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ORIGINAL ARTICLE

Evaluation of the relation between Pemphigus Vulgaris and Periodontal status

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ABSTRACT
Periodontal disease is one of the Pemphigus vulgaris (PV) patient's problems which are followed by involvement of gum and oral mucosa with this disease. Symptoms such as bleeding on probing, attachment loss, mucosal erosions should be evaluated in PV patients to deny spreading lesions in the skin and other mucosal sites. Scarce information exists on relation between PV and periodontal symptoms. So the aim of this study was to determine relationship between PV and periodontal disease in Razi hospital in Tehran. A historical-cohort study designed using 80 people, 40 PV patients and 40 as control. Both groups were similar in sex, age, smoking, using the brush per day and without any systemic disease. The clinical examinations were done using CPITN. Also, periodontal examinations such as bleeding on probing, attachment loss were investigated in both groups. Data analyzed by Chi-square, exact fisher and T-student tests using SPSS. According to the data, was no significant difference detected on sex, age, smoking and using the brush per day among the PV and control group (P>0.05). Significant difference was in frequency of PV and periodontal disease (P<0.05). Furthermore, a significant difference observed of bleeding in probe 32 (80%), pocket depth of ≥ 6 mm (72%), desquamative gingivitis (65%) and gingivitis (42%) in PV patients than control group (P<0.05). These results suggest, PV symptoms are the important to diagnosis of periodontal disease.
Keywords: *Pemphigus vulgaris, Periodontal disease*

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INTRODUCTION

Pemphigus encompasses four related diseases with autoimmune etiopathogeneses: Pemphigus vulgaris, vegetans, erythematosus, and foliaceus. Only the vulgaris and vegetans types attack the oral mucosa, and pemphigus vulgaris (PV) is the most prevalent type [1]. These rare diseases involve the mucosa and skin through the disintegration of cellular adherence (acantholysis), resulting in intradermal bullous disease [2]. One of the autoimmune intraepithelial blistering diseases is PV which appears in the skin and mucous membranes [3]. The main characterization of PV is acantholysis in the epithelium [3]. It has same effect in both gender and is more common in middle-aged and elderly patients [4, 5].

Systemic corticosteroid therapy is associated with a dramatic improvement of the condition; however, complications of medical therapy remain a concern. PV impresses its effect on the oral mucous membrane. Also, most of patients present with oral lesions as the first sign of PV [6, 7]. The disturbance of lesions are anywhere on the oral mucosa, however the buccal mucosa is the most frequently affected site, followed by involvement of the palatal, lingual, and labial mucosae [4]. Furthermore, the least commonly affected site is gingiva and desquamative gingivitis (DG) is a common manifestation of the disease [4]. In PV patients, the oral lesions are followed by the development of skin lesions [5, 7]. This disease is happens by an autoimmune manifested by immunoglobulin G (IgG) binding to desmoglein 3 in the intercellular spaces of the epithelium [8].

A direct relationship has been reported between PV and periodontal tissue involvement in the form of increased pocket depth, plaque accumulation, and attachment loss [9]. Persistent lesions are painful, thereby limiting effective tooth brushing. This leads to lack of effective oral hygiene and plaque accumulation may increase the risk of long-term periodontal disease [10].

Careful examination of the oral cavity may reveal findings indicative of an underlying systemic condition, and allow for early diagnosis and treatment. Examination should include evaluation for mucosal changes, periodontal inflammation and bleeding, and general condition of the teeth. Consequently, if oral PV can be recognized in its early stages, treatment may be initiated to prevent progression of the disease to skin involvement. Early oral lesions of PV are, however, often regarded as difficult to diagnose, since the initial oral lesions may be relatively nonspecific, manifesting as superficial erosions or ulcerations and rarely presenting with the formation of intact bullae [4, 6, 11, 12]. Diagnostic delays of greater than 6 months are common in patients with oral PV [6].

Despite marvelous research on relation between PV and periodontal disease, scarce information exists on relation between PV and periodontal disease in developing countries. So, the aim of the current study evaluation of the relation between PV and periodontal status in patients referred to hospital in Tehran, Iran.

MATERIAL AND METHODS

To evaluation of the relation between PV and periodontal disease a historical-cohort study designed in patients referred to Razi hospital in Tehran. A total 80 person (male, female) include in this study, 40 PV patients and 40 as control. Date was collected using clinical observations, investigation and valid forms. Also, the Para clinical tests were include biopsy and immunoflurocent. The clinical observations were done using the instruction of community periodontal index and treatment need (CPITN).

Study design

Volunteers were recruited through advertising, selected via preliminary interviews and measurements in the PV clinic in Razi hospital, Tehran. The samples collected using biopsy and immunoflurocent to determine occurrence of PV, then just the PV positive patients include to this study. The inclusion criteria were the similar age, smoking, using the brush per day and without any systemic disease for both groups.

The CPITN

The CPITN included factors were dental plaque, pocket depth, bleeding during probing in teeth 11, 16, 17, 21, 26, 31, 37, 41, 46 and 47. The microbial plaque was determined from the de-mineralized sites of dental crown. The pocket depth (mm) was done using e UNC-15 probe in buccal, lingual, mesial and distal sites of the mentioned teeth. Bleeding per probing calculated for 20 sec after probing to distinguish the probe-induced or spontaneous bleeding.

The CPITN score was:

Zero= any sign of lesion
1= mild bleeding during the probing
2= gum plaque
3= pocket depth ≤5 mm
4= pocket depth ≥6 mm

All subjects were informed about the limitation of the study and signed the form to include entire the study. Subject who did not accepted participation limitation or showed any indication during the test; she would be excluded from the study. All protocols for experiments were approved by the institutional of Ethical Committee, Islamic Azad University, Medical Branch, Tehran, Iran.

Statistical analysis

Data were processed in excel and analyzed using SPSS 16.0 for Windows (SPSS Inc. Chicago, IL, USA). For treatments showing a main effect, means were compared by C*hi-square, exact fisher* and *T-student* tests. The Mann U-Whitney test used to compare CPITN indexes. $P<0.05$ was considered as significant differences between treatments.

RESULTS

Result of evaluation of the relation between PV and periodontal disease is presented in tables 1-3. According to the results, there was no significant difference on sex, age, smoking and using the brush per day among the PV and control group ($P>0.05$).

Table 1. Evaluation of Pemphigus Vulgaris in patients referred to clinic

Factor	Sex		Age	Smoking		using the brush/day	
	Male	Female		Yes	No	Yes	No
Control group	28	12	50.2	2	38	28	12
PV group	29	11	46.1	-	40	15	25
	Chi-square		***Independent simple t-test***	***Fisher exact***		***Chi-square***	
	0.807		0.647	0.473		0.478	

PV: Pemphigus vulgaris. P<0.05 was considered as significant differences between treatments.

As seen in table 2, the frequency of the patients with PV was 55% and the periodontal disease detected in only 9 (22.5%) of them. However the 45% of people were without PV but the incidence of periodontal disease among them was 77.5%. As seen there was significant difference among them (P<0.05). These results suggest periodontal disease incidence was 2 times higher in PV patients.

Table 2. Incidence of Pemphigus Vulgaris and Periodontal disease in patients referred to clinic

Periodontal disease	Yes	No	Total	***Chi-square***
Control group	22 (55%)	18 (45%)	40	
PV group	31 (77.5%)	9 (22.5%)	40	0.003

PV: Pemphigus vulgaris. P<0.05 was considered as significant differences between treatments.

According to the results, bleeding in probe detected in 32 (80%) and 17 (42%) persons with PV and control group, respectively. The pocket depth of below 5 mm was higher in control group (25 case, 62%) compared to PV (11 person, 27%) group (P<0.05). On the other hand, the depth of ≥ 6 mm was higher in PV patients (72%) compared to control group (P<0.05). There was significant difference for dental plaque where it was higher in PV group in comparison to control (P<0.05). As observed, no desquamative gingivitis were found in control group, 26 patients (65%) had desquamative gingivitis (P<0.05). In this regard, the occurrence of gingivitis was higher (82%) in PV patients than control group (42%) (P<0.05).

Table 3. Relation of Pemphigus Vulgaris and Periodontal disease in patients referred to clinic

	Periodontal disease					
	Bleeding in probe	**Pocket depth**		**Dental plaque**	**Desquamative gingivitis**	**gingivitis**
		≤ 5 mm	**≥ 6 mm**			
Control group	17 (42%)	25 (62%)	15 (37%)	16 (40%)	-	17 (42%)
PV group	32 (80%)	11 (27%)	29 (72%)	28 (70%)	26 (65%)	33 (82%)
	Chi-square	**Chi-square**		**Chi-square**	**Fisher exact**	**Chi-square**
	0.001	0.002		0.007	0.001	0.001

PV: pemphigus vulgaris. P<0.05 was considered as significant differences between treatments.

DISCUSSION

To our knowledge, scarce information exists on relation between PV and periodontal disease in Iran. According to the results, significant difference was in frequency of PV and periodontal disease. Also, a significant difference observed of bleeding in probe 32 (80%), pocket depth of ≥ 6 mm (72%), desquamative gingivitis (65%) and gingivitis (42%) in PV patients than control group (P<0.05). These results suggest, PV symptoms are the important to diagnosis of periodontal disease.

PV is an uncommon condition affecting males and females in the 4th to 5th decade of life [13]. As seen in table 1, the mean age of people in this study was between 40-50 years old. The etiology of pemphigus vulgaris is uncertain. Specific enzyme-linked immunosorbent assays (ELISA) are now available for detecting Dsg_3 and Dsg_1 autoantibodies. As stated earlier, all patients with PV, especially with mucosal involvement, have antibodies against Dsg_3 [13].

Mignogna *et al*. [14] observed that patients with PV showed generally extensive involvement of the oral mucosa and most of these were localized to the gingiva at the onset. Tricamo *et al*. [15] also showed that patients with mucous membrane pemphigoid exhibited more gingival inflammation (and higher plaque scores) than controls. The present data also showed that PV patients had impaired oral health compared to the control, probably because the presence of painful oral lesions hindered proper oral hygiene practice. It was documented that long-term immunosuppressive therapy alters the host defense, which in turn may negatively affect the oral health in these patients [16].

The recent study by Akman *et al*. [10] using CPITN index revealed impaired oral health in PV patients. In this study, we used CPITN index, too. As observed, desquamative gingivitis and gingivitis incidence was higher in PV patients. Desquamative gingivitis is a clinical condition with unclear etiology. This is not a specific diagnosis but a descriptive term for nonspecific gingival manifestation which is associated with different diseases. A variety of muco-cutaneous disorders represent gingival manifestations in the form of desquamative lesions or ulceration of the gingival [17].

Periodontal and dental problems are often observed in DG patients. Mucous membrane pemphigoid and erosive lichen planus are the most frequent causes of DG, accounting for 48.9% and 23.6%, respectively, of all cases of DG. PV is the least common cause of DG (2.3%). Histopathological examination and DIF testing are necessary to make a definitive diagnosis of the diseases responsible for DG [18].

In this study, a significant difference observed pocket depth of ≥ 6 mm was 72% in PV patients. In a study, clinical examination revealed the existence of poor oral hygiene status, bleeding on probing, significant clinical attachment loss and probing pocket depth [19]. Clinical examination revealed advanced periodontitis with a periodontal pocket depth > 5.5 mm, tooth mobility, furcation involvement, and gingival recession > 3.5 mm. Intraoral physical examination showed the presence of lesions and large ulcers with erythematous halos and blood exudate in the maxillary buccal gingiva [20].

CONCLUSION

This report describes the case of relation between PV and periodontal disease in Iran. These results suggest, there is relation between PV and periodontal status. So, PV symptoms are the important to diagnosis of periodontal disease.

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