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The clinical and dermatoscopic features of melanocytic nevi in Turkish young people between 18-25 years old

18-25 yaş arası genç Türk bireylerdeki melanositik nevüslerin klinik ve dermatoskopik özelliklerinin incelenmesi

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Abstract

Purpose: Melanocytic nevi are common pigmented lesions of the skin. That can be confused with melanoma which is most malign tumor of the skin. Malign transformation of an existing nevus is one of the most seen etiological factor for melanoma formation.

Although characteristics of childhood nevi well studied, there are not much data about the nevi at 18-25 years old age group. The aim of this study is to determine the clinical and dermoscopic features of melanocytic nevi in Turkish young people with 18-25 years-old.

Material and methods: Students of Gulhane Military Medical Academy, Military Nurse School and Military Health Sergeant School and patients applied to outpatient clinic of Gulhane Military Medical Academy Department of Dermatology were included in the study. On clinical examination, we evaluated number of nevi, location of nevi and skin type. Nevi ≥3mm were examined dermoscopically, recorded and scored by using pattern analysis, ABCD total dermoscopic score, 7 point checklist, Menzies algorithm, 3 point checklist and CASH algorithm.

Results: Totally 668 young people were physically examined in this study (268 of which were women and 400 of which were men). The most common skin phototype in both sexes was type 3 (91.6% of women, 85.25% of men). A total of 3663 melanocytic nevi were determined. Mean number of nevi among cases were 5.4±5.24. A total of 453 nevi which are equal or greater than 3 mm were examined dermatoscopically. The most common localization of these nevi was the head and neck region (n=147; 32.5%), followed by anterior trunk (n=126; 27.8%), back (n=119; 26.3%), extremities (n=48; 10.6%) and acral region (n=13; 2.8%). The most common dermatoscopic global feature was the globular pattern (n=135; 29.8%), followed by reticular pattern (n=88; 19.4%), and cobblestone pattern (n=64; 14.1%). The correlations between 5 dermoscopic algorithm scores were done statically. Except the correlation between 7-point checklist and total CASH score (p=0.052 r=0.091), all algorithms were correlated with each other.

Conclusion: Different dermoscopic algorithms can be used together in routine to investigate the melanocytic nevi for valuable professional follow. This is the one of the rare studies about the characteristics of melanocytic nevi at young adult age group that lays the foundation for other studies that will elucidate the relationship between dermatoscopic pattern and the other factors in a population-based studies.

Key words: Dermoscopy, ABCD rule, 7-point checklist, Menzies algorithm, 3-point checklist.

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Özet

Amaç: Melanositik nevüsler deride sık görülen pigmente lezyonlardır. Malign bazen derinin en malign karakterli tümörü olan melanoma ile karıştırılabilirler. Varolan nevüslerde gelişen malin transformasyon melanoma etyolojisinde sık görülen bir etyolojik faktördür.

Her ne kadar çocukluk çağı nevüslerinde çok sayıda çalışma olsa da, 18-25 yaş grubu genç grupta nevüsler hakkında geniş tabanlı tarama çalışması sayısı kısıtlıdır. Bu çalışmanın amacı, 18-25 yaş grubundaki genç Türk bireylerde melanositik nevüslerin klinik ve dermatoskopik özelliklerinin belirlenmesidir.

Gereç ve yöntem: GATA (Gülhane Askeri Tıp Akademisi (GATA) tıp fakültesi öğrencileri, Sağlık Meslek Yüksek Okulu öğrencileri, Hemşirelik Yüksek Okulu öğrencileri ve GATA Deri ve Zührevi Hastalıklar Anabilim Dalı Polikliniği'ne başvuran hastalar çalışmaya dahil edildi. Olguların yaş, cinsiyet, güneşten koruyucu kullanımı, güneş yanığı öyküsünü sorgulayan medikal anamnezi alındı.

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Klinik değerlendirmede melanositik lezyonlar tespit edildi. Nevüs sayıları, lokalizasyonları ve deri tipi incelendi. Üç mm ve daha büyük melanositik nevüsler dermatoskopik olarak patern analizi, ABCD total dermatoskopi skoru (TDS), 7-nokta kontrol listesi, Menzies algoritması, 3-nokta kontrol listesi ve CASH algoritması ile retrospektif skorlandı.

Bulgular: Bu çalışmada 668 olgu (268 kadın, 400 erkek) muayene edildi. En çok görülen fototip her iki cinste de fototip III'dü (erkeklerin %91,6'sı, kadınların %85,25'i). Toplam 3663 adet melanositik nevüs saptandı. Ortalama nevüs sayısı 5,4±5,24 idi. Toplam 453 nevüs 3 mm üzerinde olarak tespit edildi ve dermatoskopik olarak incelendi. Lezyonların 147'si (%32,5) baş-boyun bölgesinde, 126'i (%27,8) gövde önyüzde, 119'u (%26,3) sırtta, 48'i (%10,6) ekstremitelerde ve 13'ü (%2,8) akral bölgelerde idi. En sık yerleşim %32,5 oran ile baş-boyun bölgesiydi. En sık görülen dermatoskopik global yapı globüler patern (n=135, %29,8), ardından retiküler patern (n=88, %19,4) ve kaldırımtaşı paterniydi (n=64; %14,1). Dermatoskopik olarak incelenen nevüslerde 5 algoritmanın birbirleri ile korelasyonu belirlendi. 7-nokta kontrol listesi ve CASH Skoru arasındaki korelasyon istatiksel olarak anlamlı değildi (p=0,052 r=0,091). Bu iki algoritma karşılaştırması dışındaki ikili korelasyonlar istatiksel olarak anlamlı idi.

Sonuç: Melanositik nevüs rutin takibinde eşzamanlı olarak farklı algoritmalar rutin olarak birlikte kullanılabilir. Bu çalışma genç erişkin yaş grubundaki melanositik nevüslerin karakteristik özellikleri hakkında dermatoskopik patternler ve diğer faktörler arasındaki ilişkiyi aydınlatmaya çalışacak topluma dayalı diğer çalışmalar için bir temel oluşturabilecek nadir çalışmalardan biridir.

Anahtar kelimeler: Dermoskopi, ABCD kuralı, 7-nokta kontrol listesi, Menzies algoritması, 3-nokta kontrol listesi.

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Introduction

Common melanocytic nevi (CMN) are observed in about 80-100% of the general population [1]. Nevi enlarge and increase usually in number in early childhood and puberty. Most of common acquired nevi are smaller than 5 mm in diameter. Genetic factors, age, skin phototype, ultraviolet light exposure, and immunological factors are the etiologic factors determined in the development of melanocytic nevi [2]. The ultraviolet light exposure is the major enviromental risk factor for the development of melanocytic nevi [3, 4]. The prevalence of melanocytic nevi increases in populations living closer to the equator [5]. Childhood sunburn is an important risk factor for the formation of nevi [6]. Acquired nevi often appears in the first two decades of life [5].

Melanoma risk factors include intermittent intense sun exposure, tendency to sunburn, tendency to freckle, fair skin, blue or green eyes, blond or red hair, xeroderma pigmentosum, giant congenital melanocytic nevus, immunosupression and a family history of melanoma. Despite several studies are on the opposite view, the majority of randomized clinical trials supports the association between large numbers of nevi and increased risk for the development of melanoma and greater genetic tendency to form melanoma [2, 6]. The number of common and atypical nevi is defined as an important independent risk factor for the development of melanoma [7]. The most prominent known phenotypic risk factor for the development of melanoma is a large number of common melanocytic nevi [5]. If a person has more than 100 nevus, the risk of developing melanoma is 7 to 12 times higher than a person with only a maximum of 10 to 15 common nevus. The risk of developing melanoma for the persons with 5 atypical nevus is 6 times higher than that of a person without any atypical lesion [7]. The prevalence of atypical melanocytic nevi ranges from 1.5% to 18% in general population [1]. Gender variations in total nevi counts are observed mainly as higher nevus counts in males compared to females in different clinical studies [1, 3, 8]. Females generally have more nevi on the limbs, whereas males have more nevi on the trunk [6, 8]. The number of nevi on the arms is correlated with total amount of nevi of whole body [6]. According to epidemiological data, the largest number of nevi is expected in males with skin type II, light skin, freckles, and high parental nevus counts [3]. Children with skin types I and II were found to have higher melanocytic nevi counts than those with skin

types III and IV in a Turkish children population study [8].

Dermoscopy is a noninvasive in vivo examination technique helps to improve diagnostic accuracy in skin lesions, skin tumors and early diagnosis of melanoma by giving physicians a more detailed view of the skin than the naked eye [9-11]. The comparison of various diagnostic algorithms for dermoscopy showed similarity in their diagnostic performance [9].

The dermoscopic structures and colors can help differentiating of melanocytic lesions, nonmelanocytic lesions, benign lesions and malign lesions [12]. The dermoscopic criteria and diagnostic algorithms have been used for skin cancer detection [13]. The most relevant dermoscopic algorithms are the ABCD rule of Stolz, the Menzies's algorithm, 7-point check list of Argenziano, CASH algorithm and 3-point check list.

The sensivity and specifity of dermoscopic algorithms were studied. Dolianitis et al. [14] reported the sensivity of pattern analyse, ABCD rule of dermoscopy, 7-point checklist and Menzies algorithm as 68.4%, 77.5%, 81.4% and 84.6% respectively. Specifities were 85.3%, 80.4%, 73%, 77.7% respectively. In Soyer's study the sensivity of 3-points checklist for non-experts were 96.3%, and specificity was 32.8% [15]. In the study of Hennig et al. [16] the CASH algorithm's sensivity 98% and specificity was 68%.

Materials and methods

A total of 668 young people from students of Gulhane Medical Academy, Gulhane Nurse School and Gulhane Health Sergeant School and suitable patients of outpatient clinic of Gulhane Medical Academy Department of Dermatology were included in the study retrospectively. Gulhane Medical Academy local ethical committee approval (No: 1491-801-10/1539) was taken. The inclusion criteria were being 18-25 years old, not to have a determined skin disease, not having cutaneous albinism, no disease like vitiligo or dermatopathology effecting melanocytic nevi and not having tattoos. All the melanocytic lesions of attendees were detected. Lesions with diameter of more than 3 mm were dermoscopically examined and recorded to exclude lentigines. Attendants didn't describe any concomitant diseases. An oral questionnaire with topics including age, sex, sunblock use, and sunburn history was asked to each participant. Skin phototypes were recorded by clinical examination. Melanocytic nevi were determined by clinical examination and dermoscopically. Melanocytic nevi were detected with DermLite® II PRO HR (3Gen, San Juan Capistrano, CA, USA) polarised hand dermoscope, they were recorded with Nikon D5000® DSRL (Nikon, Inc, Melville, NY, USA) digital camera. The suspicious lesions were also examined at FotoFinder® videodermoscopy (FotoFinder® Systems GmbH, Bad Birnbach, Germany). The Fitzpatrick skin phototypes of attendees were determined. Pigmented lesions were examined with pattern analysis. In dermoscopic examination, non-melanocytic lesions were excluded by two step algorithm. Nevi greater than 3 mm diameter were scored among ABCD total dermoscopy score, 7 point check list (Argenziano scoring), Menzies algorithm, 3 point check list and CASH algorithm.

Statistical analysis

SPSS 15.0 package program was used for statistical analyses of this randomised epidemiologic study. Results were presented by frequencies, percentages. Chi-square test, Pearson correlation test were used for the correlaton of the results of algorithms. Values below 0.05 were considered statistically significant.

Results

Totally 668 young people were physically examined in this study (268 of which were women and 400 of which were men). Most common phototypes of cases in both gender were phototype III (87.6%). No phototype I or VI were defined (Table 1). Among the questionnaire, 241 of participants (36%) answered as they used sunscreen in summer. Women using sunscreen were 63.4% of all women in study. The ratio of men using sunscreen products was 17.8% of all men. Nineteen (7%) of women and 5 (1.25%) of men among cases had former nevus examination. 13 of these young women were using sunscreens in summer time. The ratio to all women were 4.85%. Only 1 of these 5 young men were using sunscreen in summer. The ratio

Table 1. Demographic features of patients

Demographic properties	Number	Percent (%)
Gender		
Female	268	40.1
Male	400	59.9
Fitzpatrick phenotype		
II	50	7.5
III	585	87.6
IV	31	4.6
V	2	0.3

to all men were 0.25%. In 668 cases, a total of 3663 melanocytic lesions were determined. Mean number of melanocytic lesions among all cases were 5.4±5.24. Nevi greater than 3 mm were detected in 261 participants. A total of 453 nevi were found to be greater than 3 mm. These were examined dermoscopically.

The most common localization of these nevi was the head and neck region (n=147; 32.5%), followed by anterior trunk (n=126; 27.8%), back (n=119; 26.3%), extremities (n=48; 10.6%) and acral region (n=13; 2.8%) (Figure 1).

The most common dermoscopic global feature were globular pattern (n=135; 29.8%), followed by reticular pattern (n=88; 19.4%), cobblestone pattern (n=64; 14.1%), reticulo-homogeneous pattern (n=43; 10.1%, homogeneous pattern (n=40; 8%), reticuloglobuler pattern (n=30; 6.6%), multi-component pattern (n=5; 1.1%), starburst pattern (n=1; (0.2) (Figure 2, 3). Three of them were non-specific pattern Thirty of the (6.6%) nevi were on face and the pattern was pseudonetwork. Fourteen of them were on the acral region and the pattern was parallel furrow patern.

ABCD TDS scores were found to be equal or higher than 4.75 in 19 nevi. 7-point checklist scores were determined in suspicious values in 21 nevi. Menzies algorithm scores were determined in suspicious values in 97 nevi. 42 nevi were found in suspicious values according to 3-point check list algorithm. 4 nevi were in suspicious values according to total CASH score (Table 2a-e). These nevi were taken to dermoscopic periodic examination. The correlations of 5 dermoscopic algorithm scores were compared (Table 3a-e). The correlations between 5 dermoscopic algorithm scores were done statically. Except the correlation between 7-point checklist and total CASH score (p=0.052 r=0.091), all algorithms were correlated with each other (p<0.05).

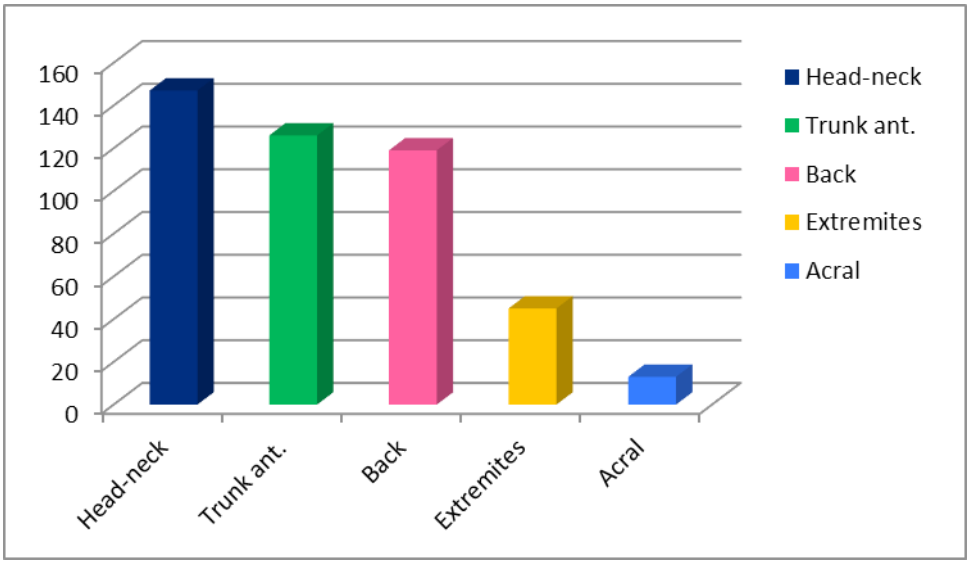

Figure 1. The distribution of nevi according to the body region

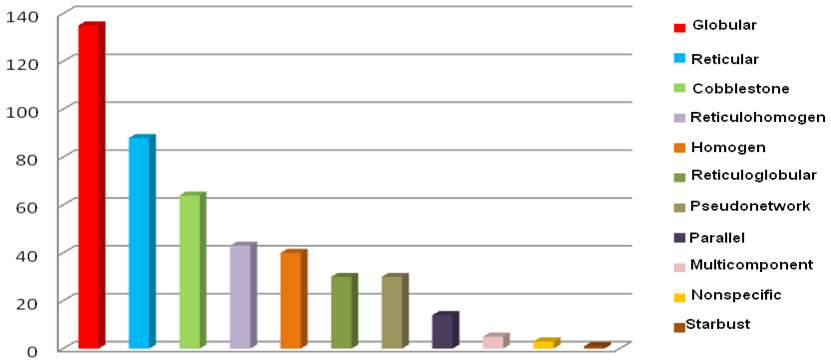

Figure 2. Frequency of dermoscopic pattern

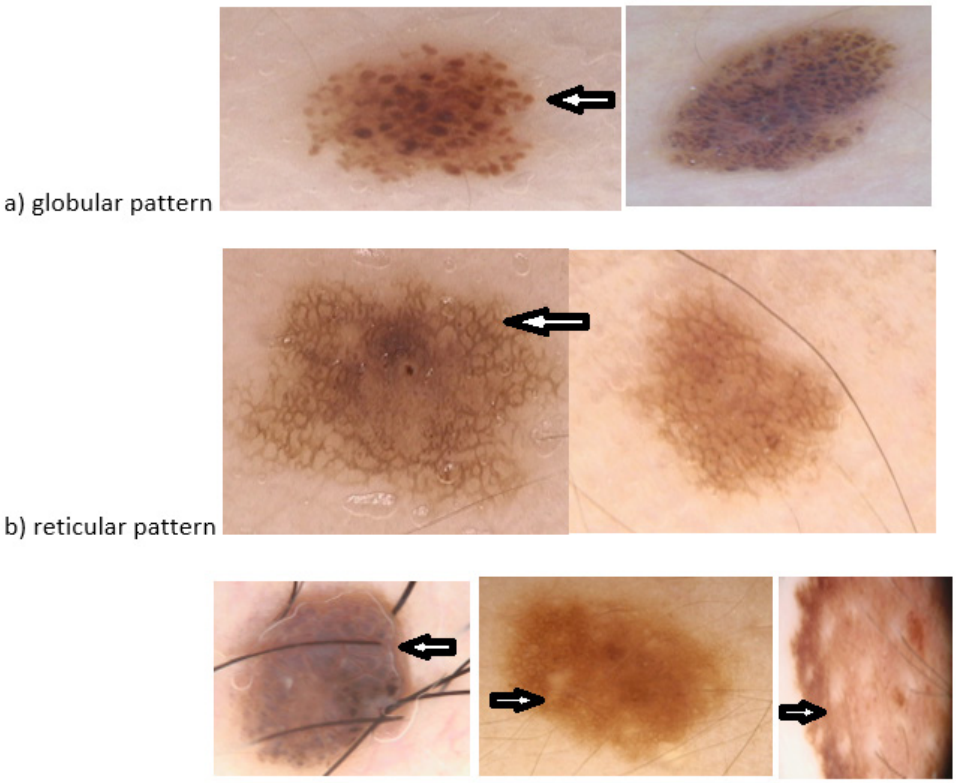

Figure 3. Dermoscopic patterns of nevi

Table 2a. The results of ABCD score

ABCD TDS score	Number of lesions	Percentage (%)
Benign	434	95.8
Suspicious	17	3.8
Malign	2	0.4
Total	453	100

Table 2b. 7-point checklist score

7 point checklist score	Number of lesions	Percentage (%)
Benign (< 3)	432	95.4
Malign (≤ 3)	21	4.6
Total	453	100

Table 2c. Menzies scoring

Menzies scoring	Number of lesions	Percentage (%)
Point or axial symmetry of pigmentation	101	22.3
Presence of single color	15	3.3
0	240	53
1	71	15.7
2	21	4.6
3	4	0.9
6	1	0.2
Total	453	100

Table 2d. 3-point checklist score

3-point checklist score	Number of lesions	Percentage (%)
0	318	70.2
1	93	20.5
2	36	8
3	6	1.3
Total	453	100

Table 2e. CASH score

CASH score	Number of lesions	Percentage (%)
0	23	5.1
1	228	50.3
2	111	24.5
3	42	9.3
4	22	4.9
5	13	2.9
6	4	0.9
7	6	1.3
8	3	0.7
9	1	0.2
Total	453	100

Table 3a. ABCD score and its correlations with other algorithms

		7-point checklist	Menzies Algorithm	3- point checklist	CASH Score
ABCD TDS Score	**r**	0.412 (**)	0.292 (**)	0.398 (**)	0.391 (**)
	p	0.000	0.000	0.00	0.000
	n	453	453	453	453

p<0.05 (**) statically significant correlation

Table 3b. 7-point checklist score and its correlations with other algorithms

		ABCD TDS Score	Menzies Algorithm	3-point checklist	CASH Score
7-point checklist	r	0.412 (**)	0.371 (**)	0.545 (**)	0.091
	p	0.000	0.000	0.000	0.052
	n	453	453	453	453

p<0.05 (**) statically significant correlation

Table 3c. Menzies score and its correlations with other algorithyms

		ABCD TDS Score	7-point checklist	3-point checklist	CASH Score
Menzies algorithym	r	0.292 (**)	0.371 (**)	0.520 (**)	0.181 (**)
	p	0.000	0.000	0.000	0.000
	n	453	453	453	453

p<0.05 (**) statically significant correlation

Table 3d. 3-point check-list score and its correlations with other algorithms

		ABCD TDS Score	7-point checklist	Menzies algorithym	CASH Score
3-point checklist	r	0.398 (**)	0.545 (**)	0.520 (**)	0.214 (**)
	p	0.000	0.000	0.000	0.000
	n	453	453	453	453

Table 3e. CASH score and its correlations with other algorithyms

		ABCD TDS Score	7-point checklist	Menzies Algorithym	3-point checklist
CASH Score	r	0.391 (**)	0.091	0.181 (**)	0.214 (**)
	p	0.000	0.052	0.000	0.000
	n	453	453	453	453

p<0.05 (**) statically significant correlation

Discussion

Melanocytic nevus is known to be the one of the most important etiologic factors in the development of melanoma. Having atypical nevi or having lots of melanocytic nevi are two examples of these risk factors [7, 17]. For this reason; clinical studies with large volunters' participation is important. 268 female (40.1%) and 400 male (59.9%) healthy young adults aged between 18-25 were enrolled to our clinical study. In the literature there is a small number of clinical studies with this age group with large numbers.

In this clinical study the attendants were asked to have any sunburn until this age. 188 attendants (28.3%) gave a history of sunburn. According to the study of Dodd et al. [18] two-third of 743 children had sunburn in their medical history. In the study of Uslu et al. [19] 20.5% of the 622 examined children had the history of sunburn. We asked the sunscreen usage to our attendants in qouestionnaire; 63.4% of females and 17.8% of males had used sunscreens in their history. It is understood that females were more serious about the importance of sunscreens use in this study. In the study of Kucukunal et al. [20] 400 women and 300 men were asked to use sunscreens. 44% of women and 1.3% of men told they were using sunscreens. In the study of

Jones et al. [21] it was found out that women were using more sun screens but they were having sunbaths much more than men. Also in the study of Ilter et al. [22] 764 people were enrolled to the study and 55.8% of them were using sunscreens. We can conclude that the use of sunscreen is associated with socio-cultural development.

According to our results; 7% of all women and 1.25% of all men had nevus examination before attending to our study. Totally 3.59% of attendants had a story of nevi examination before. This ratio was 2.4% in the study of Kucukunal et al. [20].

In the study of Scope et al. [23] 443 children were examined for melanocytic nevi. For each child; 4 nevi on the back were examined by dermoscopy and grouped in four types as reticulated, globular, homogen and complex pattern. In our study nevi examined by dermoscopy and scored by dermoscopic algorithms. Melanocytic lesions were detected by two step algorithm. Melanocytic lesions greater than 3 mm were chosen for dermoscopic statistical evaluation to eliminate freckles and lentigines from the melanocytic nevi. After the measurement of 3668 detected melanocytic lesions; 453 lesions were greater than 3mm in size (12.4%). In the epidemiological study of Dodd et al. [18] the ratio of nevi greater than 2 mm to all nevi was 7%.

The most common localization of dermoscopically evaluated nevi were head and neck location (32.5%). 27.8% were in on trunk, 26.3% were on the back, 10.6% were on the extremities, 2.8% were on acral areas. Similarly; In the study of Akyol et al. [1] nevi were most located on head and neck region in children in the range of 7-15 years. The reason of nevi to be located most in head and neck region can be because of cumulative sun exposure of these regions. In the study of Skvara et al. [24] dermoscopy was defined as effecting the clinical accuracy by 5-30%. In our study, pattern analysis and 5 algorithmic scoring systems were applied to each nevus greater than 3mm. First of all pattern analysis was performed and global patterns were defined. Globuler pattern was found in the first ratio with 29.8% in nevi detection. Reticular pattern (19.4%) and cobble stone pattern (14.1%) were the other most common patterns, respectively. In the study of Zalaudek et al. [25] 5 different age groups' global patterns were detected and globular pattern was in the greatest ratio (24%) in age group under 15 years. Lanna et al. [26] diagnosed the most prevalent dermoscopic pattern as globular pattern in an Italian children population.-

In our analysis; the correlation between dermoscopic algorithm scoring systems were detected. The related correlations of algorithm scores gives the opportunity to evaluate a melanocytic lesion with a large amount of criteria. 7-point checklist and CASH algorithm were not statically correlated statically. More studies can be done about this title.

In conclusion, in Turkish young people most common anatomic location was head and neck and most prevelant dermoscopic pattern was globular at this age-group. Dermoscopic algorithms makes the nevus examination more detailed and must be used widely in daily routine examination. This helps the re-evaluation of the same nevus with objective criteria in the clinical follow-up and to determine the changes in structure objectively. This study aims to analyze the melanocytic nevi in the young adult age group with five algorithms. This study also aims to be a base for future studies that will evaluate dermoscopic patterns by objective dermoscopic diagnostic algorithms. To our knowledge, this is one of the rare studies about the characteristics of melanocytic nevi at this age group and gives clues for future studies that will evaluate the relationship between nevi, dermoscopic patterns and the other factors.

Conflict of interest: No conflict of interest was declared by the authors.

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Contributions of the authors to the article

A.Ö., E.A. constructed the main purpose and hypothesis of the study. A.Ö, E.A. developed the theory and arranged the materials and methods section. Analysing of the data in the results section were done by A.Ö.,E.A.,M.G. The discussion section of this article was written by A.Ö. and M.G., revision and required corrections made and confirmed by E.A. In addition, all authors discussed the whole study and confirmed final version.