142. Epub 2013 May 20.
13. Haff ajee AD, Socransky SS, Gunsolley JC. Systemic anti-infective periodontal therapy: A systematic review. Ann Periodontol 2003;8:115–81.
14. Smiley CJ, Tracy SL, Abt E, Michalowicz BS, John MT, Gunsolley J, Cobb CM, Rossmann J, et al. Evidence-based clinical practice guideline on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts. J Am Dent Assoc vol. 146, issue 7,p 525–535 July 2015.
15. Smiley CJ, Tracy SL, Abt E, Michalowicz BS, John MT, Gunsolley J, Cobb CM, Rossmann J, et al. Systematic review and meta- analysis on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts. J Am Dent Assoc vol. 146, issue 7, pp 508–524.e5.
16. Laskin DM. Should Prophylactic Antibiotics Be Used for Patients Having Removal of Erupted Teeth? Oral Maxillofacial Surg Clin N Am 23 (2011) 537–539.
17. Igoumenakis D, Giannakopoulos NN, Parara E, Mourouzis C, Rallis G. Eff ect of Causative Tooth Extraction on Clinical and Biological Parameters of Odontogenic Infection: A Prospective Clinical Trial. J Oral Maxillofac Surg 73:1254–1258, 2015.
18. A critical summary of Lodi G, Figini L, Sardella A, Carrassi A, Del Fabbro M, Furness S. Antibiotics to prevent complications following tooth extractions. Cochrane Database Syst Rev 2012;11:CD003811.
19. Esposito M, Grusovin MG, Talati M, Coulthard P, Oliver R, Worthington HV. Interventions for replacing missing teeth: Antibiotics at dental implant placement to prevent complications. Cochrane Database of Systematic Reviews 2008, issue 3. [doi: 10.1002/14651858.CD004152.pub2].
20. Esposito E, Worthington HW, Loli V, Coulthard P, Grusovin MG. Interventions for replacing missing teeth: Antibiotics at dental implant placement to prevent complications. Cochrane Database Syst Rev 2010, issue 7. [doi: 10.1002/14651858. CD004152.pub3].
21. Esposito M, Grusovin MG, Worthington HV. Interventions for replacing missing teeth: Antibiotics at dental implant placement to prevent complications. Cochrane Database Syst Rev 2013 Jul 31;7:CD004152. [doi: 10.1002/14651858. CD004152.pub4].
22. Chrcanovic BR1, Albrektsson T, Wennerberg A. Prophylactic antibiotic regimen and dental implant failure: A meta-analysis. J Oral Rehabil 2014 Dec;41(12):941–56.
23. Laskin DM, Dent CD, Morris HF, et al. The influence of preoperative antibiotics on success of endosseous implants at 36 months. Ann Periodontol 5:166, 2000.
24. Abu Ta'a M, Quirynen M, Teughels W, van SteenbergheD. Asepsis during periodontal surgery involving oral implants and the usefulness of perioperative antibiotics: A prospective, randomized, controlled clinical trial. J Clin Periodontol 35:58, 2008.
25. Anitua E, Aguirre JJ, Gorosabel A, et al. A multicenter placebo-controlled randomized clinical trial of antibiotic prophylaxis for placement of single dental implants. Eur J Oral Implantol 2:283, 2009.]
26. Caiazzo A, Casavecchia P, Barone A, Brugnami F. A pilot study to determine the eff ectiveness of diff erent amoxicillin regimens in implant surgery. J Oral Implantol 37:691, 2011 9.
27. Binahmed A, Stoykewych A, Peterson L. Single preoperative dose versus long-term prophylactic antibiotic regimens in dental implant surgery. Int J Oral Maxillofac Implants 2005 Jan– Feb;20(1):115–7.
28. Sharaf B, Jandali-Rifai M, Susarla SM, Dodson TB. Do Perioperative Antibiotics Decrease Implant Failure? J Oral Maxillofac Surg 69:2345–2350, 2011.
29. Klevens RM, Gorwitz RJ, Collins AS. Methicillin-resistant Staphylococcus aureus: A primer for dentists. J Am Dent Assoc 2008 Oct;139(10):1337.
30. The Management of Infections and the Use of Antibiotic Prophylaxis by Dentists: A Review of the Evidence George Maranon, DDS; JCDA, Mar 2017