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Demographic and clinical features of cutaneous malignant melanoma patients: A single center cohort study

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ABSTRACT

OBJECTIVE: There is a worldwide increase in the incidence of malignant melanoma (MM). Although it is a highly aggressive tumor and associated with high mortality and morbidity rates, it is highly curable if diagnosed early. Both genetic and environmental risk factors are associated with MM, which may show geographic variations. In this study we aimed to investigate the demographic and clinical features of cutaneous melanoma patients who are under follow-up in our department and whether there is an association between patients' characteristics and disease features.

METHODS: Thirty-four patients with cutaneous MM who were under follow-up in the dermatology outpatient clinic, and dermoscopy unit at our hospital were retrospectively analyzed. The patients' demographic data and features related to MM were evaluated.

RESULTS: Nineteen (55.9%) women and 15 (44.1%) men were enrolled in the study. When the patients were evaluated according to their Fitzpatrick skin types, type 2 was the most common in 21 (61.8%) of the patients, followed by type 3 in 9 (26.5%), and 1 in 4 (11.8%) patients. Twenty-two (64.7%) of the patients had a history of regular sun exposure. Twelve (35.3%) patients had a history of working outdoors. Sixteen of the patients (47.1%) had at least one sunburn history during childhood. The mean age at which patients were diagnosed with MM was 50.12±12.67 years. Age at diagnosis was found to be higher in those with actinic keratosis and those with solar lentigo (p=0.030, p=0.030; respectively). It was determined that there was a statistically significant difference in terms of localization according to the place of birth of the patients (p=0.007).

CONCLUSION: We believe that defining the patients' characteristics and developing follow-up strategies accordingly, will improve the treatment rates in melanoma. Dermatologists should schedule personalized follow-up programs for patients who have priorly defined and regional risk factors.

Keywords: Actinic keratosis; lentigo; malignant melanoma; skin type; solar aging; ultraviolet radiation.

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Malignant melanoma (MM) is a neoplasm originating in the melanocytes which produce melanin pigment providing the color of the skin [1, 2]. Cutaneous melanoma is the most common subtype of melanoma, accounting for more than 90% of melanoma cases [3]. Although melanoma makes up <5% of skin cancer cases, it is the most aggressive skin cancer and is associated with high morbidity and mortality rates [4]. The prognosis of MM is strongly associated with extentent of the disease which is reflected in Breslow thickness of the primary tumor, degree of tumor ulceration, and metastasis to local lymphatic nodes [5]. Melanoma incidence is strikingly increasing in recent years, in particularly white skin populations who expose to excessive sun exposure [3]. The increase in the incidence of MM is thought to continue in the coming years [6].

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Several factors, both environmental and genetic, are considered to contribute to the development of MM. Some of these risk factors may show geographic variations. There is clearly an interaction between genetics and environment some of which may be prevented [7]. The definition of risk factors and routine screening programs will improve the prognosis and the survey of the patients.

In this study, we aimed to investigate the demographic and clinical features of cutaneous melanoma patients who are under follow-up in our department and whether there is an association between patients' characteristics and disease features.

Highlight key points

- Risk factors of malignant melanoma may show regional variations.
- Signs of sun exposure were found to be associated with melanoma development.
- Involvement site showed geographic variations such as trunk localization was lower and the percentage of upper extremities was higher in those born in the Black Sea region. The percentage of Stage 1 in patients with additional systemic disease is higher than in those without additional systemic disease which may be due to frequent hospital visit behaviour of patients with chronic diseases may cause early application to the doctor for a skin lesion.
- Defining the patients' characteristics and developing follow-up strategies accordingly, will improve the treatment rates in melanoma.

MATERIALS AND METHODS

The study was reviewed and approved by the Prof. Dr. Cemil Tascioglu City Hospital ethics committee (protocol number: 193; date of approval: 06/06/2022). The study was carried out according to the principles expressed in the Declaration of Helsinki.

Participants and Protocol

Thirty-four patients with cutaneous MM, who were under follow-up in the dermatology outpatient clinic dermoscopy unit at our hospital, Istanbul, Turkiye, in 2021, were retrospectively analyzed in this study. Cases with missing file information were not included in this study. The file information of the patients involved demographic data such as age, gender, education, marital status, and medical history of the patients including skin type, smoking and alcohol consumption habits, accompanying dermatologic and systemic diseases, history of sun exposure, and findings of solar damage on the skin. As with all sunlight-dependent diseases, Fitzpatrick skin types were recorded. This classification describes six different skin types based on the color of the skin of the people and their response after exposure to sunlight. This typing is as follows: Type I: Very white or freckled skin always burns, but does not tan when exposed to sunlight; Type II: Fair skin, burns easily and tans poorly; Type III: Darker white skin, tans after initial burn; Type IV: Light brown skin, burns minimally, tans easily; Type V: Brown skin, rarely burns, tans easily; Type VI: Dark brown or black skin, never burns; always tans darkly [8]. Features related to MM such as localization of the tumor, Breslow thickness of the tumor, lymph node involvement, stage of the disease, treatment. etc. were also noted. In our department, the eighth version of the American joint committee on Cancer (AJCC) staging and classification system, which includes sentinel lymph node staging, which is the worldwide preferred classification system, is used [9]. These findings were analyzed, moreover, it has been evaluated whether there is an association between patient characteristics and MM features.

Statistical Analyses

Statistical analyses were carried out using the R Core Team (2013) version 2.15.3 (R statistical software, Institute for Statistics and Mathematics, Vienna, Austria). The descriptive data were expressed with mean±standard deviation, numeric variables, frequency, and percentages. In the analysis of normally distributed variables, a Shapiro–Wilk test was applied to examine the differences between the two groups. The differences between the two independent groups were examined using the non-parametric Mann–Whitney U-test for the non-normally distributed variables and the Kruskal–Wallis test was applied when there are more than two groups. A Pearson Chi-square test was used to compare the qualitative variables. Fisher-Freeman-Halton test was used to compare quantitative variables. $P<0.05$ was considered statistically significant.

RESULTS

The demographic data and clinical characteristics of the patients are shown in Table 1.

A total of 34 melanoma patients, 19 (55.9%) women and 15 (44.1%) men, were enrolled in the study. The mean weight values of the MM patients were

Table 1. The demographic data and clinical characteristics of the patients

	Min–Max (Median)	Mean±SD
Age (years)	29–80 (54.5)	55.41±12.72
Height (cm)	150–190 (165)	166.06±8.68
Weight (kg)	42–110 (72)	71.24±15.41
Sunburn number	0–30 (0)	5.03±9.06
Days sun exposure	0–360 (15)	58.56±80.47
Age at diagnosis	24–71 (50.5)	50.12±12.67
Clark level	2–5 (3)	3.39±0.94
Breslow depth	0.33–10 (2.9)	3.05±2.57
	n	%
Gender		
Female	19	55.9
Male	15	44.1
Marital status		
Single	8	23.5
Married	26	76.5
Education level		
Primary	13	38.2
Middle school	1	2.9
High school	13	38.2
University	7	20.6
Additional skin disease		
No	27	79.4
Yes	7	20.6
Additional systemic disease		
No	13	38.2
Yes	21	61.8
Use of medication		
No	16	47.1
Yes	18	52.9
Smoking		
No	24	70.6
Yes	10	29.4
Alcohol consumption habit		
No	28	82.4
Yes	6	17.6
Malignancy in the family		
No	18	52.9
Yes	16	47.1
Additional malignancy		
No	33	97.1
Yes	1	2.9
Skin type		
1	4	11.8
2	21	61.8
3	9	26.5
Color of eye		
Hazel	10	29.4
Brown	11	32.4
Green	12	35.3
Blue	1	2.9
History of sunburn		
No	18	52.9
Yes	16	47.1
Regular sun exposure		
No	12	35.3
Yes	22	64.7
Working outdoor		
No	22	64.7
Yes	12	35.3
Exposure to radiation		
No	34	100.0
Yes	0	0.0
Exposure to chemicals		
No	30	88.2
Yes	4	11.8
Presence of actinic keratoses		
No	26	76.5
Yes	8	23.5
Presence of cherry angioma		
No	13	38.2
Yes	21	61.8
Presence of solar lentigos		
No	9	26.5
Yes	25	73.5
Presence of melasma		
No	31	91.2
Yes	3	8.8
Presence of telangiectasias		
No	23	67.6
Yes	11	32.4
Localization of the primary tumor		
Head/neck	8	23.5
Trunk	11	32.4
Upper extremities	7	20.6
Lower extremities	8	23.5
Subtype		
SSMM	17	58.6
Nodular MM	9	31.0
Others	3	10.3

Table 1 (cont). The demographic data and clinical characteristics of the patients

	n	%		n	%
Sentinel lymph node positivity			1b	7	20.6
No	27	79.4	2a	1	2.9
Yes	7	20.6	2b	6	17.6
Systemic involvement			2c	5	14.7
No	32	94.1	3	2	5.9
Yes	2	5.9	3a	3	8.8
Treatment			3c	1	2.9
Surgery	22	64.7	4	2	5.9
Surgery+immunotherapy	6	17.6	Present therapy		
Surgery+INF	3	8.8	None	32	94.1
C+immunotherapy+interferon	1	2.9	Yes (immunotherapy)	2	5.9
Surgery+chemotherapy+radiotherapy	1	2.9	Recurrence		
Surgery+it+radiotherapy	1	2.9	No	33	97.1
Stage			Yes	1	2.9
1a	7	20.6			

Min: Minimum; Max: Maximum; SD: Standard deviation; SSMM: Superficial spreading melanoma; INF: Interferon; MM: Malignant melanoma.

71.24±15.41 kg, while the mean height values were 166.06±8.68 cm. When the patients were evaluated according to their Fitzpatrick skin types, type 2 was the most common in 21 (61.8%) of the patients, followed by type 3 in 9 (26.5%) and 1 in 4 (11.8%) patients. While 23 (67.6%) of the patients had colored eyes, 11 (32.4%) had brown eyes. When sun exposure habits were evaluated, 22 (64.7%) of the patients had a history of regular sun exposure. 12 (35.3%) patients had a history of working outdoors. Sixteen of the patients (47.1%) had at least one sunburn history during childhood.

On dermatological examination, 25 (73.5%) of the patients had solar lentigo, 21 (61.8%) cherry angioma, 11 (32.4%) facial telangiectasias, 8 (23.5%) actinic keratoses, 3 (8.8%) melasma. In terms of accompanying non-melanoma skin cancers 5 (14.7%) patients had basal cell carcinoma and 1 (2.9%) patient had pigmented Bowen's disease, all were surgically treated. While 3 patients had a family history of cutaneous melanoma, 4 (11.8%) patients had a family history of non-melanoma skin cancer (all basal cell carcinomas). One (2.9%) of the patients had a history of non-cutaneous malignancy (breast cancer).

The mean age at which patients were diagnosed with MM was 50.12±12.67 years. Primary melanoma was located on the trunk in 11 (32.4%) patients, lower extremities in 8 (23.5%), upper extremities in 7 (20.6%), and head and neck in 8 (23.5%) patients. The mean value of Breslow depth of the primary lesions was 3.05±2.57 mm (0.33–10 mm). At the time of diagnosis, 7 (20.6%) patients had positive sentinel lymph node biopsy, while 2 (5.88%) patients had distant organ metastases (1 lung, 1 peritoneum). During the follow-up visits, cutaneous melanoma recurrence was observed in 1 (2.9%) patient, and distant organ metastasis was observed in 2 (5.8%) patients. According to TNM staging, at the time of diagnosis, 14 (41.2%) patients were stage 1, 12 (35.2%) patients were stage 2, 6 (17.6%) patients were stage 3, and 2 (5.9%) patients were stage 4.

Association between Patients' Characteristics and Melanoma Features

The relationship between the personal characteristics of the patients and the disease characteristics is summarized in Tables 2–6.

When examined in terms of the age at which the diagnosis of MM was made, it was found that there was a statistically significant positive correlation between the age of diagnosis and the weight values of the patients (r=0.361, p=0.036). Age at diagnosis

Table 2. Correlation between age at diagnosis and characteristics of the patients

	Age at diagnosis	
	r	p
Height (cm)	0.164	0.353
Weight (kg)	0.361	0.036*
Numbers of sunburn	-0.204	0.246
Sun exposure	0.057	0.750
	Median (Q1, Q3)	p
Place of birth		[a]0.175
Gender		[b]0.054
Marital status		[b]0.640
Education level		[a]0.216
Additional skin disease		[b]0.881
Additional systemic disease		[b]0.141
Smoking		[b]0.762
Alcohol consumption		[b]0.498
Family history of malignancy		[b]0.654
Additional malignancy		[b]0.185
Skin type		[a]0.518
Eye color		[a]0.460
History of sunburn		[b]0.325
Regular sun exposure		[b]0.773
Outdoor working		[b]0.182
Exposure to chemicals		[b]0.309
Presence of actinic keratoses		[b]0.030*
Presence of cherry angiomas		[b]0.329
Presence of solar lentigos		[b]0.030*
Presence of melasma		[b]0.976
Presence of telangiectasia		[b]0.568

r: Pearson correlation analysis; a: Kruskal–Wallis test, results are presented as median (first quarter, third quarter); b: Mann–Whitney U-test, results are presented as median (first quarter, third quarter); *: P<0.05.

Table 3. Correlation between the values of Breslow's depth and characteristics of the patients

	Breslow's depth	
	r	p
Numbers of sunburn	-0.243	0.165
Sun exposure	0.116	0.514
	Median (Q1, Q3)	p
Place of birth		[a]0.139
Gender		[b]0.395
Marital status		[b]0.597
Education level		[a]0.078
Additional skin disease		[b]0.382
Additional systemic disease		[b]0.085
Smoking		[b]0.449
Alcohol consumption		[b]0.619
Family history of malignancy		[b]0.133
Additional malignancy		[b]0.092
Skin type		[a]0.617
Eye color		[a]0.942
History of sunburn		[b]0.233
Regular sun exposure		[b]0.678
Outdoor working		[b]0.086
Exposure to chemicals		[b]0.208
Presence of actinic keratoses		[b]0.180
Presence of cherry angiomas		[b]0.619
Presence of solar lentigos		[b]0.494
Presence of melasma		[b]0.068
Presence of telangiectasia		[b]0.386

r: Pearson correlation analysis; a: Kruskal–Wallis test, results are presented as median (first quarter, third quarter); b: Mann–Whitney U-test, results are presented as median (first quarter, third quarter); *: P<0.05.

was found to be higher in those with actinic keratosis and those with solar lentigo (p=0.030, p=0.030; respectively). No correlation was found between Breslow thickness and MM disease subtype and other variables (p>0.05; for all). When localizations of the primary tumor are examined; it was determined that there was a statistically significant difference in terms of localization according to the place of birth of the patients (p=0.007). While the percentage of trunk localization was lower and the percentage of upper extremities was higher in those born in the Black Sea Region (p=0.013, p<0.001; respectively). Lower extremities were a more common tumor site in women than in men, while trunk involvement as the primary tumor site was more common in men than in women (p=0.004, p=0.020; respectively). When the stage of melanoma and patients' characteristics are examined; it was observed that there was a statistically significant difference in terms of stage according to the presence of additional systemic disease in patients (p=0.026). The percentage of Stage 1 in patients with additional systemic disease was higher than in those without additional systemic disease (p=0.016).

Table 4. Correlation between the melanoma subtype and characteristics of the patients

	Type			[a]p
	SSMM Median (Q1, Q3)	Nodular Median (Q1, Q3)	Others Median (Q1, Q3)	
Height (cm)	165 (163, 170)	165 (158, 174)	160 (150, 180)	0.858
Weight (kg)	70 (57, 73)	80 (63, 92)	75 (52, 95)	0.056
Numbers of sunburn	3 (0, 5)	0 (0, 3)	0 (0, 10)	0.549
Sun exposure	14 (0, 90)	30 (0, 30)	90 (0, 180)	0.740
	n (%)	n (%)	n (%)	[c]p
Place of birth				0.604
Gender				0.648
Marital status				0.480
Education level				0.507
Additional skin disease				0.136
Additional systemic disease				0.175
Smoking				0.485
Alcohol consumption				0.464
Family history of malignancy				0.473
Additional malignancy				0.104
Skin type				0.699
Eye color				0.926
History of sunburn				0.647
Regular sun exposure				0.493
Outdoor working				0.052
Exposure to chemicals				0.999
Presence of actinic keratoses				0.573
Presence of cherry angiomas				0.414
Presence of solar lentigos				0.702
Presence of melasma				0.999
Presence of telangiectasia				0.999

SSMM: Superficial spreading melanoma; a: Kruskal–Wallis test, results are presented as median (first quarter, third quarter); c: Fisher-Freeman-Halton exact test; *: P<0.05.

DISCUSSION

The new melanoma cases per year in Europe vary between 3 and 5/100 000 in Mediterranean countries to 12–35/100 000 in Nordic countries, while it can rise to 50/100 000 in Australia or New Zealand. There is a continuous increase in the incidence of melanoma in the last 40 years, fortunately with stable mortality rates, except in elderly males [10]. Although melanoma can be seen at any age, it is more common after 65 years of age [11].

Diagnosis of melanoma is based on clinical suspicion, diagnostic clues include asymmetry, border, color, diameter, and evolution, and the ugly duckling sign. Dermoscopy by an experienced physician enhances diagnostic accuracy and histopathologic examination is necessary for confirmation, classification, and staging of the disease. Several new technologies have been developed to provide diagnostic accuracy which include artificial intelligence image analysis, whole-body 3-D imaging, reflectance confocal microscopy, optical coherence tomography, and epidermal genetic information retrieval from adhesive

Table 5. Correlation between the localization of the tumor and characteristics of the patients

	Localization				[a]p
	Head/neck Medyan (Q1, Q3)	Trunk Medyan (Q1, Q3)	Upper extr. Medyan (Q1, Q3)	Lower extr. Medyan (Q1, Q3)	
Height (cm)	165 (157, 167.5)	172 (168, 174)	165 (158, 172)	162 (157.5, 166.5)	0.064
Weight (kg)	76.5 (63, 87.5)	72 (68, 78)	72 (53, 92)	58.5 (56.5, 72)	0.223
Numbers of sunburn	0 (0, 3)	3 (0, 6)	3 (0, 15)	0 (0, 1.5)	0.379
Sun exposure	5 (0, 105)	30 (0, 120)	90 (0, 150)	11 (0, 52.5)	0.562
	n (%)	n (%)	n (%)	n (%)	[c]p
Place of birth					0.007*
Black Sea region	3 (23.1)	1 (7.7)	7 (53.8)	2 (15.4)	
Istanbul	1 (10)	6 (60)	0 (0)	3 (30)	
Others	2 (25)	3 (37.5)	0 (0)	3 (37.5)	
Gender					0.010*
Female	4 (21.1)	3 (15.8)	4 (21.1)	8 (42.1)	
Male	4 (26.7)	8 (53.3)	3 (20)	0 (0)	
Marital status					0.104
Education level					0.393
Additional skin disease					0.144
Additional systemic disease					0.263
Smoking					0.844
Alcohol consumption					0.999
Family history of malignancy					0.738
Additional malignancy					0.210
Skin type					0.094
Eye color					0.455
History of sunburn					0.369
Regular sun exposure					0.682
Outdoor working					0.198
Exposure to chemicals					0.182
Presence of actinic keratoses					0.551
Presence of cherry angiomas					0.184
Presence of solar lentigos					0.950
Presence of melasma					0.284
Presence of telangiectasia					0.332

a: Kruskal–Wallis test, results are presented as median (first quarter, third quarter); c: Fisher-Freeman-Halton exact test; *: P<0.05; SSMM: Superficial spreading melanoma.

tape stripping. Although they offer potential advantages, none at present is used regularly clinically except for digital photographic monitoring [12].

Staging, risk assessment procedures, additional surgical procedures, imaging methods, and treatment options are defined according to the eighth version of the AJCC staging and classification system, which includes sentinel lymph node staging, is the preferred classification system [9].

Among risk factors of melanoma UVR is the most important one, particularly exposure to sun during early childhood as well intermittent exposure [13]. Indoor tanning [14], classified as a carcinogen by the World

Table 6. Correlation between the stage of melanoma and characteristics of the patients

	Stage				[a]p
	Stage 1 Median (Q1, Q3)	Stage 2 Median (Q1, Q3)	Stage 3 Median (Q1, Q3)	Stage 4 Median (Q1, Q3)	
Height (cm)	165 (158, 172)	168 (162.5, 170.5)	171 (160, 174)	157.5 (155, 160)	0.324
Weight (kg)	71 (57, 75)	73 (62.5, 88)	75 (62, 87)	52.5 (52, 53)	0.151
Numbers of sunburn	3 (0, 5)	0 (0, 3)	0 (0, 0)	15 (0, 30)	0.308
Sun exposure	12 (0, 90)	20 (0, 90)	60 (0, 120)	90 (90, 90)	0.597
	n (%)	n (%)	n (%)	n (%)	[c]p
Place of birth					0.340
Gender					0.388
Marital status					0.609
Education level					0.051
Additional skin disease					0.560
Additional systemic disease					0.026*
No	2 (15.4)	5 (38.5)	4 (30.8)	2 (15.4)	
Yes	12 (57.1)	7 (33.3)	2 (9.5)	0 (0)	
Smoking					0.286
Alcohol consumption					0.387
Family history of malignancy					0.094
Additional malignancy					0.057
Skin type					0.765
Eye color					0.169
History of sunburn					0.232
Regular sun exposure					0.999
Outdoor working					0.943
Exposure to chemicals					0.518
Presence of actinic keratoses					0.495
Presence of cherry angiomas					0.353
Presence of solar lentigos					0.999
Presence of melasma					0.407
Presence of telangiectasia					0.340

a: Kruskal–Wallis test, results are presented as median (first quarter, third quarter); c: Fisher-Freeman-Halton exact test; *: P<0.05.

Health Organization, [15] is also a risk factor, especially in young women. Other risk factors of the development of melanoma include fair skin types (I and II), age, high numbers of typical nevi, large congenital nevi, and atypical nevi [7]. Germline mutation; commonly CDKN2A, is associated with familial melanoma cases which represent approximately 10% of all melanoma cases [16].

Studies in Europe and the USA report that superficial spreading melanoma (SSM) is the most frequent variant followed by nodular melanoma, lentigo maligna melanoma, and amelanotic melanoma [17]. In two studies conducted in Turkiye, involving 31 and 30 cutaneous melanoma patients, the most common subtype was observed as nodular MM and acral lentiginous MM, respectively [18, 19]. In the present study, SSM is the most frequent variant followed by nodular melanoma and a few other types.

In a recent study investigating the age-specific incidence of melanoma in the United States increased melanoma incidence was reported to be largely associated

with adults aged 40 years or older [20]. In our study consistent with this data, the mean age at diagnosis was 50.12±12.67 years in our patients.

As mentioned above MM is more common in men than in women, additionally, MM tends to behave more aggressively in men than in women [21]. However, in our study, there was a slight female dominance. As consistent with the literature most of the MM patients included in the study had fair skin type 1 or 2.

As regards lesions' distribution, the trunk is the most common site in men, whereas the legs are in women [17]. In line with the literature, in our study, it was observed that the lower extremities were a more common tumor site in women than in men, while trunk involvement as the primary tumor site was more common in men than in women which may be explained by clothing trends. In addition, in our study, it was determined that there was a statistically significant difference in terms of localization according to the place of birth of the patients. While the percentage of trunk localization was lower and the percentage of upper extremities was higher in those born in the Black Sea Region which may be a result of outdoor working trends in the area.

UV-B is a very well-known risk factor in the development of melanoma. Intermittent exposure to UV-B is associated with melanoma development while personal history of sunburn is associated with increased risk. On the other hand, chronic exposure is associated with actinic keratoses and keratinocyte cancers [7]. Most of the patients had a history of regular sunbaths during vacations or outdoor work. Nearly half of our patients had a history of sunburn during childhood.

Immunosuppression is thought to be associated with melanoma [22]. In addition, patients with other skin cancers (basal cell or squamous cell carcinomas or mycosis fungoides) are shown to be at higher risk of developing melanoma and subsequent death from the disease [7]. In our study, a little percentage of melanoma patients have non-melanoma skin cancers, namely basal cell carcinoma and pigmented Bowen's disease.

Actinic keratoses and solar lentigines are known as signs of UV damage. Multiple solar lentigines are regarded as a sign of photodamage and a risk indicator for the development of skin cancers [23, 24]. Actinic keratoses are also defined as sun-damage-related disorders [25]. Cherry angiomas have also been suggested to be a risk factor for the development of melanoma; however, the exact pathogenesis and association have not been clarified. It is proposed that cherry angiomas may be markers of actinic skin damage in patients with genetic susceptibility [26]. In the present study, most of the patients had cherry angiomas or solar lentigines which are considered signs of sun exposure. Moreover, age at diagnosis was found to be higher in those with actinic keratosis and those with solar lentigo.

When the stage of melanoma and patients' characteristics are examined; it was observed that there was a statistically significant difference in terms of stage according to the presence of additional systemic disease in patients. The percentage of Stage 1 in patients with additional systemic disease is higher than in those without additional systemic disease. We believe that this may be explained as the frequent hospital visit behavior of patients with chronic diseases may cause the early application to the doctor for a skin lesion.

Approximately 20–30% of early-stage melanoma patients are expected to develop a recurrence within 5 years [27], however, this ratio was far lower in our patients.

MM has high cure rates when diagnosed at early stages. Improvements in prevention and early detection of the disease will help reduce the mortality rates [28]. Well-proved protection method from melanoma is physical protection and regular use of sunscreen which are shown to be associated with reduced incidences of cutaneous melanoma [29].

The sample size was the limitation of the study. Some subgroup analyses couldn't be performed.

Conclusion

In conclusion, patients involved in this study had a mean age of 50.12±12.67 at the time of diagnosis, the most common subtype was superficial spreading MM, lower extremities were more common tumor site in women and trunk involvement was more common in men. Most of the patients had fair skin types and a history of sun exposure and presented with cherry angiomas and solar lentigines (as signs of photodamage) which are all consistent with the literature. Moreover, age at diagnosis was found to be higher in those with actinic keratosis and those with solar lentigo. The involvement site showed geographic variations such as trunk localization was lower and the percentage of upper extremities was higher in those born in the Black Sea Region. We assumed that this variation may depend on the outdoor working trends of the area. In addition, it was observed that the percentage of Stage 1 in patients with the additional sys-

temic disease is higher than in those without additional systemic disease which may be due to the frequent hospital visit behavior of patients with chronic diseases may cause early application to the doctor for a skin lesion.

We believe that defining the patients' characteristics and developing follow-up strategies accordingly, will improve the treatment rates in melanoma. Dermatologists should schedule personalized follow-up programs for patients who have priorly defined and regional risk factors. In this study, we analyzed the features of the patients and disease which may provide new approaches both for the patients and the clinicians.

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