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Microbiology and antibiotic treatment of the bacterial oral infections

The microbiota associated with odontogenic infections are complex and generally reflect the indigenous oral flora. Such infections are typically polymicrobial, and invasiveness is often influenced by synergistic interactions of multiple microbial species. In fact, more than 700 bacterial species from the oral cavity have been identified, and the total microscopic counts from the gingival crevice of healthy adults average 2.7×10^{11} microorganisms per gram of wet weight.

Under normal “healthy” conditions, these commensal bacteria maintain an effective and nondestructive inflammatory barrier against potential pathogens. Under pathologic conditions, however, this microbial homeostasis is disrupted, and the commensal flora shifts to a pathogenic form, which results in inflammation and tissue destruction.

In fact, important differences in bacterial composition have been noted for dental caries, gingivitis, and periodontitis in comparison to cultures from healthy tissues. An aetiological association between *Streptococcus mutans* and caries has been firmly established. Similarly, in gingivitis and periodontitis, a unique and specific bacterial composition of the subgingival plaque, with a major shift towards anaerobic gram-negative rods and motile organisms and spirochetes, has been identified.

The awareness about these complex microbiologic phenomena, the host defence mechanisms and the antibiotic sensitivities of the normal and pathogenic flora are essential to plan and manage the approach to the oral health and hygiene and will be discussed in my presentation, together with some innovative antimicrobial therapeutic measures.