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Original Article / Özgün Araştırma

Changes in Oral Health in Patients with Behçet's Disease: 10-Year Follow-Up

Behçet Hastalarında Oral Sağlığın Değişimi: 10 Yıllık İzlem Çalışması

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ABSTRACT

Objective: The aim of this retrospective study was to evaluate the changes in oral health parameters in patients with Behçet's disease (BD) in a 10-year follow-up study.

Patients and Methods: Eighteen BD patients (F/M: 12/6, mean 36.4 ± 9.9 years) followed regularly by clinical, laboratory and oral health examinations for 10 years, were included in the study. Oral health was evaluated by dental and periodontal indices. Patients were given oral hygiene education regularly in each visit. In addition, the number of oral ulcers per month was noted and a disease activity score was calculated.

Results: Although the frequency of tooth brushing was higher for the 10-year follow up (median:1.2) than for the baseline (1.0), no significant difference was observed (p=0.06). Also there were no significant differences for the scores of periodontal indices and dental indices at baseline and follow-up (p>0.05). The number of oral ulcers/month was lower at follow-up (median:1) compared to baseline (median:6) (p=0.000).

Conclusion: Although painful ulcers affect oral health negatively, dental and periodontal health remained stable in a 10-year follow-up in BD patients with motivation and education for oral hygiene. However, further studies are required to demonstrate whether better oral hygiene effects the course of oral ulcers.

Keywords: Oral health, Oral hygiene, Oral ulcer and Behçet's disease

ÖZET

Giriş: Bu araştırmanın amacı Behçet hastalarında (BH) 10 yıllık dönemde oral sağlıktaki değişimleri incelemektir.

Hastalar ve Yöntemler: Bu retrospektif araştırmaya 10 yıl süresince düzenli olarak klinik, laboratuvar ve oral sağlık değerlendirmeleri yapılan 18 BH'lı hasta seçildi (K/E: 12/6, yaş ort.:36.4 ± 9.9 yıl). Oral sağlık dental ve periodontal indeksler ile değerlendirildi. Hastalara her muayenede düzenli olarak oral hijyen eğitimi verildi. Oral ülser sayısı/ay kaydedildi ve hastalık şiddet skoru hesaplandı.

Bulgular: Diş fırçalama sıklığının 10 yıllık izlem sonrasında (median:1.2) başlangıç dönemine (median:1) göre artış gösterdiği ama anlamlı farklılığa ulaşmadığı görüldü (p=0.06). Başlangıç ve kontrol dönemlerinde dental ve periodontal indeks skorlarında anlamlı farklılık tespit edilmedi (p>0.05). Aylık oral ülser sayısı ise 10 yıllık izlem döneminde (median:1) başlangıç dönemine göre (median:6) anlamlı olarak azaldı (p=0.000).

Sonuçlar: Behçet hastalarında ağrılı ülser varlığının oral sağlığı olumsuz yönde etkilemesine rağmen, 10 yıllık izlem döneminde oral hijyen eğitimi ve motivasyon ile dental ve periodontal sağlığın stabil kaldığı belirlendi. Ancak oral hijyenin iyileştirilmesi ile oral ülserin azalması arasındaki ilişkinin daha iyi değerlendirilebilmesi için yeni çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Oral sağlık, Oral hijyen, Oral ülser ve Behçet hastalığı

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INTRODUCTION

Behçet's Disease (BD) is a multi-systemic vasculitic disorder characterized by oral and genital ulcers, cutaneous, ocular, arthritic, vascular, central nervous system and gastrointestinal involvements[1,2]. The prevalence of BD is fairly high in Turkey, Israel, Iran, Korea and Japan compared to USA and European countries. In addition, ocular, vascular and central nervous system involvements, reflecting a severe disease course, are more common in these countries[3-5]. Although the aetiology of BD is unknown, a role of infectious agents is implicated in the etiopathogenesis and the recurrence of symptoms[1-6].

Since oral ulcers as a cardinal clinical symptom are commonly seen as the first manifestation of BD, oral flora[1-6] and oral health[2,4,5] are implicated in the pathogenesis of BD. Streptococcia is the most commonly investigated microorganism among members of the oral flora[1-9]. The high incidence of infection relating to tonsillitis and dental caries, relapse of disease manifestations after dental treatments[6-9], clinical responses of mucocutaneous symptoms to antimicrobial medications[10,11,12] support the role of streptococcia in the etiopathogenesis of BD. Colonization of streptococcia on the oral mucosa may trigger the immune responses for ulcer formation in patients with BD[6,7,9]. When oral health is examined, poor dental and periodontal health is observed in patients with BD[13-19]. Increased microbial plaque accumulation around the teeth which is a complex microbial ecosystem is found to be a risk factor for a severe disease course with major organ involvement[13]. Besides, the number of oral ulcers is decreased in a 6-month follow-up after dental and periodontal treatments[14]. Although short term and cross sectional data regarding oral health have been obtained from different studies[11-19], long term follow-up data are not available for BD. Therefore, the aim of this study was to evaluate changes in oral health parameters in patients with Behçet's disease in a 10-year follow-up.

PATIENTS and METHODS

Eighteen BD patients (F/M: 12/6, mean age: 36.4 ± 9.9 years) classified according to the International Study Group Criteria[20] and followed regularly by clinical, laboratory and oral health examinations for 10 years, were included in the study. These patients were examined and followed in multi-disciplinary Behçet's Disease Clinic in Marmara University Hospital. Time interval between the examinations was determined as 4-6 months according to disease activity and organ involvement of each of the BD patients. Both general and oral examinations were carried out in each examination during the 10-year follow-up period. Parameters of oral health and general health were compared between the first visit at baseline and the last visit after the 10-year period in the study.

Oral health was evaluated by dental and periodontal indices as previously described[21]. Dental indices were the number of extracted teeth and carious teeth. Plaque index, gingival index, sulcus bleeding index and periodontal pocket depth were the periodontal indices. Patients were regularly given oral hygiene education regarding the methods of tooth brushing and dental flossing and the effects of cariogenic foods on oral health in each visit.

In addition, the number of oral ulcers per month was noted in each examination during the study period. A total clinical severity score reflecting organ involvement was also determined in each examination according to Krause et al[22].

The exclusion criteria from the study were the presence of other disorders affecting oral health and irregular visits to the BD outpatients' clinic. The study was approved by the Local Ethics Committee and informed consent was obtained.

Statistical Analysis. Data were analysed by using the SPSS 11.5 statistic programme (SPSS Inc, Chicago, IL). The Wilcoxon rank test and the Chi-square test were used in comparisons between baseline and follow-up. A p value equal or less than 0.05 was accepted as significant.

RESULTS

Scores for plaque index, gingival index, sulcus bleeding index and periodontal pocket depth were similar at the 10-year follow-up (median: 2.1, 2.3, 2.4 and 3.3, respectively) compared to those at baseline (median: 2.5, 2.5, 2.3 and 3.2, respectively) (p=0.32, p=0.55, p=0.64 and p=0.87, respectively) (Table I). Similarly, no significant differences were present in the number of extracted teeth and carious teeth at baseline (median: 6 and 2, respectively) when compared to follow-up (median: 7 and 2, respectively) (p=0.70 and p=0.32, respectively)(Table I).

The frequency of tooth brushing was higher in the 10-year follow up (median: 1.2), than those of baseline (median:1.0), however without reaching statistical significance (p=0.06) (Table 1).

The number of oral ulcers in a month was lower at follow-up (median: 1) than at baseline (median:6) (p=0.000) (Table 1). Similarly, only half of the patients had active oral ulcer at follow-up (n=10, 55.5%) compared to baseline (n=18, 100%) (p=0.002). However, disease severity score (median: 4), which demonstrates a cumulative presence of various organ manifestations, was lower at baseline than the 10-year follow-up (median: 5)(p=0.000).

Table I: Oral and Disease Related Parameters at Baseline and 10-Year Follow-Up in Behçet's Disease.

	BASELINE		10-YEAR FOLLOW-UP		
	Median	**Min-Max**	**Median**	**Min-Max**	**p***
Plaque index	2.5	0.8-3.5	2.1	0.3-3.2	0.32
Gingival index	2.5	0.7-4.8	2.3	0.3-3.8	0.55
Sulcus bleeding index	2.3	0.7-3.8	2.4	0.3-3.5	0.64
Periodontal pocket depth β	3.2	2.1-4.2	3.3	2.3-4.2	0.87
Extracted teeth	6	0-19	7	0-28	0.70
Carious teeth	2	0-7	2	1-7	0.32
Tooth brushing	1.0	0.2-2	1.2	0.4-3	0.06
The number of oral ulcer	6	1-20	1	0-6	0.000
Disease severity score	4	3-9	5	3-9	0.000

* Wilcoxon rank test was used in the analysis.

β mm

DISCUSSION

Since the oral mucosa is accepted to be an infection focus, poor oral health is a possible risk factor in cardiovascular diseases[23], respiratory disorders[24], and diabetes[25]. As clinical manifestations mostly start from the oral mucosa in BD, oral microbial flora[1-6] and oral health[2,4,5] are also implicated in the etiopathogenesis of BD. In this frame, improvement of oral health status may have a critical importance in the disease course of BD.

In the present study, an increase in the frequency of tooth brushing was observed at follow-up. In relation to this figure, dental and periodontal health was found to be stable in the 10-year follow-up. Since oral hygiene education and patient motivation are necessary for the improvement of oral hygiene[21], patients were educated and motivated in each examination. In our previous studies, the frequency of tooth brushing was found to be fairly low in patients with BD[13,15]. This can be related to the presence of painful oral ulcers or to socio-cultural factors. Lack of oral hygiene due to infrequent tooth brushing triggers both periodontal disease and activates innate immunity[4,5,16]. Moreover, genetic factors such as the presence of various single nucleotide polymorphisms of IL-1alpha-889C and TNF-alpha-1031C might also be additional risk factors for poor periodontal health in BD, causing periodontitis-induced autoinflammatory responses[17,18]. Therefore, we think, improvement of oral hygiene applications are of critical importance in BD.

Another important observation was the decrease of oral ulcer activity at follow-up compared to baseline. Infections are suspected to have a role both in the initiation phase and in relapses of the illness in BD[1-10]. In this perspective, the relationship between oral health and ulcer formation can be explained by oral microbial factors.

Oral streptococci can colonize and penetrate the oral mucosa by breaking the physical barrier of the mucosa[6,9,10]. An increase in colonisations of S.sanguis on the tongue, supragingival dental plaque and buccal mucosa[26] and of S.mutans in the saliva[27] are observed in BD. S.mutans colonisations are elevated especially in male patients and produce a severe disease course with major organ involvement. The increase in

S.mutans colonisation might be related to low serum mannose-binding lectin levels that recognise microorganisms as a part of the first-line innate defences[27]. In a germ-free mouse model, S.sanguis is shown to adhere to buccal epithelial cells and cause local inflammatory cytokine responses[9]. Increases in patern-recognition receptors such as toll-like receptor-6 (TLR-6) expressed on granulocytes, was also observed after S.sanguis stimulation in patients with BD[28]. In addition, TLRs can recognize lipoteichoic-acid localized in gram-positive bacteria cell walls and stimulate immune responses in BD[29]. The other molecular mechanism of oral ulcer formation may be "molecular-mimicry" as in the cross-reactivity between heat shock protein-65 (HSP-65) of S.sanguis and human HSP-60 in BD[30]. As a result, the presence of infectious focus and poor oral health may activate immune responses with different pathways in BD. If these connections could be eliminated by the improvement of oral health, recurrence of oral ulcers would be limited. In this perspective, improvement of oral health by the preventive oral health care should be a part of the treatment protocols for patients with BD. Moreover, a decrease in oral ulcer activity may be related with the nature of disease since remission and exacerbations of symptoms could be different time periods in BD[31].

As a conclusion, data from this study indicate that dental and periodontal health remained stable by motivation and education for oral hygiene in a 10-year follow-up in BD patients. However, whether better oral hygine improves the disease course and prevents oral ulcer activity requires further studies.

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