PREVALENCE OF AGGRESSIVE PERIODONTITIS IN HIGH SCHOOL STUDENTS IN QAZVIN — IRAN

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ABSTRACT

Aggressive periodontitis, characterized by a rapid rate of periodontal disease progression in the absence of large quantity of bacterial plaque and or calculus present, affects otherwise healthy individuals less than 30 years old. The purpose of this study was to determine the prevalence of aggressive periodontitis among high school students in Qazvin, Iran.

780 students attending high school in Qazvin, Iran during 2004-2005 were randomly selected. Probing depths on 6 sites of permanent incisors and first molars were measured in each individual. Those presenting with pocket depths \( \geq 4.5 \) mm in more than one tooth were asked to participate in the next phase of the study, in which bitewing and periapical radiographs were taken. Individuals with radiographic evidence of bone loss received full clinical and radiographic examinations. The prevalence of aggressive periodontitis was determined. Fisher’s exact test was used to determine significant differences between gender groups. Data analysis was done utilizing SPSS Version 13.

Of the 780 patients examined initially, 39 individuals had probing depths \( \geq 4.5 \) mm. Thirty four of these individuals presented for further examination which led to the diagnosis of localized aggressive periodontitis in 6 individuals (0.77%), 4 girls (0.86%) and 2 boys (0.63%). No significant difference between boys and girls were found. We found no cases of generalized aggressive periodontitis.

The results of this study revealed that 0.77% of the population studied was diagnosed with localized aggressive periodontitis. This figure is similar to those reported for European and North American populations.1,2

Key words: Aggressive periodontitis, Localized Aggressive Periodontitis, Generalized Aggressive Periodontitis, Prevalence, Qazvin.

INTRODUCTION

Aggressive periodontitis (AP) refers to a specific class of periodontitis with characteristic clinical, laboratory and radiographic features3,4. This term replaces Early Onset Periodontitis (EOP) used in the 1989 American Academy of Periodontology and 1993 European classifications4.

Patients diagnosed with AP are otherwise systemically healthy and yet show rapid periodontal attachment loss and alveolar bone destruction3,4. The rate of alveolar bone loss in these patients is three to four times faster than in chronic periodontitis5. The amount of plaque and microbial deposits are inconsistent with the level of periodontal destruction observed in patients suffering from AP. This class of period-
ontitis is believed to have a genetic basis, although the search for susceptibility genes has been shown to be difficult. Nonetheless, evidence from a number of reports suggests that the risk for developing AP is substantially heritable\textsuperscript{2,5,8}.

AP can be further divided into: Localized aggressive periodontitis (LAP) and generalized aggressive periodontitis (GAP)\textsuperscript{3,4}. Characteristics of LAP and GAP are outlined in Tables 1 and 2\textsuperscript{3}.

Three bacterial species have been implicated in the pathogenesis of AP in susceptible hosts: Actinobacillus actinomycetemcomitans, Porphyromonas gingivalis and Tannerella forsythensis\textsuperscript{9}. In fact, a number of studies have implicated Actinobacillus actinomycetemcomitans as a key etiologic agent for LAP\textsuperscript{10-14}. However, it is important to note that the idea of a specific role of certain bacteria in the pathogenesis of AP has been challenged by other investigators\textsuperscript{15-19}.

The purpose of this investigation was to determine the prevalence of AP among 15-16 year-old high school students in the Qazvin Province, Iran. To our knowledge, this study represents the first attempt at such investigation.

**METHODS**

From a total of 1962 students attending 8 different high schools in the Industrial City of Alborz and Alvand in the Qazvin Province, Iran, 780 were randomly selected for participation in this study. The study population consisted of 314 (40.26%) boys and 464 (59.49%) girls. The protocol was approved by the Institutional Review Board of Qazvin University of Medical Sciences in accordance with the Declaration of Helsinki. The participants and their parents were informed of the nature of the study and a consent form, approved by the Institutional Review Board, was signed by each participant’s parent prior to the study.

The clinical examination was performed in 2 phases: Phase I of the study was carried out in the school where the students were enrolled. A Williams probe (Hu-Friedy, Chicago, IL) was used to measure the pocket depths of first molars and incisors at 6 different sites (mesiobuccal, buccal, distobuccal, mesiolingual, lingual and distolingual). All patients with PD \(\geq 4.5\)mm in the first molar or incisor regions were invited to participate in Phase II of the study.

In Phase II the patients were seen in Qazvin University of Medical Sciences, Faculty of Dentistry Clinic. Two bitewing radiographs of the right and left molar regions were taken in each patient. If the patient had PD \(\geq 4.5\)mm in any of the incisor areas, a PA radiograph of the involved region, using the paralleling technique was also taken.

All areas of localized bone loss believed to be the result of local etiologic factors, i.e., overhang restoration in the interproximal area, deep CII carious lesions, orthodontic bands, crowding etc., were eliminated from the study.

The radiographs were examined using a magnifying lens by 3 faculty members of the Department of Periodontics, Qazvin University of Medical Sciences, Faculty of Dentistry. A Boley gauge was used to measure the distance between the CEJ and the alveolar crest (CEJ-BC) to within 0.1 mm. Areas with CEJ-BC \(\geq 2\)mm were recorded.

The prevalence of AP was determined for each gender. Fisher’s exact test was used to determine any significant differences between groups. A P-
value of < 0.05 was considered statistically significant. All data analysis was done utilizing SPSS Version 13.

RESULTS

A total of 780 patients (465 girls and 315 boys) were examined in Phase I of the study. Thirty nine (5%) of these patients were found to have probing depths >4.5mm in the first molar/incisor regions. These 39 patients were subsequently selected for further clinical and radiographic examinations in Phase II of the study. Thirty four (87.18%) of these patients presented to Qazvin University of Medical Sciences, Faculty of Dentistry Clinic for Phase II portion of the study. Five patients (12.82%) dropped out of the study and did not present for Phase II.

The diagnostic criteria used were based on the American Academy of Periodontology Consensus Report (Consensus report 1999). Of the 34 patients examined in Phase II of the study, 2 patients (0.26%) were diagnosed with chronic periodontitis, and 6 patients (0.77%) were diagnosed with LAP. No patient was diagnosed with GAP.

The results can be summarized accordingly:

The incidence of LAP for boys was found to be 2/315 (0.63%) and for girls it was found to be 4/465 (0.86%). There was no statistically significant difference in incidence between boys and girls. The average probing depth was highest on the mesial side of first permanent molar in boys (4.8 ± 0.8mm) while in girls it was (4.5 ± 0.7mm). The first permanent molar on the right side was found to be the most commonly involved tooth. Mesial side of the first molar was the most common site to have PD>3mm among the permanent molars.

DISCUSSION

The majority of studies to date have reported a prevalence of AP of 0.1 to 0.2% in Caucasian populations. Kronauer20 reported a prevalence of LAP of 0.1% among 16 year-old Swiss adolescents. They also reported no gender difference in prevalence for this disease entity. In another study. Saxby23 reported a difference in prevalence of AP for different ethnic groups in the United Kingdom. The overall prevalence of AP was reported to be 0.1%. However, the prevalence was 0.02% for the Caucasian group, 0.8% for the Afro-Caribbean group and 0.2% for the Asian group. These differences were reported to be statistically significant. There was no difference in prevalence between males and females.

The difference in prevalence of AP in different populations may be attributed to different research methodologies used in various studies. On the other hand, genetic susceptibilities may also underlie the difference in prevalence of this disease in different populations. Some studies have suggested a predilection for female patients, particularly in the youngest age groups24 whereas others report no male-female differences in incidence when studies are designed to correct for ascertainment bias25.

In the present study, 780 high school students, 15-16 years of age, residing in the Qazvin Province, Iran were examined to determine the prevalence of AP. Six individuals (0.77%), of whom 4 (0.86%) were girls and 2 (0.63%) were boys, were diagnosed with LAP. No case of GAP was found. Furthermore, no sex difference in prevalence was found in our study population.

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REFERENCES

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