

Clinical investigation of oral findings in inherited disorders of platelet function

Hereditör trombosit fonksiyon bozukluğu olan hastalarda görülen oral bulgularının klinik olarak incelenmesi

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Abstract

Objective: Bleeding disorders are a very important health problem due to the associated high risk of hemorrhage during dental procedures. The present study aimed to investigate oral manifestations of inherited disorders of platelet function (IDPF).

Materials and Methods: The study included 20 IDPF patients (mean age: 31.90 ± 10.71 years) and 40 healthy controls (mean age: 31.63 ± 9.07 years). Tooth brushing habits, level of education, and clinical index scores (Simplified Oral Hygiene Index [OHI-S], Decayed Missing Filled Teeth Index [DMFT] index, probing depth [PD] index, Gingival Bleeding Index [GBI], and Community Periodontal Index [CPI]) were recorded.

Results: There weren't any significant differences between the 2 groups with respect to tooth brushing habit, level of education level, OHI-S, DMFT index, or CPI ($p > 0.05$), whereas significant differences in PD index and GBI were observed between the groups ($p < 0.05$).

Conclusion: The present study's findings show that IDPF has a negative effect on periodontal tissues. (*Türk J Hematol 2011; 28: 294-8*)

Key words: Blood platelet disorders, thrombocytopenia, gingival hemorrhage, periodontal diseases, oral hygiene, dental caries

Received: March 3, 2009

Accepted: April 30, 2010

Özet

Amaç: Diş hekimliğinde uygulanan işlemler sırasında kanama, kanama problemi olan hastalarda oldukça önemlidir. Bu çalışmada Hereditör Trombosit Fonksiyon Bozukluğu (HTFB) olan hastaların ağız bulguları değerlendirilmiştir.

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doi:10.5152/tjh.2011.83

Yöntem ve Gereçler: Çalışmamıza HTFB olan 20 hasta (31.90 ± 10.71) ve 40 sağlıklı kontrol (31.63 ± 9.07) alınmıştır. Diş fırçalama alışkanlıkları, eğitim seviyeleri ve klinik indeksler; Modifiye Oral Hijyen İndeksi (OHI-S), Çürük indeksi (DMFT), cep derinliği (PD), diş eti kanama indeksi (GBI) ve Genel Periodantal indeks (CPI) kaydedildi.

Bulgular: Gruplar arasında, diş fırçalama alışkanlıkları, eğitim seviyesi, OHI-S, DMFT ve CPI sonuçları için istatistiksel olarak anlamlı bir farklılık bulunmadı ($p > 0.05$). PD, GBI sonuçları ise iki grup arasında istatistiksel olarak anlamlı bulundu ($p < 0.05$).

Sonuç: Bu çalışmada HTFB'nin periodontal dokuları etkilediği görülmüştür.

(Turk J Hematol 2011; 28: 294-8)

Anahtar kelimeler: Trombosit hastalıkları, trombositopatiler, dişeti kanaması, periodontal hastalık, oral hijyen, diş çürükleri

Geliş tarihi: 03 Mart 2009

Kabul tarihi: 30 Nisan 2010

Introduction

Platelet function disorders are uncommon causes of bleeding disorders treated by hematologists. Inherited disorders of platelet function (IDPF) are diverse and include defects in platelet adhesion, aggregation, secretion, and platelet procoagulant activity. Clarification of the abnormal platelet mechanism in such patients has provided invaluable insights concerning the key aspects of platelet physiology and hemostasis. IDPF patients at all times must be made aware of the importance of oral health. Based on anatomical location, bleeding in the oral cavity can be life threatening. The frequency of oral findings in IDPF patients is not precisely known; however, oral bleeding in related diseases can occur in $\leq 70\%$ of patients [1-7].

Materials and Methods

The present study included patients that were referred to the Department of Oral Diagnosis and Radiology by our hospital's hematology department. The Hacettepe University Ethics Committee approved the study protocol and written informed consent was obtained from each participant. In all, 20 IDPF patients and 40 healthy controls were included in the study. The 20 patients (5 male and 15 female) had a mean age of 31.90 ± 10.71 years (range: 19-52 years) and were diagnosed with IDPF (Table 1). The control group consisted of 40 systemically healthy age- and gender-matched individuals (10 male and 30 female) with a mean age of 31.63 ± 9.07 years (range: 18-51 years) that presented to our clinics for routine care.

All the participants were examined while in the supine position in a dental chair under standard lighting conditions. Data collected via clinical oral examinations included the Simplified Oral Hygiene Index (OHI-S), Decayed Missing Filled Teeth (DMFT) index, Probing Depth (PD) index, and Gingival Bleeding Index (GBI) [8-11]. Periodontal status was evaluated using the Community Periodontal Index (CPI) [12]. These indexes were used to identify periodontal disease, dental caries activity, and oral hygiene status. One dentist performed all clinical oral examinations.

Table 1. Distribution of IDPF Patients

Disease	Age (years)	Gender
1 von Willebrand Disease	31	F
2 Hermansky-Pudlak Syndrome	25	M
3 von Willebrand Disease	50	M
4 Platelet-release reaction defects	25	F
5 Hermansky-Pudlak Syndrome	29	M
6 von Willebrand Disease	54	M
7 von Willebrand Disease	22	F
8 Grey Platelet Syndrome	23	F
9 Grey Platelet Syndrome	28	F
10 von Willebrand Disease	34	F
11 von Willebrand Disease	22	F
12 von Willebrand Disease	38	F
13 Platelet-release reaction defects	22	F
14 von Willebrand Disease	43	F
15 Platelet-release reaction defects	37	F
16 Platelet-release reaction defects	32	F
17 Glanzmann Thrombasthenia	46	F
18 von Willebrand Disease	21	M
19 Hermansky-Pudlak Syndrome	47	F
20 von Willebrand Disease	45	F

Table 2. Tooth Brushing Habits and Level of Education

Tooth Brushing Habit	Elementary School n	High School n	University n	Total n
Once daily/irregular	8 (30.8%)	8 (30.8%)	10 (38.5%)	26 (100%)
Twice daily/regular	5 (14.7%)	7 (20.6%)	22 (64.7%)	34 (100%)
Total	13 (21.7%)	15 (25%)	32 (53.3%)	60 (100%)

Values are given as median, TP1: At presentation; TP2: after 1 month of treatment, *The results of transfused patients (n=3) were excluded

Statistical analysis

Data were analyzed using SPSS for Windows v.11.0 (SPSS Inc., Chicago, IL, USA). The Mann Whitney U test was used for group comparisons. Differences in qualitative data were evaluated using the chi-square and Fischer exact tests. Correlations between variables were evaluated using Spearman's correlation coefficient.

Results

There wasn't a significant difference in tooth brushing habits ($p>0.05$) or level of education between the 2 groups ($p>0.05$) (Table 2). Additionally, there wasn't a significant difference in OHI-S, DMFT index, or CPI scores between the groups ($p>0.05$) (Table 3). PD index and GBI scores were higher in the patient group than in the control group ($p<0.05$) (Table 3), and CPI scores in the patient and control groups differed significantly ($p<0.05$)—the patients had more sites with a PD ≥ 6 mm (CPI Score 4) and more patients bled during probing (CPI score 1) (Table 3). There was a significant correlation between PD index and GBI scores in the patient group ($p<0.05$), whereas mean PD index and GBI scores were significantly correlated with CPI score in both groups ($p<0.05$) (Table 4).

Discussion

Undiagnosed hematologic disorders are an important health problem that dentists must be aware of. It was reported that some patients are diagnosed following oral symptoms and complications that occur during and after dental treatment [13-15,18]. Case reports have described submucosal hemorrhaging, gingival bleeding, petechiae, ecchymosis, and hematomas in patients with IDPF [15-21].

Tooth brushing habits are affected by age, gender, level of education level, parental level of education, and fear of bleeding. Koivusilta et al. [22] and

Table 3. Clinical Parameters

Parameter	Patients Group (n=20)	Control Group (n=40)
DMFT index	8.60 \pm 3.83	8.33 \pm 5.36
PD index	2.37 \pm 0.74	1.96 \pm 0.46
OHI-S	1.23 \pm 0.54	1.67 \pm 0.48
CPI Score		
Score 0	0/20 (0%)	1/40 (2.5%)
Score 1	3/20 (15%)	1/40 (2.5%)
Score 2	5/20 (25%)	22/40 (55%)
Score 3	6/20 (30%)	11/40 (27.5%)
Score 4	6/20 (30%)	5/40 (12.5%)

$p<0.05$ (two-tailed)

Honkala et al. [23] reported that tooth brushing habits improved as the level of education increased. Although not statistically significant, there was a positive correlation between tooth brushing habits and level of education in the present study's patient group.

DMFT index scores were reported to be lower in the children with hemophilia than the controls [24-25]. DMFT index scores were similar in Mielnic-Blaszczak et al.'s [26] 2 study groups. In the present study DMFT index scores did not differ between the patients and controls. Mielnic-Blaszczak et al. [26] evaluated bacterial dental plaque in children with congenital hemorrhagic diatheses and observed that the level of oral hygiene was lower in the patients than in the healthy children. In the present study the level of oral hygiene was similar in both groups.

Mean PD index and GBI scores were significantly correlated in the patient group and were higher than those in the control group. Moreover, more patients had CPI score 1 and score 4 than did controls. These findings indicate that gingival inflammation were more frequent and PD index scores were higher in the patients than the controls.

Periodontal health is important in patients with bleeding disorders because inflamed gingiva is at

Table 4. Correlation Between CPI and PD Index Scores, and Between PD Index and GBI Scores

		Mean PD index		CPI	
		r	p	r	p
Patient group	Mean PD	-	-	0.527	0.017
	Mean GBI	0.605	0.005	0.485	0.030
Control group	Mean PD	-	-	0.469	0.002
	Mean GBI	0.302	0.059	0.336	0.034

Spearman's correlation analysis, p<0.05 (two- tailed)

risk of bleeding. Good oral health reduced the incidence of unnecessary bleeding in patients with bleeding disorders [15]. In the present study the level of oral hygiene was similar in both groups. An interesting finding is that the patients had deeper pocket depth and higher levels of gingival inflammation than the controls. The present study's findings show that the incidence of periodontal inflammation was higher in the patients than in the healthy controls. The findings also show that both groups had poor oral hygiene; however, PD index and GBI scores were significantly higher in the study group than the control group. Our results supposed that IDPF affects periodontal tissues negatively. Alterations in platelet functions which result a with delayed or impaired wound healing may also contribute on these negative effects [27].

Conclusion

Regular oral-dental examination can play an important role in the diagnosis and screening of hematologic disorders. We think that patients with bleeding disorders should be examined regularly by dental specialists and that oral hygiene educational programming may benefit such patients. More comprehensive studies are needed in order to reach a more definite conclusion on the relation between periodontal health and IDPF. Determination of the effect of bacterial dental plaque on gingiva and oral wound healing (saliva, bacterial products, tissue interaction, etc.) in IDPF patients requires additional research.

Acknowledgement

This study was presented as a poster presentation at the IADR/CED & ID Divisional Meeting in Thessaloniki Greece, 26-29 September 2007.

Conflict of interest statement

The authors of this paper have no conflicts of interest, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

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