Clinical Guideline on Appropriate Use of Antibiotic Therapy

Originating Council
Council on Clinical Affairs

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Purpose

To provide guidance in the proper and conservative use of antibiotic therapy in the treatment of oral conditions recognizing the increasing prevalence of antimicrobial-resistant microorganisms. (The use of antibiotics for the prevention of bacterial endocarditis is reporduced on pages 179-189).[1]

Background[2-8]

The widespread use of antibiotics has permitted common bacteria to develop resistance to drugs that once controlled them. Several studies have shown that children recently treated with an antibiotic are more likely to be colonized with bacteria resistant to that antibiotic. At present, there are no antibiotics to which resistance has not appeared.[2] To diminish the rate at which resistance is increasing, physicians and dentists must be prudent in the use of antibiotics.

Recommendations

Given the increasing number of organisms that have developed resistance to current antibiotic regimens, it is best to be conservative in the use of antibiotics. The following general principles should be adhered to when prescribing antibiotics for the pediatric population.

Oral wound management[9]

Oral wounds are associated with an increased risk of bacterial contamination as 1 mm of saliva contains 10^{8-9} bacteria.[3] Depending upon the amount of bacterial contamination, wounds can be classified as: (1) clean, (2) potentially contaminated, or (3) contaminated/dirty. If the insult to the oral cavity/dentition appears to be have been contaminated by extrinsic bacteria, antibiotic therapy should be considered. If it is determined that antibiotics would be beneficial to the healing process, the timing of the administration of antibiotics is critical in order to supplement the natural host resistance in bacterial killing. The drug should be administered as soon as possible for the best result. The most effective route of drug administration (intravenous vs intramuscular vs oral) must also be considered. The clinical effectiveness of the drug also 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. The minimal duration of drug therapy should be limited to 7 days beyond the point of substantial improvement or resolution of signs and symptoms; this is usually a 10- to 14-day course of treatment. The importance of completing a full course of antibiotic must be emphasized. If the patient stops the antibiotic early, the surviving bacteria can restart an infection that may be resistant to the original antibiotic. Examples of oral wounds are: (1) soft tissue laceration, (2) complicated crown fracture (pulp exposure), (3) severe tooth displacement, (4) extensive gingivectomy, or (5) severe ulcerations.

Special conditions

Pulpitis/apical periodontitis/draining sinus tract/localized intraoral swelling[11]

Bacteria can gain access to the pulpal tissue through caries, exposed pulp or dentinal tubules, cracks into the dentin, and defective restorations. If a child presents with acute symptoms of pulpitis, treatment should be rendered (ie, pulpotomy, pulpectomy, or extraction). Antibiotic therapy *usually* is not indicated if the dental infection is contained within the pulpal tissue or the immediately surrounding tissue. In this case, the child will have no systemic signs of an infection (ie, no fever and no facial swelling).

Acute facial swelling of dental origin[12]

A child presenting with a facial swelling secondary to a dental infection should receive immediate dental attention. Depending on clinical findings, treatment may consist of treating or extracting the tooth/teeth in question with antibiotic coverage or prescribing antibiotics for several days to contain the spread of infection and then treat the involved tooth/teeth. The clinician should consider the ability to obtain adequate anesthesia, the severity of the infection, and the medical status of the child. Intravenous antibiotic therapy and/or referral for medical management may be indicated.

Dental trauma[13-15]

Local application of an antibiotic to the root surface of an avulsed tooth has been advocated to reduce root resorption and increase the rate of pulpal revascularization. Systemic antibiotics have been recommended as an adjunctive therapy to the recovery of a severely injured tooth/teeth. However, the value of systemic antibiotics in oral wound healing remains unclear.

Pediatric periodontal diseases[16] (eg, neutropenias, Papillon-LeFevre syndrome, leukocyte adhesion deficiency)

In pediatric periodontal diseases, the immune system is unable to control the growth of periodontal pathogens, thus necessitating antibiotic therapy. Culture and susceptibility testing of isolates from the involved sites is helpful in guiding the drug selection. Prolonged antibiotic therapy may be indicated in the management of chronic periodontal disease, especially if the underlying immunodeficiency is not corrected. Subsequent cultures are beneficial in determining the timing of the endpoint of antibiotic therapy.

Viral diseases[17-19]

Conditions such as acute primary herpetic gingivostomatitis should not be treated with antibiotic therapy unless there is strong evidence to indicate that a secondary bacterial infection exists.

References

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