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| **Name:** |
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| **Pathology Question:** |
| What is the correlation between diabetes and periodontal disease? |
| **Report:** |
| Periodontal disease and diabetes have a two-way relationship that involves pro-inflamamtory effects. Periodontal disease is often associated with diabetes and is considered one of the chronic complications of diabetes mellitus in type 1 and 2 individuals (Campus et al., 2005). Diabetes is a disease in which your blood glucose levels are too high due to insufficient insulin presence (type I) or resistance (type II) resulting in increased glucose within your blood since insulin is not helping glucose into the cells of the body. Individuals with diabetes and poor metabolic control can experience microvascular and macrovascular complications; also diabetes and persisting hyperglycemia may lead to an exaggerated immune-inflammatory response that can result in more rapid and severe periodontal tissue destruction (Taylor and Borgnakke, 2008). With diabetes metabolic dysregulation and persisting hyperglycemia, non-enzymatic glycation and oxidation of proteins and lipids may result along with formation of advanced glycation endproducts (AGEs) that accumulate in the plasma and tissues; AGEs are considered to be a causal factor in the pathogenesis of diabetes and have been found in human gingiva accompanied by markers for increased oxidant stress (Taylor and Borgnakke, 2008). AGEs lead to increased production of pro-inflammatory cytokines and osteoclast activation that can lead to periodontal tissue destruction in diabetic individuals.  Periodontal disease involves infection and inflammation of the soft tissue and bone surrounding and supporting the teeth. Periodontal disease has also been found to have an impact on diabetes in regard to insulin resistance and control; the bacteremia of periodontal pathogens and metabolic products can lead to increased serum levels of pro-inflammatory cytokine (IL-6) and fibrinogen which worsen insulin resistance and negatively impact diabetic control (Kudiyirickel and Pappachan, 2015). The inflammatory mediators important in periodontal inflammation have also been shown to have important effects on glucose and lipid metabolism and have been reported to antagonize insulin action (Taylor and Borgnakke, 2008).  Overall, Campus et al., 2005 found that individuals with type 2 diabetes had significant susceptibility for more severe periodontal disease; they were found to have significantly lower number of teeth present, increased number of probing depths, increased percent of pocket depths greater than 4 mm, increased plaque and bleeding on probe (Campus et al., 2005). In regard to periodontal disease effect on diabetes, non-surgical periodontal therapy has been seen to improve glycemic control in individuals with diabetes (Taylor and Borgnakke, 2008). All in all proving that periodontal disease and diabetes has a two-way relationship and impact on one another. |
| **References:** |
| Campus, G., Salem, A., Uzzau, S., Baldoni, E. and Tonolo G. (2005), Diabetes and Periodontal Disease: A Case-Control Study. Journal of Periodontology, 76, 418-425.  Kudiyirickel, MG., and Pappachan, JM. (2015). Diabetes Mellitus and Oral Health. Endocrine, 49, 27-34.  Taylor, G., and Borgnakke, W. (2008). Periodontal disease: associations with diabetes, glycermic control, and complications. Oral Diseases, 14, 3, 191-203. |