Original Article

Is the Periodontal Status a Risk Factor for the Development of Psoriasis?

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Abstract

Background and Objectives: Psoriasis is a common, chronic, inflammatory, and hyperproliperative skin disease. It has been known that the infectious agents play a role in triggering and exacerbation of the disease. Periodontal diseases are chronic inflammatory gum diseases initiated by microorganisms in dental plaques. This study intended to determine the role of periodontal diseases, as chronic infective foci in psoriasis. **Materials and Methods:** A total of 76 patients, who applied to Faculty of Medicine, Department of Dermatology, İnönü University, diagnosed as psoriasis and a control group consisting of 76 dermatologic patients without any systemic disease at similar age and gender were included the study. The dental examinations of the subjects were done by the Community Periodontal Index of Treatment Needs index system, using a periodontal probe. **Results:** Significant difference was identified between the patients with psoriasis and control group, in terms of CPI (Community Periodontal Index), oral hygiene habits, frequency of tooth brushing and flossing (P = 0.01, P = 0.001, P = 0.01, P = 0.05, respectively). A positive correlation between the severities of psoriasis and dental disease was determined, but this difference was not statistically significant (P = 0.204). **Conclusion:** The periodontal disease may affect psoriasis as a chronic infectious focus and probably through proinflammatory cytokines. In order to clarify the exact role of periodontal disease in psoriasis, the issue should be studied in larger series with serum cytokine levels.

Keywords: *Dental disease, periodontal disease, psoriasis*

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Introduction

Psoriasis has a chronic course and is characterized by sharply-demarcated papules and plaques.[1] Although the etiology is still unclear, it has been known that genetic predisposition, physical traumas, various medicines, stress, and infectious agents trigger and exacerbate the disease.[2]

Periodontal disease is a general name of the chronic inflammatory diseases of the tissues around the teeth, such as changes in color of the gums, in texture, easy bleeding, pocket formation, bone loss, motility of the teeth, and teeth losses.[3] It is thought that the microorganisms and products on the dental plaque are the primary agents in the initiation and progression of the periodontal diseases. Oral hygiene, brushing habits, immune status, smoking, stress, and genetic predisposition are also among the etiologic agents.[4,5] Periodontal disorders may affect the course of various systemic diseases, such as pemphigus vulgaris, Behçet's disease, and acute myocardial infarction.[6-9]

In this study, we aimed to identify the effect of periodontal diseases, as chronic infection focus on psoriasis.

Aim

Periodontal diseases are chronic inflammatory disease of the gums initiated by microorganisms in dental plaques. This study intended to determine the role of periodontal diseases, as chronic infective foci in psoriasis.

Materials and Methods

Participants

A total of 76 psoriatic patients over 18 years old, (45 females and 31 males, 34.82 ± 14.48 years) and the control group of 76 people without any systemic disease, with same gender and at similar age (52 female and 24

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male, 30.80 ± 11.19 years), were included in the study. The patients had all the clinical types of psoriasis. The subjects with oral mucosa disease (i.e.; lichen planus, aphthae, oral candida, pemphigus) and under periodontal treatment were not included in the control group. The patients with localized skin diseases (such as verruca, callus, and tinea pedis) were included in the control group. In order to evaluate the severity of psoriasis, Psoriasis Area Severity Index (PASI) was used. Routine oral and dental examinations were done in both patient and control groups. The study protocol in the current study was approved by the Ethical Committee of Inonu University (Reference Number: 2009/36).

Dental Examination

In order to evaluate the periodontal findings, the system of Community Periodontal Index of Treatment Needs was used. Clinical examinations were done by periodontal probe recommended by World Health Organization. The examination of every patient was done by dividing the jaw into equal quadrants. The teeth were examined as follows: 17,16,11,26,27,47,46,42,41,31,32,36,37. The score numbers were identified as: 0: no periodontal disease, 1: gingival bleeding, 2: calculus detected while probing, 3: the depth of pocket 4-5 mm, 4: the depth of pocket 6 mm and above. The highest score of CPI according to these six equal parts were recorded as the periodontal status of patient.

The habit of using dental floss and usage of denture were questioned by the dentist. The status of oral hygiene habits was recorded as the frequency of daily tooth brushing. Those that did not brush had very poor oral hygiene habit, brushing once a day improved the hygiene status and those brushing two times or more a day recorded very good oral hygiene habit.

Statistical Analysis

Statistical analysis was performed by using Statistical Package for Social Sciences for Windows version 15.0 program. Measurable variables were presented by average +/− standard deviation, whereas categorical variables were presented with number and percentage. It was identified by Shapiro–Wilk normality test that the distribution of measurable variables indicated normal distribution. In statistical evaluations, unpaired t test and Pearson's chi–square test and in independent groups, one way variance analysis test was used. $P < 0.05$ was considered as statistically significant.

Results

No significant differences were identified between the patient and control groups in terms of age and gender (P: = 0.057 and P = 0.237, respectively) [Table 1].

When the patient and control groups were compared in terms of dental score, it was determined that the dental scores of the patients were significantly higher than those of the control groups (P = 0.01) [Table 2].

Patients were divided into three groups according to the PASI scores. Patients with PASI score between 0 and 5 were named as the first group, from 5 to 15 were named as the second group, and 15 and above were named as the third group. A total of 35 patients were in the first group, 30 in second, and 11 in third group. Dental scores were found to be as 1.54 ± 1.01 in first, 1.90 ± 0.80 in second, and 2.09 ± 0.83 in third group. It was observed that PASI and dental scores increased in a parallel manner. However, this parallelism was not found statistically significant (P = 0.204) [Table 3].

When the patients were compared with controls, it was identified that the habit of tooth brushing in patients was less than in controls and this difference was found as to be statistically significant (P = 0.01). When patients and controls were compared in terms of poor oral hygiene habits, a statistically significant difference was determined (P = 0.001). In patients, it was determined

Table 1: Age and gender chart of patients and control group

	Patient (n = 76)	Control (n = 76)	P
Age	34.43 ± 14.48	30.80 ± 11.19	0.057
Gender			
Female	45 (%59.3)	52 (%68.4)	0.237
Male	31 (%40.8)	24 (%31.6)	

Table 2: CPI scores of patient and control groups

	0 n (%)	1 n (%)	2 n (%)	3 n (%)	4 n (%)
Patient group	6 (%7.9)	23 (%30.3)	32 (%21.1)	13 (%8.6)	2 (%2.6)
Control group	27 (%35.5)	21 (%27.6)	22 (%28.9)	5 (%6.6)	1 (%1.3)

Table 3: PASI dental scores in patients

PASI score	CPI score
PASI 0--5	1.54 ± 1.01*
PASI 5--15	1.90 ± 0.80*
PASI 15 and above	2.09 ± 0.83*

*P = 0.204

Table 4: Comparison of oral hygiene to psoriasis and control group

	Good oral hygiene habits, n (%)	Poor oral hygiene habits, n (%)	Very poor oral hygiene habits, n (%)
Patient	4 (5.3%)	26 (34.2%)	46 (60.5%)
Control	30 (39.5%)	31 (40.8%)	15 (19.7%)
P	0.001	0.001	0.001

When patients were compared with controls in terms of the use of dental floss, flossing was found significantly higher in the control group (P = 0.05) [Table 5].

Table 5: Psoriasis patients and use of dental floss in control group

	Using dental floss, n (%)	Not using dental floss, n (%)
Patient	2 (2.6%)	74 (97.4%)
Control	8 (10.5%)	68 (89.5%)
P	0.05	0.05

When psoriasis patients were compared with control group using dental prosthesis, there were no significant statistical differences noticed (P = 0.703). Of the 76 patients 19 were using dental prosthesis, 17 of the patients in control group were using dental prosthesis [Table 6].

Table 6: Dental prosthesis use among psoriasis patients and control group

	Using dental prosthesis, n (%)	Not using dental prosthesis, n (%)
Patient	19 (25%)	57 (75%)
Control	17 (22.4%)	59 (77.6%)
P	0.703	0.703

that 46 (60.5%) of patients had a poor, whereas 26 (34.2%) of patients had moderate, and 4 (5.3%) of patients had a good oral hygiene habits. In the control group, it was determined that, 15 (19.7%) of subjects had poor, 31 (40.8%) of subjects had moderate, and 30 (39.5%) of subjects had a good oral hygiene habits [Table 4].

When patients were compared with controls in terms of the use of dental floss, flossing was found significantly higher in the control group (P = 0.05) [Table 5].

When psoriasis patients were compared with control group using dental prosthesis, there were no significant statistical differences noticed (P = 0.703). Of the 76 patients 19 were using dental prosthesis, 17 of the patients in control group were using dental prosthesis [Table 6].

Discussion

Psoriasis is a multifactorial and polygenic disease. Its pathogenesis is still not known exactly. On a genetic base, many triggering factors, such as physical traumas, infections, various drugs, stress, alcohol, and smoking[1,2] have been defined as infectious foci, especially chronic infections of the oral region and tonsils are well-defined ones.[10] In recent years, some studies have indicated that periodontal diseases might affect the course of different types of systemic diseases. The microorganisms in the periodontal tissues create a chronic infection focus in the body. It has been presented that these microorganisms increase the levels of proinflammatory cytokines such as interleukin (IL)-6, particularly tumor necrosis factor (TNF)-α and IL-1β in the periodontal tissues and serum.[11-14]

In the literature psoriatic cases related with Helicobacter pylori have been reported. It has been thought that foci of focal infection might be a trigger for psoriasis.[15-16]

Periodontal diseases are a group of destructive diseases and initiated by microorganisms in dental plaques. The microorganisms in the periodontal tissues create a chronic infection focus in the body. A recent excessive immune response progresses to these microorganisms in time.[17,18] In studies, it has been concluded that

periodontal diseases might affect the course of different types of systemic diseases. It has been reported that these disorders increase the levels of proinflammatory cytokines, such as IL-6, particularly TNF-α and IL-1β in the periodontal tissues and serum and affect the course and severity of many systemic diseases.[11,12,19]

Grossi and Genco[14] observed that advanced periodontal disease affects the severity of diabetes and made its control difficult. Akman *et al.*,[6] identified that dental scores of patients with pemphigus vulgaris were higher than those of healthy controls. However, the relationship between severity of the disease and dental scores could not be identified. Akman et al.[7] reported that the dental scores of the patients with Behçet's disease were higher than those of the healthy controls and there was a positive relationship between the severities of the disease and periodontal disease.

Periodontal infections have been thought as sources of superantigen. It can be hypothesized that they may be effective in pathogenesis of psoriasis and its course. There are a limited number of studies on the relationship between periodontal status and psoriasis in the literature. Preus *et al.*[20] found that there were decreased alveolar bone levels and accordingly more mobile teeth and tooth loss in the psoriatic group than controls. The association between periodontal disease and psoriasis has been reported in a patient by Akazawa et al.[21] They observed that a female with severe periodontitis for 10 years and a diagnosis of palmoplantar pustulosis for 3 years. Her lesions could not be controlled by topical steroids. After a periodontal treatment, her psoriasis declined and did not relapse.

Antal *et al.*[22] proposed that smoking might have permissive effect on the development of severe periodontal disease in psoriasis.

Top of Form

We conducted this study to investigate the relationship between psoriasis and periodontal disease. We observed that the score of periodontal disease in patients with psoriasis was significantly higher than controls. There was a positive correlation between the severity of psoriasis and dental score, but it was.

There has been no significant differentiation reported (P = 0.204). There was no a parallelism in the severity of periodontal disease and probably due to limited study population. It should be re-evaluated that this relationship in larger populations with serum proinflammatory cytokine levels.

We identified that in patient group, basic factors affecting the periodontal health, such as frequency of tooth brushing, the habit of flossing, and oral hygiene were in a negative manner. Another effective factor in periodontal disease is the immune status of the host. We conclude that immune suppressive agents used in the treatment of psoriasis may be another factor that may negatively influence the periodontal health.

Conclusion

Although there are very few studies investigating the relationship between periodontal disease and psoriasis, its relationship with many systemic inflammatory disease has been reported was with clear findings. The periodontal disease may affect psoriasis as a chronic infectious focus and probably through proinflammatory cytokines. In order to clarify the exact role of periodontal disease in psoriasis, the issue should be studied in larger series with serum cytokine levels.

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Conflicts of interest

There are no conflicts of interest.

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