

## **Clinical Assessment of Periodontal Disease and Detection of *Porphyromonas gingivalis* by Polymerase Chain Reaction in Type I Diabetic Children and Adolescents**

By

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### **Abstract**

*Diabetes type 1 is a systemic disease which affects both children and adults and is associated with oral complications as periodontal disease and dental caries. The mechanism responsible for this relationship remains unclear. The aim of this study is to assess the prevalence of periodontal disease as well as dental caries in a group of diabetic children and adolescents and to study the subgingival microflora (*Porphyromonas gingivalis*), using PCR technique. This study was conducted on 70 patients with type I diabetes regularly attending the Pediatric Clinic, Ain Shams University Pediatric Hospital. They were 34 males and 36 females ,3-18years (mean10.9±4.1 years). The duration of their diabetes ranged between 3 and 14 years with mean of 7.1±3.1 years. The control group included 20 healthy age-matched children and adolescents. Both patients and controls were subjected to full medical history, thorough clinical examination, caries assessment, periodontal examination, and bacteriological sampling for microbiological testing of *Porphyromonas gingivalis* for detection, quantification and sequencing using 16S ribosomal RNA based PCR methods. Among the seventy studied patients, 9/70(12.8%) have been diagnosed as **periodontitis** , 38/70 (54.4%) as **gingivitis**, and the remaining 23 (32.8%) were **periodontally healthy diabetics** . **Assessment of caries condition showed higher caries scores among diabetics than the controls but this increase was statistically non significant.** The percentage of ***Porphyromonas gingivalis***, organism was significantly higher in periodontitis (66.7%) and gingivitis (31.6%) compared to periodontally healthy diabetics (13.04%), and control (10%) {P<0.05}. On comparing periodontitis and gingivitis patients, *P.gingivalis* was detected in 6/9 (66.7%) and in 12/38 (31.6%) respectively, this difference was found to be statistically significant (P<0.05). No significant difference could be detected between periodontally healthy diabetics and healthy controls. Also, significantly higher DNA copies/ml of *P. gingivalis* was detected in both periodontitis(15983± 2188 ) and gingivitis(7112±3540) subgroups when compared with both periodontally healthy diabetics (2433±351) and*

healthy control(1600+-100) (P<0.05). ***Porphyromonas gingivalis*** DNA copies/ml was also significantly higher in periodontitis when compared to gingivitis subgroup( p<0.05), and no significant difference was detected between periodontally healthy diabetics and healthy controls. Correlation studies showed significant positive correlation between periodontal disease and age of the patient, disease duration, and poor metabolic control.