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Research Article

OCCURRENCE OF AGGRESSIVE PERIODONTITIS IN SECONDARY SCHOOL STUDENTS

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Abstract:

Background: Aggressive periodontitis, characterized by a rapid progression of periodontitis in the absence of a large amount of plaque and / or tartar, affects healthy individuals under 30 years of age. The aim of the study was to determine the frequency of aggressive periodontitis among high school students.

Place and Duration: In the Department of Dentistry, Punjab Dental Hospital Lahore for one-year duration from April 2019 to April 2020.

Methods: 780 high school students were randomly selected. The probing depth was examined in each of them in 6 places of permanent incisors and first molars. People presenting with pocket depressions > 4.5 mm in more than one tooth were asked to participate in the next phase of the study, in which vane and periapical images were taken. People with radiographic evidence of bone loss received complete clinical and radiographic examinations. The frequency of aggressive periodontitis was determined. Fisher's exact test was used to determine significant 4 differences between the sex groups. Data analysis was performed using SPSS version 18.

Results: Of the 780 patients initially examined, 39 had probing depths > 4.5 mm. Thirty-four of these people reported for further tests, which resulted in the diagnosis of local aggressive periodontitis in 6 (0.77%), 4 girls (0.86%) and 2 boys (0.63%). There were no significant differences between boys and girls. We found no cases of generalized aggressive periodontitis.

Conclusion: The results of this study showed that in 0.77% of the studied population, localized aggressive periodontitis was diagnosed. This number is similar to the number reported for European and North American populations.

Key words: aggressive periodontitis, local aggressive periodontitis, generalized aggressive periodontitis, morbidity.

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INTRODUCTION:

Aggressive periodontitis (AP) is a specific class of periodontitis with characteristic clinical, laboratory and radiological features¹. This term replaces Early Onset Periodontitis (EOP) used in the 1989 American Academy of Periodontology classifications and the 1993 European classifications. Patients diagnosed with AP are otherwise systemically healthy, yet exhibit rapid loss of periodontal attachment and bone destruction of the alveolar process²⁻³. The rate of alveolar bone loss in these patients is three to four times greater than that of chronic periodontitis. The amount of plaque and microbial deposits is not consistent with the level of periodontal damage seen in AP patients. This class of periodontitis is believed to be genetic, although the search for susceptibility genes has been shown to be difficult. Nevertheless, evidence from many reports suggests that the risk of developing AP is generally heritable³⁻⁴. AP can be further divided into: localized aggressive periodontitis (LAP) and generalized aggressive periodontitis (GAP)⁵⁻⁶. The characteristics of LAP and GAP are presented in Tables 1 and 2. Three species of bacteria are involved in the pathogenesis of AP in susceptible hosts: *Actinobacillus actinomycetemcomitans*, *Porphyromonas gingivalis* and *Tannerella forsythensis*⁷⁻⁸. In fact, many studies point to *Actinobacillus actinomycetemcomitans* as the key etiological agent of LAP. It should be noted, however, that the idea of a specific role for certain bacteria in the pathogenesis of AP has been questioned by other researchers⁹. The aim of this study was to determine the prevalence of AP among high school students aged 15-16 years. As far as we know, this study is the first attempt at such a study.

METHODS:

This study was held in Department of Dentistry, Punjab Dental Hospital Lahore for one-year duration from April 2019 to April 2020. Out of a total of 1,962 students attending 8 different secondary schools in Lahore County. 780 people were randomly selected to participate in this study. The study population consisted of 314 (40.26%) boys and 464 (59.49%) girls. The protocol was approved by the Institutional Audit Committee. Participants and their parents were

informed about the nature of the study, and before the study began, the parents of each participant signed a consent form, approved by the Institutional Audit Committee. The clinical trial was conducted in 2 phases: Phase I of the research was carried out in the school attended by the students. A Williams probe (HuFriedy, Chicago, IL) was used to measure the pocket depth of the first molars and incisors at 6 different sites (mesial-buccal, buccal, posterior-buccal, metacarpo-lingual, lingual and distal). All patients with PD > 4.5 mm in the area of the first molar or incisor were invited to participate in the second phase of the study. In Phase II, patients were followed at the Dental Clinic of the Qazvin Medical University. Two X-ray pictures were taken in each patient from the area of the right and left molars. If the patient had a PD > 4.5 mm in any of the incisal areas, a PA radiograph of the affected area was also performed using the parallelism technique. All areas of local bone loss, which were considered the result of local etiological factors, were excluded from the study, i.e. interdental overhang reconstruction, deep CII carious lesions, orthodontic bands, crowding, etc. X-rays were examined with a magnifying lens by 3 employees of the Department of Periodontology of the Faculty Dentistry at the Qazvin Medical University. A Boley gauge was used to measure the distance between the CEJ and the alveolar crest (CEJ-BC) with an accuracy of 0.1 mm. Areas with CEJBC > 2 mm were recorded. The incidence of AP was determined for each sex. Fisher's exact test was used to determine any significant differences between the groups. A p value of <0.05 was considered statistically significant. All data analyzes were performed using SPSS version 18.

RESULTS:

In total, 780 patients (465 girls and 315 boys) were examined in the first phase of the study. Thirty-nine (5%) of these patients had a probing depth > 4.5 mm in the first molar / incisor regions. These 39 patients were then selected for further clinical and radiographic studies in a Phase II study. Thirty-four (87.18%) of these patients reported to the Dental Clinic for the second part of the study. Five patients (12.82%) dropped out of the study and failed to enter Phase II.

TABLE 1: CLINICAL FEATURES OF LOCALIZED AGGRESSIVE PERIODONTITIS

Localized Aggressive Periodontitis	
•	Onset around puberty
•	Localized involvement of first molar/incisor
•	Interproximal attachment loss on at least two permanent teeth, one of which is a first molar and involving no more than 2 teeth, other than first molars and incisors

The diagnostic criteria used were based on the American Academy of Periodontology consensus report (Consensus report 1999). Of the 34 patients examined in the second phase of the study, 2 patients (0.26%) were diagnosed with chronic periodontitis, and 6 (0.77%) were LAP. No patient has been diagnosed with GAP. The results can be summarized accordingly: the incidence of LAP in boys was 2/315 (0.63%), and in girls it was 4/465 (0.86%).

TABLE 2: CLINICAL FEATURES OF GENERALIZED AGGRESSIVE PERIODONTITIS

Generalized Aggressive Periodontitis	
•	Generally affecting patients < 30 years old
•	Pronounced episodic nature of destruction of alveolar bone
•	Generalized interproximal attachment loss involving at least 3 permanent teeth other than first molars and incisors

There was no statistically significant difference in the incidence between boys and girls. The mean depth of probing was greatest on the mesial side of the first permanent molar in boys (4.8 ± 0.8 mm), while in girls it was 4.5 ± 0.7 mm. The first permanent molar on the right was found to be the most frequently affected tooth. The mesial side of the first molar was the most common site of PD > 3 mm among permanent molars.

DISCUSSION:

Most studies to date have reported an AP prevalence of 0.1% to 0.2% in Caucasian populations. It is estimated that among American students aged 14 to 17, the incidence of LAP ranges from 0.2% for white people and 2.6% for African Americans¹⁰⁻¹¹. White teens, on the other hand, were more likely to have LAP than their white males. Some developing countries have reported a higher incidence of AP. Kronauer reported a LAP incidence of 0.1% among 16-year-old Swiss youth. They also reported no gender differences in the incidence of this disease¹². Another Saxby study noted a difference in AP prevalence for different ethnic groups in the UK¹³⁻¹⁴. The overall prevalence of AP was found 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 group¹⁵. These differences were found to be statistically significant. There was no difference in prevalence

between men and women. The difference in the prevalence of AP in different populations can be attributed to the different research methodologies used in different studies. On the other hand, genetic susceptibility may also underlie differences in the prevalence of the disease in different populations. Some studies suggest a preference for women, especially in the youngest age groups, while others do not report any differences in the incidence of women and men when the studies are designed to correct an error of judgment.

CONCLUSION:

In this study, 780 high school students aged 15-16 years old were tested to determine the prevalence of AP. Six patients (0.77%), including 4 (0.86%) girls and 2 (0.63%) boys, were diagnosed with LAP. No GAP case was found. Moreover, in our study

population, no gender differences in incidence were found.

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