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| **Name:** |
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| 6B-5 |
| **Basic Science Question:** |
| What is periodontal disease? |
| **Report:** |
| Periodontal disease is the term used to describe diseases that impact the gingiva and supporting structures of the gingiva, such as the connective tissue and alveolar bone of the oral cavity (Williams, 1990). Periodontal diseases include both gingivitis and periodontitis, of which gingivitis is the milder form of disease. In order to understand the gingiva and its supporting structures in a state of disease, the appearance and characteristics of a normal, healthy gingiva should be understood first. In health, the free gingival tissues are typically pale pink or coral pink (there may be variations in pigment), have a scalloped or knife-edged free gingival margin with pointed interdental papillae, and have a gingival sulcus that probes 1-3 mm in depth without bleeding (Kinane, 2001 and Highfield, 2009). A healthy attached gingiva will appear scalloped and tightly adhered to the bone (Highfield, 2009).  Gingivitis can be non-plaque induced, as in the case of specific bacterial, fungal, or viral infections, genetics, systemic conditions, trauma, etc.; however, gingivitis is normally associated with inflammation due to plaque (Highfield, 2009). Early plaque-induced gingivitis begins when bacteria colonize periodontal tissues of a susceptible host (Pihlstrom, 2005). Within 24 hours of an oral hygiene procedure, bacteria will accumulate and form plaque biofilms (Pihlstrom, 2005). If this process continues without disruption of the biofilm, pathogenic microbiota will migrate subgingivally into the sulcus and release enzymes, toxins, and waste products that break down collagen and host cell membranes. This irritation incites the host immune response, which responds by releasing pro-inflammatory molecules and recruiting neutrophils and leukocytes into the gingival sulcus (Kinane, 2001). As a result of these inflammatory processes, the clinical signs of gingivitis begin to appear up to 10-20 days from the initial colonization: redness, swelling, bleeding on probing, and increased gingival crevicular fluid flow. Importantly, this stage of periodontal disease can be reversed if the plaque can be effectively removed by mechanical methods (Kinane, 2001).  Gingivitis progresses into periodontitis when bacterial plaque extends to and damages the periodontal ligament and alveolar bone. These changes are irreversible, as it is impossible to regain bone and epithelial attachment once it is lost. As with gingivitis, these changes are largely controlled by the host immune response to the destructive lesions. The bacteria that colonize periodontal pockets are largely motile, anaerobic, and gram negative. Some of the primary organisms involved in periodontitis are *P. gingivalis, B. forsythus, A. actinomycetemcomitans, T. denticola, and P. intermedia.* While the tissue damage may be irreversible, it is imperative that periodontitis be controlled because it will eventually lead to complete tooth loss (Kinane, 2001). |
| **References:** |
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