

Expression of ICAM-1 and Integrin Adhesion Proteins in Gingival Tissues of Early Onset Periodontitis Patients

By

Ghada A.Mansour *

Abstract:

EOP, an aggressive form of periodontitis, is subdivided into PP, JP and RPP which represent three age-related distinct clinical entities with different clinical manifestations, and possible distinct etiologies. EOP patients have been suggested to be predisposed to periodontal infections by a defect in PMNL and/or monocytes, and in the regulatory events that govern their immune responsiveness. The present study was conducted to determine the expression of β 1-integrin (CD29) and ICAM-1 (CD54) adhesion molecules in gingival tissues of different EOP patients. The study included 22 otherwise healthy EOP patients (6 LPP, 8 LJP and 8 RPP) and 22 age and sex matched controls with clinically normal gingiva. Gingival specimens related to areas of greatest loss of attachment were taken and immunohistochemical analysis using APAAP technique was performed. The results revealed statistically significant higher expression of CD29 and CD54 when EOP patients were compared to their corresponding controls. Furthermore, comparison between different EOP patients was carried out. RPP patients demonstrated significantly higher CD29 expression when compared to LPP and LJP who did not show a significant difference in between. Moreover, RPP patients expressed the highest level of CD54 when compared to LJP patients, but the difference was not significant when compared to LPP patients. This differential expression of CD29 and CD54 may throw light on their importance in the immunopathogenesis of this rare form of periodontal diseases, and their possible role in mediating the severe periodontal destruction in RPP.

Introduction:

Periodontitis is a multifactorial disease that encompasses the hard and soft tissues, microbial colonization, inflammatory responses and adaptive immune responses. A subset of individuals, representing early onset periodontitis patients, are uniquely susceptible to severe progressive destructive disease.⁽¹⁾

Early onset periodontitis (EOP) comprises a group of rare, often severe, rapidly progressing forms of periodontitis characterized by an early stage of clinical manifestations, with age of onset prior to 35 years and a distinctive tendency for cases to aggregate in families. The hallmark of EOP is affection of young patients, with rapid rate of disease progression severe loss of periodontal attachment and alveolar bone not commensurate with the patient's age or the amount of local factors, alteration in the host response, and association with specific periodontal pathogens.⁽²⁾

Classically, several forms of EOP have been recognized based on age of onset and distribution of periodontal lesions within the dentition: prepubertal periodontitis (PP), juvenile periodontitis (JP), and rapidly progressive periodontitis (RPP). It is unclear, however, if these different forms represent variations in the phenotypic expression of a single disease entity, different stages of the same pathology, or distinct diseases.⁽³⁾

Prepubertal periodontitis appears soon after the eruption of the primary teeth, and affects primary and mixed dentitions. Page et al (1983)⁽⁴⁾ described PP as a rare form

*Lecturer of Oral Medicine, Periodontology, Oral Diagnosis and Radiology, Faculty of Dentistry, University of Alexandria.