Gingival involvement in patients with autoimmune mucocutaneous diseases

Parviz Deyhimi[1], Laleh Maleki[1*], Adel Tayefi Nasr Abadi[2]

1. Department of Oral and Maxillofacial Pathology, Dental Research Center, Dental Research Institute, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran
2. Dental Students Research Committee, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

***Corresponding author:** Tel: +98 3137925577
Address: Department of Oral and Maxillofacial Pathology, Dental Research Center, Dental Research Institute, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran
E-mail: l.maleki@dnt.mui.ac.ir
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Abstract

Introduction: Growing evidence indicates that the incidence of autoimmune diseases has remarkably increased in recent decades. In many cases, oral manifestations are the first signs of autoimmune diseases. The purpose of this study was to determine the frequency of gingival involvement in patients with autoimmune mucocutaneous diseases referred to Isfahan Dental School during a thirty-year period (1989-2018).

Materials and Methods: In this cross-sectional descriptive-analytical study, the data of 848 patients with autoimmune mucocutaneous diseases, referred to Pathology Department of Isfahan Dental School from 1989 to 2018, were reviewed. The obtained data were fed into SPSS-22 software and analyzed by central and dispersion indices and one-way ANOVA. $P<0.05$ was considered as statistically significant.

Results: The most common autoimmune mucocutaneous disease was lichen planus (n =556) and the least common was erythema multiforme (n =10). The highest gingival involvement was related to pemphigoid disease (40.8%) and the least gingival involvement was seen in erythema multiforme (10%).

Conclusion: Considering the high frequency of gingival involvement in autoimmune diseases and the significance of its diagnosis, dentists can play a pivotal role in the diagnosis and early treatment of patients with autoimmune mucocutaneous disease.

Keywords: Autoimmune disease, Gingiva, Gingivitis, Oral lichen planus

Introduction

Growing evidence indicates that the incidence of autoimmune diseases has remarkably increased in recent decades. The prevalence of oral mucosal involvement in autoimmune diseases varies depending on the type of disease. Studies have shown that oral lichen planus is the most common autoimmune disorder in the oral cavity, followed by pemphigus vulgaris and mucous membrane pemphigoid, respectively (1-5). Systemic lupus erythematosus, pemphigus vulgaris, and mucous membrane pemphigoid are among the common autoimmune diseases that present their first symptoms in oral cavity (6). Gingival involvement occurs in approximately all autoimmune mucocutaneous disorders such as pemphigoid, pemphigus, and oral lichen planus (7, 8).

The highest rate of oral mucosal involvement is found in pemphigus vulgaris with 80-90% prevalence, followed by mucous membrane

pemphigoid (85%), oral lichen planus (70-77%), erythema multiforme (60-70%), and lupus erythematosus (8-45%) (9). Altered oral mucosa with acute or latent onset may present with blisters and ulcers, mostly in the oral cavity, along with erosion, redness, and gingivitis (10). Oral blisters and ulcers are the most prevalent signs of autoimmune disorders in the oral cavity. The clinical and epidemiologic features of autoimmune diseases have been evaluated in various populations around the world. However, most reports have been focused on a specific unit or group of patients and only very few studies described epidemiologic characteristics of the whole range of autoimmune diseases in a specific population (11).

In a review in 2012, Mays et al. investigated the oral manifestations of autoimmune and systemic inflammatory diseases. They reported oral manifestations as the most common clinical findings of lupus erythematosus disease, with a prevalence rate of up to 50% and more than one lesion presentation during examination (12). Saccucci, et al. reported 94% gingival involvement in mucous membrane pemphigoid, which was the highest rate compared to other autoimmune diseases, and Martinez, et al reported 90% gingival involvement in mucous membrane pemphigoid (6, 13).

Unfortunately, there is not sufficient information about the sex- and age-related prevalence and accurate microscopic diagnosis in patients with mucocutaneous autoimmune lesions with gingival involvement. Since the treatment of gingival lesions varies depending on the accurate clinical and microscopic diagnosis, accurate and timely diagnosis is highly important. Hence, this study was aimed to investigate the frequency of gingival involvement in patients with mucocutaneous autoimmune lesions referring to Isfahan Dental School over a 30-year period from 1989 to 2018.

Materials and Methods

Study Design

This cross-sectional descriptive-analytical study was conducted using the data and pathological reports of patients diagnosed with mucocutaneous autoimmune diseases referring to the oral pathology department of Isfahan dental school from 1989 to 2018. A total of 848 samples were selected by census sampling with 95% confidence level. The inclusion criteria comprised the complete data and pathological reports of patients with a definite microscopic diagnosis of mucocutaneous autoimmune diseases. The exclusion criteria consisted of patients with an indefinite microscopic diagnosis and reports with incomplete clinical information. The present study followed the tents of the Declaration of Helsinki. The Ethics Committee of Isfahan University of Medical Sciences approved this study (IR.MUI.RESEARCH.REC.1398.446).

Statistical Analysis

The data of all patients (n=848) diagnosed with mucocutaneous autoimmune diseases (lichen planus, pemphigoid, pemphigus, lupus erythematosus, and erythema multiforme) were obtained from their hospital files. Data such as age, gender, and gingival involvement status were extracted and recorded. The obtained data were fed into SPSS-22 software and analyzed by central and dispersion indices and one-way ANOVA. $P<0.05$ was considered as statistically significant.

Results

A data of 848 patients with mucocutaneous autoimmune diseases referring to the oral pathology department were investigated. The

frequency of gingivial involvement among patients with different diseases is presented in Table 1. Patients with oral lichen planus (n=556) and erythema multiforme (n=10) had the highest and lowest frequency of gingivial involvement, respectively. Further, the highest and lowest rates of gingival involvement were found among patients with pemphigoid (40.8%) and erythema multiforme (10%), respectively. Gingival involvement was indefinite for 3 lichen planus cases. The results of the chi-square test showed that gingival involvement was significantly higher among patients with pemphigoid compared to those with lichen planus (P<0.001), in pemphigoid rather than in pemphigus cases (p=0.001), and in pemphigus rather than in lichen planus patients (P=0.05).

Table 1. Frequency distribution of gingival involvement for different diseases.

Disease	Gingivial involvment status			
	Gingivial involvment		No gingivial involvment	
	No	%	No	%
Lichen planus	58	10.5	495	89.5
Pemphigoid	29	40.8	42	59.2
pemphigus	34	19.7	139	80.3
Lupus erythematosus	3	16.7	15	83. 3
Erythema multiforme	1	10	9	90
Lack of differential diagnosis	4	20	16	80
Total	129	15.3	716	84.7

Data regarding the patients' age were missing for 31 patients. Apart from that, the mean age of the patients was 45.76 ± 14.11 years. The results of one-way ANOVA indicated a significant difference in the patients' mean age among different types of diseases. The results of the Bonferroni test also showed a significant difference in the age of the patients with lichen planus and pemphigus (P<0.001) and patients with pemphigoid and pemphigus (P=0.05 but indicated no significant difference in the mean age between the other diseases (Table 2). In addition, there was no significant difference in gender between different diseases.

Table 2. Mean age of patients with gingival involvement for different autoimmune diseases.

Disease (gingival involvement)	Number	Mean ± SD	Minimum age	Maximum age
Lichen planus	52	42 ± 12	18	72
Pemphigoid	29	42 ± 13	18	78
Pemphigus	32	38 ± 11	13	62
Lupus erythematosus	3	44 ± 15	32	62
Erythema multiforme	1	48	48	48
Lack of differential diagnosis	4	43 ± 13	32	62
Total	121	41 ± 12	13	78

Discussion

The results of this study showed that the highest and lowest frequency of gingival involvement were found in pemphigoid (40.8%) and erythema multiforme (10%) patients, respectively. Similar studies on mucocutaneous autoimmune lesions confirm the results of the present study. Saccucci, et al reported 94% gingival involvement in patients with mucous membrane pemphigoid, which was the highest rate among the other autoimmune diseases studied in their study (6). Martinez et al also reported 90% gingival involvement (13). These results were also similar in other studies and the highest

gingival involvement was observed in pemphigoid (7, 9, 11, 14).

The other diseases investigated in the present study were also compared with those of similar studies regarding gingival involvement. This study reported gingival involvement to be 19.7% among pemphigus vulgaris patients. Gingival involvement is one of the first symptoms of pemphigus vulgaris, although it has been reported to be variable in different studies. Some studies have reported a lower level of gingival involvement than the involvement of other areas. Gingival involvement was reported as desquamative gingivitis in all these studies (6, 9, 13). Lucio Lo Russo also reported 3-15% of desquamative gingivitis were in pemphigus vulgaris (15).

In the present study, oral lichen planus (n=556) was the most frequent disease, although only 10.5% of cases had gingival involvement. This autoimmune disease, which presents periodically in the oral cavity, mostly involves the tongue, buccal mucosa, labial mucosa, and gingiva (usually as desquamative gingivitis). The results also showed oral lichen planus was ranked fourth in terms of gingival involvement following pemphigoid, pemphigus, and lupus erythematosus, respectively. However, the study of Lucio Lo Russo on the epidemiologic features of desquamative gingivitis indicated oral lichen planus as the most prevalent reason (10).

Similar studies on vesiculobulosis diseases have also reported oral lichen planus as the most frequent reason for desquamative gingivitis. However, in contrast to the present study, these studies reported a higher rate of gingival involvement, especially in oral lichen planus. In all these studies, desquamative gingivitis was the most frequent form of gingivial involvment (5, 16, 17). Baglama also reported the same result for type of gingival involvement in oral lichen planus (9), although Rameshkumar and Mustafa found oral involvement in oral lichen planus to be higher in buccal mucosa (7, 11). The reason for the difference in these results can be due to the number of study samples, gender, race, and accuracy of different studies.

The mean age of the patients in this study was 45.76 ± 14.11 years, most of whom were female. Autoimmune diseases are generally more prevalent in women. Among the five diseases investigated in the present study, over 60% of the cases were associated to women. Similar studies have reported the same results and the most frequent mucous membrane pemphigoid cases have been observed among women (6, 11, 13, 14). However, Rameshkumar et al., reported a higher prevalence of mucous membrane pemphigoid among men compared to women (7). This difference can be associated with the population or cultural differences, such as differences in the referral rate of males and females to hospital or living habits.

Despite the age difference (6-92 years) of the patients with the five diseases studied in the present study, their mean age was 45.76 ± 14.11. The highest age among the samples was 92 for pemphigoid and the lowest age was related to oral lichen planus. The age range of gingival involvement in pemphigoid and pemphigus in similar studies were 50-60 years (11, 13, 14), which is different from that of the present study. Oral lichen planus has been reported to occur in younger individuals, which is more similar to the results of the present study (11, 13). The prevalence of erythema multiforme and lupus erythematosus has been reported in younger individuals, which is in line with the results of the present study (11).

Limitations

In the study the lack of complete and accurate clinico-pathological information of patients with autoimmune mucocutaneous diseases with oral lesions was a limitation.

Furthermore, ther was a difficult access to the old files of patients with autoimmune mucocutaneous diseases with oral lesions. However, the number of patients in the study were relatively high and the results were statistically significant.

Conclusion

Gingival involvement was most frequently associated with mucous membrane pemphigoid compared to other autoimmune diseases. Due to the frequency of gingival involvement in autoimmune diseases and the significance of its diagnosis, dentists can play a pivotal role in diagnosis and rapid and appropriate treatment of the patients. Early and accurate diagnosis increases the efficiency of treatment strategies.

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Conflicts of interest

No conflict of interests declared.

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