

RECOMMENDATIONS OF ANTIBIOTIC TREATMENT IN PAEDIATRIC DENTISTRY

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ABSTRACT

The child has series of differential characteristics and this facilitate faster diffusion of oral infection: the greater proportion of water in the tissues, and their increased bone sponginess. Odontogenic infections usually are mixed, with multiple organisms, anaerobic and aerobic bacteria, with different characteristics.

Pediatric patients with aggressive periodontal diseases may require antimicrobial therapy in conjunction with local treatment, if is present signs of systemic involvement (fever, asymmetry and facial swelling, regional lymphadenitis), with the use of mechanical debridement. Amoxicillin is the first choice antibiotic, especially amoxicillin. Alternative antibiotic for use in penicillin-allergic patient is erythromycin. Penicillin has been substituted by other antibiotics - clindamycin, the newer macrolides: clarithromycin and azithromycin, and cephalosporin: cephalexin and cefadroxil. Metronidazole is useful only against anaerobic bacteria, and should be reserved for situations in which only anaerobic bacteria are suspected.

Contrary to healthy children, factors related to host risk: systemic illness, malnutrition and immunosuppressed patients must be evaluated when determining the risk for infection, and need antibiotics even if infection is only suspected.

In light of the growing problem of drug resistance, the clinician should consider altering or discontinuing antibiotics following determination of either ineffectiveness or cure prior to completion of a full course of therapy. For reaching optimal therapeutic concentration, especially in the bone infections, our reason is: do not duplicate optimal doses, but do elongated the time of antibiotic treatment, minimum 7 days, and maximum 14 days.

Introduction: A children is not a men in small version, but an organism in the phase of intense growing and differentiation. The child has series of differential characteristics and this facilitate faster diffusion of oral infection: the greater proportion of water in the tissues, and their increased bone sponginess. In other hand, in most children is found an deficient of oral hygiene, and the presence of consumption of sugar-rich foods, high level of biofilm in the mouth, it contribute to increasing the risk of bacteremia following oral treatments. The children from an early age are known to develop infections who affect Waldeyer's lymphatic ring; there has the possibility of drug allergies or adverse reactions.

On the other hand, such patients require adequate dose of the prescribed medication. Consequent of inadequate antibiotic treatment, or due to self medication, sometimes result of unwarranted situations - is an etiological factor of bacterial resistance to the antibiotics.

Microbiology of odontogenic infections: Odontogenic infections usually are cause of the oral bacteria. The present microbiology is characteristically mixed, with multiple organisms, anaerobic and aerobic bacteria, with different characteristics. The main aerobic bacteria are streptococci, but the anaerobic bacteria show greater variety of species. Two main groups, however, dominate, gram-positive cocci (Streptococci and Peptostreptococcus) and gram-negative rods (Bacteroides and Fusobacterium) (1).

Odontogenic infections in children: Acute odontogenic orofacial infections usually are self-limiting, and may drain spontaneously. A child with a facial swelling or facial cellulitis should receive prompt dental attention and emergency treatment. The clinician should consider age, the severity of the infection, the medical status, and any social issues of the child. In most situations, intravenous antibiotic therapy and medical management may be not indicated, but systemic antibiotics therapy yes.

Pediatric patients with aggressive periodontal diseases may require antimicrobial therapy in conjunction with local treatment, if is present signs of systemic involvement (fever, asymmetry and facial swelling, regional lymphadenitis), with the use of mechanical debridement.

The treatment of infection: Early recognition and management of acute orofacial infection and careful follow-up of the resolution of the infection is critical, because pediatric patients may become systematically ill within a short period of time. Treatment follows two basic tenets: local drainage, debridement and removal of a cause, and proscribe the antibiotics.

Antibiotics as adjunct to treatment of odontogenic infection: Sometimes dental treatment must be accompanied by antibiotic therapy in patients with local dental infection, or the immediate surrounding tissue, with regional lymphadenitis, and some disturbance of health - systemic signs of an infection: fever or facial swelling, abscesses dentoalveolaris, facial cellulitis. In that case, for optimal healing, antibiotics should be prescribed as soon as possible. After 2-3 days, based on culture and susceptibility testing of isolates from the involved sites, are helpful in guiding and change the drug selection.

Use of antibiotics should be given in cases of nonodontogenic bacterial infections such as staphylococcal mucositis and facial skin infection. Antibiotic therapy is recommended in status of chronic recurrent juvenile parotitis, generally occurs prior to puberty. For acute submandibular sialadenitis, antibiotic therapy is included as part of the treatment.

In other hand, the administration of antibiotics in pediatric patients is complicated by the necessity to adjust the dosages to accommodate their lower weight and body size, and vary from patient to patient, depending on the patient's age, weight and other considerations.

Antibiotic therapy is contraindicated in situations such as: healthy child, presence of minor, chronic, well localized vestibular abscess, with little or no facial swelling (4).

Selection of an antibiotic: Penicillin remains the empirical choice for odontogenic infections, however, the orally administered antibiotics are effective against odontogenic infections (streptococci and oral anaerobes), include penicillin, clindamycin, erythromycin, cefadroxil and one fungicide - metronidazole.

Phenoxymethylpenicillin (penicillin V) is the penicillin of choice for odontogenic infections. It is bactericidal and although its spectrum is relatively narrow, it is appropriate for the treatment of odontogenic infections. For that point, amoxicillin is the first choice antibiotic, especially amoxicillin-clavulonate - it has an advantage that it retains activity against penicillinase (β -lactamase) producing microorganisms commonly associated with odontogenic infections. Dosage is: 50 mg/kg/BW (max 2 grams).

Alternative antibiotic for use in penicillin-allergic patient is erythromycin, 4x0,25 (max 1 gr.).

Penicillin has been substituted by other antibiotics - clindamycin, who is also clinically with the usual recommended doses bactericidal (3). Dosage is: 20 mg/kg/BW (max 600 mg).

The newer macrolides: clarithromycin and azithromycin, 15 mg/kg/BW (max 500 mg) may also be used if the child is allergic to penicillin.

The cephalosporin: cephalexin and cefadroxil, 50 mg/kg/BW (max 2 grams), may be a useful drug when a large antibacterial spectrum is necessary.

Metronidazole is useful only against anaerobic bacteria, and should be reserved for situations in which only anaerobic bacteria are suspected.

Duration of antibiotic therapy: It's well known that it's very difficult to reach optimal therapeutic concentration, based on low circulation in the bone. For that, our reason is: do not duplicate optimal doses, but do elongate the time of antibiotic treatment, minimum 7 days, and maximum 14 days.

Preventive antibiotic treatment: If it is considered important to save that preventive antibiotic treatment is contraindicated in healthy children for the extraction of the abscessed primary tooth, or root-canal therapy for a permanent tooth (1).

Antibiotics are indicated as a prophylaxis against infection, when the primary barrier is corrupted (skin, mucosa), for trauma, but in cases with significant soft-tissue or dentoalveolar injuries and have an increased risk of infection. Patients with facial lacerations, intraoral lacerations that appear to have been contaminated by extrinsic bacteria, open fractures, should be covered with antibiotics (4) and additional topical antibiotic agents. Antibiotic coverage should also be given when an avulsed tooth is replanted, since the use of systemic antibiotics may decrease the incidence of external root resorption. Penicillin V or amoxicillin is the drug of choice, and can be warranted in cases of concomitant soft tissue injuries and when dictated by the patient's medical status. For luxation injuries in the primary dentition, antibiotics generally are not indicated. The use of antibiotics may be justified after extraction of many teeth under general anaesthesia, it has been found to cause postoperative temperature elevation possible because of transitory bacteremia, because single tooth extraction results in bacteraemia in 40 to 50% of the children (3). If it is determined that antibiotics would be beneficial to the healing process, the timing of the administration of antibiotics is critical, and the drug should be administered as soon as possible for the best result (1).

Contrary to healthy children, factors related to host risk: systemic illness, malnutrition and immunosuppressed patients must be evaluated when determining the risk for infection, and need antibiotics even if infection is only suspected. In pediatric periodontal diseases associated with systemic disease, the immune system is unable to control the growth of oral infection pathogens, and treatment strictly involve antibiotic therapy (1).

Antibiotic coverage is required in patients with reduced neutrophil counts, children undergoing chemotherapeutic treatment, children who have deficiency in humoral or T-cell mediated immunity, children who receive immunosuppressive medication, or an autoimmune disease, children infected with the human immunodeficiency virus (HIV) and AIDS, children with diabetes (especially the insulin-dependent type) often exhibit some degree of leukocyte dysfunction, severe congenital neutropenia, Papillon-Lefevre syndrome, leukocyte adhesion deficiency (2,3). Therefore antibiotic coverage is usually recommended for invasive dental procedures when their condition is poorly controlled or uncontrolled (1).

For the prophylaxis against the endocarditis and associated rheumatoid diseases, every dental procedure with suspect bacteremia, must be covered - amoxicillin is the first choice antibiotic, amoxicillin-clavulanate may be used in selective cases since it has an advantage that it retains activity. The clinical effectiveness of the drug must be monitored: if the infection is not responsive to the initial drug selection, a culture and susceptibility testing of isolates from the infective site may be indicated.

Conclusion: In light of the growing problem of drug resistance, the clinician should consider altering or discontinuing antibiotics following determination of either ineffectiveness or cure prior to completion of a full course of therapy. For reaching optimal therapeutic concentration, especially in the bone infections, our reason is: do not duplicate optimal doses, but do elongate the time of antibiotic treatment, minimum 7 days, and maximum 14 days.

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