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Risk Factors for Melanoma in a Latin American Population: A Case-Control Study☆

Factores de riesgo para melanoma en una población latinoamericana: estudio de casos y controles

To the Editor,

Melanoma incidence continues to rise in different populations and ethnic groups worldwide.[1–3] Epidemiological data and known risk factors for melanoma are mostly based on studies of US, Australian, and European populations. Few population-based studies have been conducted in Latin American or Hispanic communities.[4]

Latin America is known for its significant ethnic diversity secondary to interracial relationships that vary from one country to the next depending on population structure and migration history. In Colombia, for example, the population results from interactions between indigenous/native populations, Spanish people, and Africans, with mestizos representing the largest segment. The aim of this study was to identify possible risk factors for cutaneous melanoma in a Colombian population in the city of Medellín, Colombia.

We conducted a retrospective age- and sex-matched case-control study. Cases were patients with a histopathologically confirmed diagnosis of in situ or invasive melanoma, while controls were randomly selected patients without a personal history of melanoma who were seen for any dermatologic condition. The ratio of cases to controls was 1:2. We analyzed the medical records of patients older than 18 years seen at Clínica Aurora, a specialized skin cancer center, in Medellín between May 2014 and October 2017. We included both incident and prevalent cases of melanoma. In other words, we studied patients newly diagnosed with melanoma during the study period and those with an existing diagnosis. The required sample size was estimated at 62 cases and 125 controls using an alpha error of 5%, a beta error of 20% (95% confidence level and 80% statistical power) and an odds ratio (OR) of 3 associated with the presence of multiple melanocytic nevi as the main risk factor for melanoma. The calculations were performed in the statistical software program Epi Info.

We analyzed the medical records of 187 patients (62 cases and 125 controls). Their phenotypic, sociodemographic, and sun exposure characteristics are given in Table 1. Table 2 summarizes the characteristics of the patients with melanoma. Table 3 presents the results of the bivariate and multivariate analyses.

Similarly to previous reports in the literature,[5–7] our multivariate analysis showed that patients with melanoma were more likely to have a history of recreational or intermittent sun exposure (OR = 4.2; 95% CI, 1.8-9.6) and a lifetime history of sunburn (OR = 5.6; 95% CI, 2.2-14.6), suggesting that these patterns of exposure are risk factors for melanoma in our study population. In contrast, the use of 2 or more sun protection measures exerted a protective effect (OR = 0.2; 95% CI, 0.1-0.5). Unlike other studies, we did not observe an association between number of common or atypical nevi and melanoma risk.[5,8] We observed a protective effect for a personal history of basal cell carcinoma, possibly

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Table 1 Sociodemographic, Phenotypic, and UV Radiation Exposure Characteristics.

Variable	Controls N = 125 (%)	Cases N = 62 (%)	Total N = 187 (%)
Sociodemographic characteristics			
Sex			
Male	61 (49)	35 (56)	96 (51)
Female	64 (51)	27 (44)	91 (49)
Median age (interquartile range), y[a]	53 (37-63)	53 (35-66)	
Civil status			
Married	93 (74)	44 (71)	137 (73)
Single	32 (26)	18 (29)	50 (27)
Place of residence			
Urban	106 (85)	58 (94)	164 (88)
Rural	15 (12)	2 (3)	17 (9)
Abroad	4 (3)	2 (3)	6 (3)
Social security regime			
None	10 (8)	7 (11)	17 (9)
Subsidized	1 (1)	1 (2)	2 (1)
Contributive	19 (15)	7(11)	26 (14)
Private	95 (76)	47(76)	142 (76)
Phenotypic characteristics			
Red/blonde hair	13 (10)	7 (11)	20 (10)
Blue/green/gray eyes	22 (18)	13 (21)	35 (19)
Facial freckles	4 (3)	0 (0)	4 (2)
Fitzpatrick skin type I or II	34 (27)	10 (6)	44 (23)
> 5 clinically dysplastic nevi or at least 2 per condition	15 (12)	18 (29)	33 (17)
Sun-damaged skin	103 (82)	46 (74)	149 (80)
Personal history of melanoma	5 (4)	5 (8)	10 (5)
Personal history of nonmelanoma skin cancer	23 (18)	6 (10)	29 (15)
Family history of melanoma in a first- to third-degree relative	14 (11)	10 (16)	24 (13)
Number of common nevi			
0-20	44 (35)	8 (13)	52 (28)
20-50	32 (25)	10 (16)	42 (22)
50-100	17 (14)	12 (19)	29 (16)
> 100	27 (22)	11 (18)	38 (20)
Not described	5 (4)	21 (34)	26 (14)
Number of nevi on trunk and upper extremities (based on photographs)			
0-20	45 (36)	8 (13)	53 (29)
20-50	32 (26)	12 (19)	44 (23)
50-100	23 (18)	11 (18)	34 (18)
> 100	18 (14)	10 (16)	28 (15)
Not described	7 (6)	21 (34)	28 (15)
Nevi: predominant dermoscopic pattern			
Reticular diffuse	78 (62)	24 (38)	102 (54)
Reticular patchy	4 (3)	0 (0)	4 (2)
Peripheral reticular pattern with central hypopigmentation	0 (0)	0 (0)	0 (0)
Peripheral reticular pattern with central hyperpigmentation	0 (0)	1 (2)	1 (1)
Peripheral reticular pattern with central hypopigmentation	0(0)	0 (0)	0 (0)
Homogenous pattern	2 (2)	0 (0)	2 (1)
Peripheral globules	1 (1)	0 (0)	1 (1)
Globular	1 (1)	0 (0)	1 (1)
Two components	7 (6)	5 (8)	12 (6)

Table 1 (*Continued*)

Variable	Controls N = 125 (%)	Cases N = 62 (%)	Total N = 187 (%)
Multiple components	0 (0)	1 (2)	1 (1)
Not described	32 (26)	31 (50)	63 (33)
Congenital melanocytic nevus			
None	117 (93)	59 (96)	176 (94)
Small (< 1.5 cm)	8 (6)	0 (0)	8 (4)
Median (1.6-19.9 cm)	0 (0)	2 (3)	2 (1)
Large (> 20 cm)	0 (0)	1 (1)	1 (1)
Solar lentigines			
In 1 area	66 (53)	32 (52)	98 (52)
In 2 areas	44 (35)	21 (34)	65 (35)
In ≥ 3 areas	15 (12)	8 (13)	23 (12)
Not described	0 (0)	1 (1)	1 (1)
Actinic keratosis			
None	104 (83)	47 (76)	151 (81)
< 10	17 (14)	7 (11)	24 (13)
> 10	4 (3)	8 (13)	12 (6)
History of another cancer			
No	119 (95)	61 (99)	180 (96)
Yes	6 (5)	1 (1)	7 (4)
Chronic immunosuppression			
No	125 (100)	62 (100)	187 (100)
Yes	0 (0)	0 (0)	0 (0)
Genodermatosis			
No	125 (100)	62 (100)	187 (100)
Yes	0(0)	0 (0)	0 (0)
Parkinson disease			
No	124 (99)	62 (100)	186 (99)
Yes	1 (1)	0 (0)	1 (1)
UV radiation exposure			
Skin reaction to sunlight			
No effect	0 (0)	0 (0)	0 (0)
Tan	17 (14)	12 (19)	29 (16)
Mild sunburn then tan	75 (60)	30 (48)	105 (56)
Sunburn without blisters	29 (23)	13 (21)	42 (22)
Sunburn with blisters	3 (2)	1 (2)	4 (2)
Not described	1 (1)	6 (10)	7 (4)
Lifetime history of sunburn			
No episodes	68 (54)	13 (21)	81 (43)
< 3 episodes	34 (28)	25 (40)	59 (32)
> 3 episodes	22 (17)	6 (10)	28 (15)
	1 (1)	18 (29)	19 (10)
Sunburn before age of 20 years			
No	74 (59)	16 (26)	90 (48)
Yes	50 (40)	29 (47)	79 (42)
Not described	1 (1)	17 (27)	18 (10)
Frequency of sunscreen use			
Never	17 (13)	7 (11)	24 (13)

Table 1 (*Continued*)

Variable	Controls N = 125 (%)	Cases N = 62 (%)	Total N = 187 (%)
Only during intense sun exposure	14 (11)	3 (5)	17 (9)
Occasional	22 (18)	11 (18)	33 (17)
Once a week	1 (1)	0 (0)	1 (1)
Once a day	66 (53)	29 (47)	95 (51)
At least twice a day	5 (4)	0 (0)	5 (3)
Not described	0 (0)	12 (19)	12 (6)
Frequency of use of other sun protection measures			
Never	13 (11)	8 (13)	21 (12)
Sometimes	53 (42)	25 (40)	78 (42)
Often	56 (45)	13 (21)	69 (37)
Always	3 (2)	0 (0)	0 (0)
Not described	0 (0)	16 (26)	16 (9)
Lifetime use of physical sun protection measures			
1 method	24 (19)	19 (31)	43 (23)
2 methods	89 (71)	27 (43)	116 (62)
3 or more methods	12 (10)	0 (0)	12 (6)
Not described	0 (0)	16 (26)	16 (9)
Use of sunscreen before age of 18 years			
Never	47 (38)	20 (32)	67 (36)
Sometimes	65 (52)	24 (39)	89 (47)
Often	1 (1)	0 (0)	1 (1)
Always	0 (0)	0 (0)	0 (0)
Not described	12 (9)	18 (29)	30 (16)
Use of tanning booths			
Never	111 (89)	39 (63)	150 (80)
Yes, before age of 25 years	6 (5)	3 (5)	9 (5)
Yes, after age of 25 years	8 (6)	4 (6)	12 (6)
Not described	0	16 (26)	16 (9)
History of sunburn			
None	84 (67)	17 (28)	101 (54)
Intermittent	31 (25)	31 (50)	62 (33)
Chronic	9 (7)	2 (3)	11 (6)
Not described	1 (1)	12 (19)	13 (7)
At least 1 modifiable factor[b]			101 (54)
At least 1 nonmodifiable factor[b]			48 (26)

[a] Interquartile range: minimum, 18 years; maximum, 88 years.
[b] Nonmodifiable factors refer to phenotypic characteristics.

because the control population was selected from a specialized center where patients with skin cancer predominate and basal cell carcinoma would be expected to be relatively common.

Our study has some limitations. First, the controls were selected from a referral center for patients with skin cancer and their exposure habits may not be representative of the general population in the area, possibly resulting in an overestimation of the proportion of patients with a history of skin cancer and creating a bias in our results for use of sun protection measures, access to health care, and level of education. Second, recall bias may have affected the accuracy or completeness of important data for our analyses, as some of the information was based on subjective perceptions of past events.

In conclusion, recreational or intermittent sun exposure and a lifetime history of sunburn were risk factors for melanoma in our study population, while use of 2 or more sun protection measures exerted a protective effect. Our findings are consistent with reports from different regions in the world, indicating that UV radiation plays an important role in populations other than Whites and that primary prevention efforts are also essential for preventing skin cancer in mestizo populations such as those in Colombia.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Table 2 Characteristics of Patients With Melanoma (n = 62).

Variable	N = 62 (%)
Person who detected the melanoma	
Patient	5 (8)
Dermatologist	56 (90)
Other physician	1 (2)
Tumor site	
Extremities	24 (39)
Trunk	21 (34)
Head and neck	13 (21)
Abdomen	4 (6)
Dermoscopic features	
Atypical network	22 (35)
Atypical globules	15 (24)
Atypical vessels	9 (15)
Regression	7 (11)
Crystalline structures	6 (10)
Multicomponent	31 (50)
Not described	13 (21)
Histologic features	
Melanoma in situ	41 (66)
Invasive	21 (34)
Breslow thickness < 0.8 mm	15 (24)
Breslow thickness > 0.8 mm	6 (10)
Ulceration	1 (2)
Regression	5 (8)
Perineural invasion	1 (2)
Lymphovascular invasion	0
Microsatellites	0
Histologic subtype	
Superficial spreading	21 (34)
Nodular	6 (10)
Lentigo maligna	8 (13)
Acral lentiginous	2 (3)
Other: blue nevus–like	1 (2)
Mitoses/mm^2	
Not applicable	39 (63)
< 1	11 (18)
> 1	12 (19)
Growth phase	
Radial	53 (85)
Vertical	9 (15)
Staging	
In situ	41 (66)
I	16 (26)
II	2 (3)
III	2 (3)
IV	1 (2)

Table 3 Bivariate and Multivariate Analysis of Risk Factors for Melanoma.

Bivariate analysis	*P* Value	Odds Ratio (95% CI)
Hair color		
Blonde/red	.802	1 (0.4-3.1)
Light Fitzpatrick skin type	.279	1 (0.5-2.5)
Eye color		
Blue/green/gray	.547	1.3 (0.6-2.8)
Personal history of squamous cell carcinoma	.733	1.3 (0.4-5.0)
Use of tanning booths	.779	1.4 (0.3-5.9)
Frequency of tanning booth use	.567	1.42 (0.5-4.9)
Presence of actinic keratosis	.242	1.5 (0.7-3.3)
No. of common nevi	.085	1.7 (0.6-4.8)
History of melanoma in a first- to third-degree relative	.767	1.7 (0.5-6.1)
Personal history of melanoma	.245	2.1 (0.6-7.5)
Number of nevi on trunk and upper extremities	.158	2.1 (0.8-5.7)
Dysplastic nevus	.022	2.5 (1.1-5.7)
Sunburn before age of 20 years	.005	2.6 (1.3-5.4)
$\geq$ 1 predominant dermoscopic pattern	.06	2.9 (0.9-9.6)
Lifetime history of sunburn	.003	3.8 (1.7-8.4)
Recreational sun exposure	< .001	4.9 (2.4-10.1)
Presence of sun-damaged skin	.246	0.6 (0.3-1.3)
Personal history of basal cell carcinoma	.037	0.2 (0.0-0.9)
Congenital nevus	.502	0.4 (0.1-2.4)
Use of sun protection methods	.978	0.9 (0.4-1.9)
Physical sun protection	.040	0.3 (0.2-0.8)
Sun protection before age of 18 years	.660	1.1 (0.6-2.4)
Multivariate analysis[a]		OR (95% CI)
History of sunburn		5.63 (2.2-14.6)
History of reactive sun exposure		4.17 (1.8-9.6)
Use of 2 or more physical sun protection measures		0.19 (0.1-0.5)

χ^2 test or Fisher exact test for counts below 5. Logistic regression was used for polytomous variables. Variables with a *P* value < .25 (Hosmer-Lemeshow goodness of fit test) were entered into the multivariate analysis.

[a] Logistic regression analysis was applied using a variable selection method evaluated using the omnibus test (< .001), R-squared (.285), and Hosmer-Lemeshow test (.055), with a correct classification percentage of 76.4%; 95% CI.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.adengl.2021.10.009.

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Heterotopic Salivary Gland Tissue☆

Heterotopia salival

To the Editor:

Salivary gland heterotopia or choristoma consists of the presence of salivary gland tissue outside the major and minor salivary glands. It is a rare disease, usually congenital, secondary to the persistence and abnormal development of vestigial structures[1,2].

A 53-year-old woman with no past history of interest reported the appearance in childhood of a nodular lesion in the right lower anterior cervical region that had been growing slowly and gradually. The lesion occasionally exuded a clear, odorless liquid, frequently in association with eating. The examination revealed a soft nodule measuring 9 mm in diameter, with overlying light-brown skin, located on the right sternoclavicular joint. It was associated with a small central orifice with no active draining on pressing (Fig. 1A and B). Ultrasound revealed a well-defined nonencapsulated hypoechoic subcutaneous lesion with no clear fistular tracts and with no vascularization in the Doppler study (Fig. 2). The

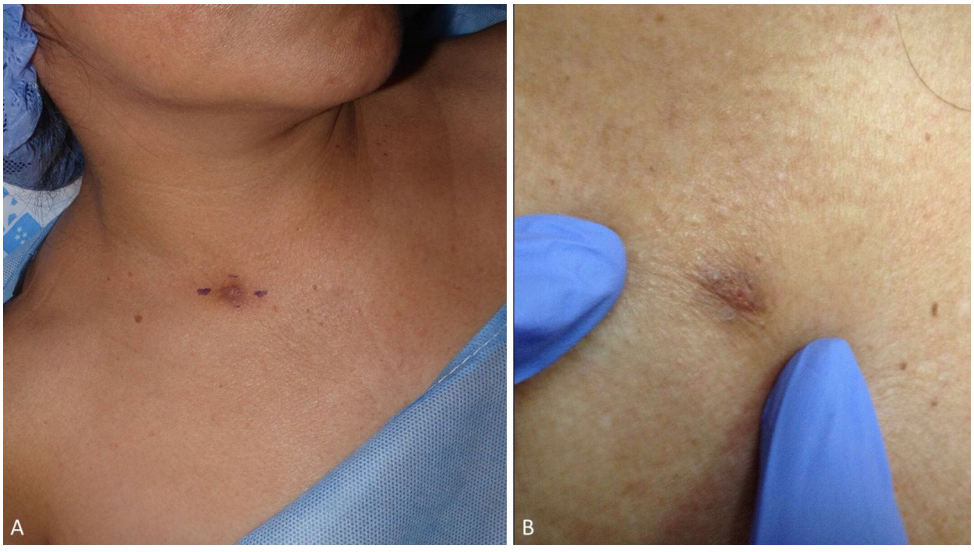

Figure 1 Right supraclavicular nodular lesion.

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