Risk factors in pediatric melanoma: a retrospective study of 39 cases

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Introduction

Pediatric melanoma is a rare form of the tumor whose epidemiology is widely increasing thanks to the improvement of dermoscopic and anatomopathologic diagnostic techniques[1,2]. Although it is a tumor of considerable interest in adults, little has been described about the pediatric field. The objective of our study was then to identify the possible risk factors for the development of melanoma in the pediatric population.

Materials and Methods

We performed a retrospective study conducted in the Melanoma and Skin Cancer Unit Area Vasta Nord Ovest Toscana (TAVNO) and Unit of Dermatology (Livorno, Italy). We analyzed a population of 38 children under 21 years with a diagnosis of melanoma. This population was compared with a control population of 114 children followed up in our dermatologic clinic.

Results

From our combined univariate-multivariate statistics analysis, the number of nevi [regression coefficient (RC) of 1.04 and odds ratio (OR) of 2.8 confidence interval (CI, 1.2-6.6)], and family history of melanoma [RC of 1.99 and OR of 7.3 (CI, 2.3-22.7)] emerged as possible risk factors for the development of melanoma.

Table 1 Clinical, histologic and surgical features of the 39 analyzed melanoma

Feature	Statistics
Site of onset	
Trunk	23 (59)
Lower limb	8 (20)
Upper limb	7 (19)
Head/neck	1 (3)
Onset on preexisting nevus	
No	24 (62)
Yes	15 (38)
T Parameter AJCC 7° (edition)	
pTis	20 (51)
pT1a	13 (33)
pT1b	1 (3)
pT2a	5 (13)
cTNM stadium AJCC 7° (edition)	
0	20 (51)
IA	13 (33)
IB	6 (16)
Sentinel lymphnode	
Positive	0 (0)
Negative	4 (100)

Statistics: frequency (%).

Table 2 Histologic features of the invasive forms in the analyzed population. 19 invasive forms out of 39 melanoma

Feature	Statistics
Histologic type	
Superficial spreading	19 (100)
Other	0 (0)
Breslow thickness	
≤1 mm	14 (74)
>1 mm	5 (26)
Clark level	
II	9 (47)
III	5 (26)
IV	3 (16)
Not reported	2 (11)
Ulceration	
Present	0 (0)
Absent	19 (100)
Regression areas	
Present	6 (32)
Absent	13 (68)
Mitosis	
<1	9 (47)
≥1	10 (53)
Intralesional lymphoid infiltrate	
Absent	13 (68)
Present (nonbrisk)	3 (16)
Present (brisk)	3 (16)
Perilesional lymphoid infiltrate	
Absent	5 (26)
Present	14 (74)
Vascular invasion	
Absent	19 (82)
Present	0 (0)

Statistics: frequency (%).

Table 3 Univariate and multivariate analysis of pediatric melanoma risk factors

	Univariate analysis			Multivariate analysis (step-wise method)		
Factor	PM no (0)	PM yes (1)	*P* value	RC	OR (CI 95%)	*P* value
Age	17 (3.5)	18 (3.6)	0.109			0.207
Cutaneous phenotype			0.158			0.308
Light (0)	48	21				
Dark (1)	66	17				
Skin tone			0.369			
Light	48	21				
Olive color	42	11				
Dark	24	6				
Hair color			0.315			
Blonde-red	37	14				
Brown	45	18				
Black	32	6				
Eye color			0.397			
Light	54	15				
Dark	60	23				
Familiarity			<0.001	1.99	7.3 (2.3–22.7)	**0.001**
No (0)	108	27				
Yes (1)	6	11				
UV ray exposure			0.615			
High	30	13				
Moderate	44	14				
Low	40	11				
Previous sun burns			0.156			0.903
No (0)	31	6				
Yes (0)	83	32				
Artificial UV ray exposure			0.366			
No	107	34				
Yes	7	4				
Number of nevi			0.005	1.04	2.8 (1.2–6.6)	**0.017**
>30						
No (0)	63	11				
Yes (1)	51	27				
At least 1 congenital nevus			0.059			0.051
No (0)	92	25				
Yes (1)	22	13				
Dysplastic-nevus syndrome			0.242			
No	112	36				
Yes	2	2				

Bold indicates statistically significant at our multivariate analysis.
Statistics: mean (sd) or frequency.
CI 95%, 95% confidence interval; OR: odds ratio; PM, pediatric melanoma; RC, regression coefficient.

Discussion

The identification of these elements would allow the physician to carry out a more targeted preliminary assessment of the patient, potentially decisive in cases of diagnostic doubt of the lesion. Our study also lays the foundations for identifying those children who, despite not having received a diagnosis of melanoma on histologic examination, should be considered as patients susceptible to a focused follow-up, because of the presence of the risk factors that emerged from our research.

References

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