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Reliability of Family History Report among Relatives of Aggressive Periodontitis Patients

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Abstract

To assess the periodontal status among relatives of aggressive periodontitis (AgP) patients and to evaluate the reliability of the family history report as provided by the proband.

Fifty AgP patients were identified during 2005/2006 as fulfilling the criteria to be diagnosed as AgP as outlined in the 1999 international classification system for periodontal disease. These subjects met the clinical criteria for either localized or generalized AgP.

It was considered that AgP patients should be informed of the genetic nature of their condition and that other blood relatives could be at risk. The results would suggest that the screening of relatives with a positive family history could be justified as a standard procedure, but negative family history reports are unlikely to yield significant numbers of affected relatives and may not be a justifiable use of scarce resources.

The report given by the proband was considered reliable. If the report was positive, it was followed by diagnosis of periodontitis in 73% of the cases, while if it was negative, periodontitis was absent in 66% of the cases.

Introduction

Periodontal disease is a wide word disease which attaches any age at any time; it was two types of disease, gingivitis and periodontitis. Early onset periodontitis (EOP) represent a group of infrequent type of periodontal diseases that have their onset at a young age with rapid attachment and bone loss which aggregate in families. The etiology, although unclear, includes the sum of environmental and genetic factors, these heritable factors may predispose to altered inflammatory or immunological processes. [1,2] .

To solve certain shortcomings to the previous classification [3]. Patients the term EOP is discarded since the term is too restrictive. It was noted that features of this form of periodontitis can occur at any age and the disease is not necessarily confined to individuals under the arbitrary chosen age of 35 years.1999 international workshop for classification of periodontal diseases and conditions introduced a new term "aggressive periodontitis" to replace early onset periodontitis would be diagnosed with AgP they fulfil the three common criteria of rapid attachment/bone loss, being medically healthy and the presence of familial aggregation. The stringent age requirement used previously for early onset periodontitis is no longer considered to be essential [3] .

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Several family studies have indicated that the prevalence of AgP is disproportionately high among certain families, where the percentage of the affected siblings may reach 40-50%.Such a dramatic familial aggregation of cases indicates that genetic factors may be important in susceptibility to AgP [4].

The familial aggregation feature of these conditions is taken for granted. However if we examine the literature, we can see that the percentage of affected relatives of a given AgP/EOP patients or proband may vary from 8% in a group of affected Finnish families [5] up to 63% in one Brazilian family [6].These different results can not only be attributed to differences in the population, but to differences in the inclusion criteria, diagnostic criteria, the variable number of examined relatives and obviously the number of families included.

In Europe a recent study of one Scottish Caucasian family with a proband affected by generalized EOP [7] showed that from the 34 examined relatives, 41% were considered definitely affected with AgP and further 16% were probably or possibly affected.

There is still a shortage of more extensive family studies of AgP in Europe and there is insufficient data in literature which reflect the robustness of familial aggregation in AgP. On the other hand, the diagnosis of a periodontal patient may be uncertain (between the chronic and the aggressive form) and the reported family history may influence the clinician in classifying the patient one way or the other. However, the reliability of the report provided by the patient may often be questionable.

The aims of this study are firstly to assess the periodontal conditions of relatives of AgP patients to ascertain the extent of periodontal breakdown within affected families and secondly, to assess reliability of the periodontal family history report provided by the proband about their relatives.

Material and methods

The college of dentistry/university of Baghdad is a referential center for subjects, all patients refered to the department of periodontics are first seen at a diagnostic clinic.

Fifty AgP patients were identified during 2005/2006 as fulfiling the criteria to be diagnosed as AgP as outlined in the 1999 international classification system for periodontal disease [3].These subjects met the clinical criteria for either localized or generilized AgP (Table 1), as described in the Consensus Report [8], with the exception that familial aggregation was not taken into account. This was because family history was the factor being considered in this investigation.

All the patients filled out a questionnaire that included family details, smoking status, medical status and specific information on signs of periodontitis for each of their blood relatives. The patient had to state ‘‘Yes’’ or ‘‘No’’ for the presence of bleeding gingiva, mobile teeth, missing teeth or if they knew the blood relative had ever been diagnosed/treated for periodontal disease. This information was categorized as a positive, or negative report on each specific relative according to the criteria selected (Table2). If the proband was uncertain about this information it was classified as dubious. On some occasions our invitation to the relatives was declined because of phobia about dentists, being edentulous, having had previous periodontal treatment or not being able to attend. At a screening level, this consisted of an assessment of oral hygiene and gingival appearance (percentage of surfaces

positive) a full periodontal charting was recorded including gingival index, probing pocket depths, attachment level, and recessions and bleeding on probing at forth points per tooth. The patient was then sent to the radiology department to have panoramic radiograph.

Results

Only 20 out of 50 AgP patients had relatives willing to be examined. This subgroup of 20 AgP patients will now be termed probands.The mean age at diagnosis of the proband group was 27.5 year with an age range of 16-45. All probands reported being healthy without any systemic diseases. The generalized AgP form was present in 15/20 (75%) and 5/20 (25%) was the localized AgP of the probands and the predominant gender was female 17/20 (85%).7/20 (35%) of the probands were current smokers, 6/20 (30%) were former smokers while 7/20 (35%) had never smoked. (Table 3).

The proband group provided family history report on 101 relatives. Records were gathered for only 61 of the 101 potentially available first degree relatives. Sisters and mothers were the most likely group of relatives to accept our invitation to attend.

The age range of these relatives at the time of diagnosis was 16-66 and 40(65.6%) of them were females. The report previously provided by the proband about the relatives who were examined was positive for 15/61 (24.5%), and negative for 33/61 (54.1%) of them (Table 4).

The periodontal status of the 61 examined relatives described previously was: chronic periodontitis in 20/61 (32.8%) of the subjects, gingivitis in 25/61 (41%), healthy periodontium in 10/61 (16.4%) and AgP in 6/61 (9.8%)(table 5).

n the cases where the individual family history report was either positive or negative 48/61 (78.6%), this was matched to the subsequent diagnosis of the relative. If they coincided, the report was considered reliable. This occurred in 33/48 cases, equivalent to an overall reliability of 71% when the report was either positive or negative. Out of the positive reports, 11/15 (73%) were reliable as they were followed by diagnosis of periodontitis (AgP or chronic). Out of the negative reports, 22/33 (66%) were followed by diagnosis of healthy periodontium or gingivitis (Table 6).

Discussion

The populations examined in this study were self selected and not random. The probands, were all patients diagnosed by their dentist as having severe periodontal disease who were referred to a specialist clinic, where a diagnosis of AgP was made. The large prevalence of females among the probands and relatives reflects a greater willingness for females to attend for investigations and/or treatment.

Chronic periodontitis was present in 20 out 61 examied relatives. This finding is not similar to results from other studies such as in hart et al [(9)], and Llorente et al [(10)].

Only 6 out of 61 examined relatives were diagnosed with AgP. The proportion of AgP-affected subjects among examined relatives in our study is similar to the previous study of Llorente et al [(10)], but unlike the reported figures for EOP or localized juvenile periodontitis which are found in USA by Marazita et al [(4)]. Possible explanations for the difference between our relatives affected and the results from other studies may be the use of different diagnostic criteria, possible

ascertainment bias (probands and/or relatives), low number of examined relatives in our study and different geographical area/ethnicity mix. However, our AgP relatives is much higher than that reported in epidemiological studies such as the 0.1% of localized juvenile periodontitis subjects among a population of British school children [(11)].

The good reliability of the family history report provided by the patients and the low proportion of AgP cases among examined relatives in this study, has implications to planning health care services. We consider that AgP patients should be informed of the genetic nature of their condition and that other blood relatives could be at risk. Our results would suggest that the screening of relatives with a positive family history could be justified as a standard procedure, but negative family history reports are unlikely to yield significant numbers of affected relatives and may not be a justifiable use of scarce resources.

Conclusions

Collection of periodontal family history report from AgP patients about their relatives, and subsequent examination of their willing to participate relatives led to the following conclusions:

(9.8%) examined relatives were diagnosed with AgP. The prevalence of the condition among relatives of all our AgP probands, although lower than results from other studies, is still higher than in the general population and similler to some studies.

The report given by the proband was considered reliable. If the report was positive, it was followed by diagnosis of periodontitis in 73% of the cases, while if it was negative, periodontitis was absent in 66% of the cases.

References

1- Michalowicz BS: Genetic and heritable risk factors in periodontal disease. Journal of Periodontology 1994; 65, 479–488.
2- Diehl SR, Wu T, Burmeister JA, Califano JV, Brooks CN, Tew JG & Schenkein HA. Evidence of a substantial genetic basis for IgG2 levels in families with aggressive periodontitis. Journal of Dental Research 2003; 82, 708–712.
3- Armitage GC. Development of a classification system for periodontal diseases and conditions. Annals of Periodontology 1999; 4, 1–6.
4- Marazita ML, Burmeister JA, Gunsolley JC, Koertge TE, Lake K & Schenkein HA. Evidence for autosomal dominant inheritance and race-specific heterogeneity in early-onset periodontitis. Journal of Periodontology 1994; 65, 623–630.
5- Saxen L. Heredity of juvenile periodontitis.Journal of Clinical Periodontology 1980; 7, 276–288.
6- Trevilatto PC, Tramontina VA, Machado MA, Goncalves RB, Sallum AW & Line SR. Clinical, genetic and microbiological findings in a Brazilian family with aggressive periodontitis. Journal of Clinical Periodontology 2002; 29, 233–239.
7- Hodge PJ, Teague PW, Wright AF & Kinane DF. Clinical and genetic analysis of a large North European Caucasian family affected by early-onset periodontitis.Journal of Dental Research 2000; 79, 857–863.
8- Annals of periodontology. International workshop for a classification of periodontal diseases and conditions.1999; 4: 32-53.
9- Hart TC, Marazita ML, McCanna KM, Schenkein HA & Diehl SR. Reevaluation of the chromosome 4q andidate region for early onset periodontitis.Human Genetics 1993; 91, 416–422.
10- Llorente MA, Griffiths GS. Periodontal status among relatives of aggressive periodontitis patients and reliability of family history report. J Clin Periodontol 2006; 33: 121–125.
11- Saxby MS. Juvenile periodontitis: an epidemiological study in the west Midlands of the United Kingdom. Journal of Clinical Periodontology 1987; 14, 594–598.

Table 1. Diagnostic criteria for probands and relatives, based on the 1999 AAP Classification of Periodontal Diseases

Periodontal disease	Dignostic criteria
Localized aggressive periodontitis	Rapid attachment and bone loss in otherwise healthy patients First molar-incisor presentation with no more than two other teeth affected At least two permanent teeth affected where at least 1 is a first molar Lifetime cumulative attachment loss (LCAL) ≥4mm on the affected sites
Generalized aggressive periodontitis	Rapid attachment and bone loss in otherwise healthy patients Generalized interproximal attachment loss affecting at least three teeth other than first molars and incisors LCAL ≥ 4mm on the affected sites
Chronic periodontitis	Amount of attachment and bone loss is in relation to local factors Most prevalent in adults Usually slow to moderate progression
Gingivitis	Gingival inflammation present, but an absence of significant bone or attachment loss
Uncertain periodontitis diagnosis	Periodontal findings do not fit in any of the aggressive or chronic types of periodontitis
Edentulous	Patient lost all teeth
Healthy periodontium	Absence of gingival inflammation and attachment/bone loss in a dentate patient

Table 2. Criteria for categorization of the reported family history, based on the information provided by the proband on each relative

Patient states	Criteria selected
Positive report	Relative was diagnosed/treated with periodontal disease or . . . Mobile teeth was present alone or in combination with bleeding gingiva/missing teeth
Dubious report	Relative lost all teeth or . . . Unknown status of the relative or . . . Bleeding gingiva present alone or in combination with missing teeth
Negative report	Denial of any sign of periodontal disease or . . . Absence of any sign of periodontal disease but relative may have lost some teeth

Table 3. Comparison of demographic data between the aggressive periodontitis (AgP) group and its subgroup the ‘‘Probands’’

	AgP patients		Probands patients	
	N	%	N	%
Total	50	100	20	100
Age range	16-56	-	16-45	-
Mean age	26	-	27.5	-
Femels	30	60	17	85
Males	20	40	3	15
Generalized AgP	35	70	15	75
Loclazied AgP	15	30	5	25
Current smokers	15	30	7	35
Formal smoker	10	20	6	30
Never smoked	25	50	7	35
Total of reports on relatives	-		101	-

Table 4. Demographic data on the blood relatives examined

	N	%
Total	61	100
First degree	61	100
Females	40	65.6
males	20	32.8
+ve report	15	24.5
Dubious report	13	21.3
-ve report	33	54.1
Age range	17-66	-

Table(5):periodontal diagnosis made for hew examied blood relatives.

Diagnosis	No.	%
Localized AgP	3	4.9
Genirilized AgP	3	4.9
Chronic periodontitis	20	32.8
Gingivitis	25	41
Healthy periodontium	10	16.4
total	61	100

Table 6. Reliability of the report given by the proband on the relative: comparison of the report with the diagnosis made following examination of the relative (Dx)

Report on examined relatives	N	Matched by diagnosis (Dx)	% of reliability
Dubious	13	-	-
Negative	33	22	66
Positive	15	11	73
Total	61	34	-
Positive or negative	48	34	71