Dermatology Practical & Conceptual

Prevalence and clinical-pathological features of nevus-associated versus de novo melanoma: a retrospective cross-sectional study of 2806 cases

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ABSTRACT

Introduction: Nevus-associated melanoma (NAM) accounts for almost one third of all cutaneous melanomas; it is often associated with younger age, trunk location and lower Breslow's thickness compared to de novo melanoma (DNM).

Objectives: To define the prevalence of NAM in a tertiary referral Center in Italy and to analyze its distribution according to demographics, clinical and histopathological variables

Methods: Data were retrospectively retrieved from the archive of the Pathology Unit from June 2011 to August 2020. NAMs were compared with DNMs according to demographic, clinical and histopathological variables.

Results: A total of 2806 consecutive cases of melanoma were excised in 2537 patients. Of these, 431 (15.4%) were NAM. NAM patients were significantly younger than DNM patients (55.1±14.1 vs. 62.0±15.0 years, p<0.001); they were predominantly located on the trunk (64.0% vs. 47.9% of DNMs). Melanoma located on the head and neck, trunk and upper limbs respectively had 2.3 (95%CI:1.2-4.5, *p*:0.014), 3.2 (95%CI:2.1-5.1, *p*<0.001) and 3.5 (95%CI:2.0-6.1, *p*<0.001) more odds to be NAM than those on the lower limbs.

Conclusions: Our results confirm the association of NAM with younger age and trunk location. We also demonstrated that body site differences of NAM distribution are enhanced before the sixth decade of life.

Introduction

Nevus-associated melanoma (NAM) accounts for almost one third of all cutaneous melanomas [1]. A growing body of literature demonstrated that NAM is associated with younger age, trunk location and lower Breslow's thickness compared to de novo melanoma (DNM) [2-9].

Objectives

In this retrospective cross-sectional study, we reviewed our 10-year real-life experience at a tertial referral center for skin cancers with the aim to analyze the prevalence of NAM and its distribution according to demographics, clinical and histopathological variables.

Methods

From the archive of the Pathology Unit, we retrieved 2806 consecutive cases of skin melanoma excised in 2537 patients from June 2011 to August 2020: 431 (15.4%) melanomas were NAM. NAMs were compared with DNMs according to demographic, clinical and histopathological variables using the Student's T and chi square tests; statistical significance was set at $p<0.05$ and age was categorized according to quartiles. Statistical analysis was performed using the IBM SPSS 27.0 package (Statistical Package for Social Sciences, IBM SPSS Inc., Chicago, Ill.). The study was approved by Local Ethical Committee (protocol number: 1249/CE).

Results

Our study revealed that NAM patients were significantly younger than DNM patients (55.1 ± 14.1[standard deviation, SD] versus 62.0 ± 15.0 SD years, P < 0.001), with 67.7% NAMs having ≤61 years and 52.5% of DNMs being older than 61 years. Moreover, the NAM ratio decreased with increasing age. Interestingly, when considering body site distribution, a significant higher proportion of NAMs were on the trunk (64.0% vs. 47.9% of DNMs, NAM ratio: 19.5%) whereas DNMs were predominantly located on the lower limbs (23.9% vs. 14.7% of NAM, NAM ratio: 8.1%) (Figure 1).

No significant differences were found according to sex and Breslow's thickness, while ulceration was significantly more observed among DNMs (Table 1).

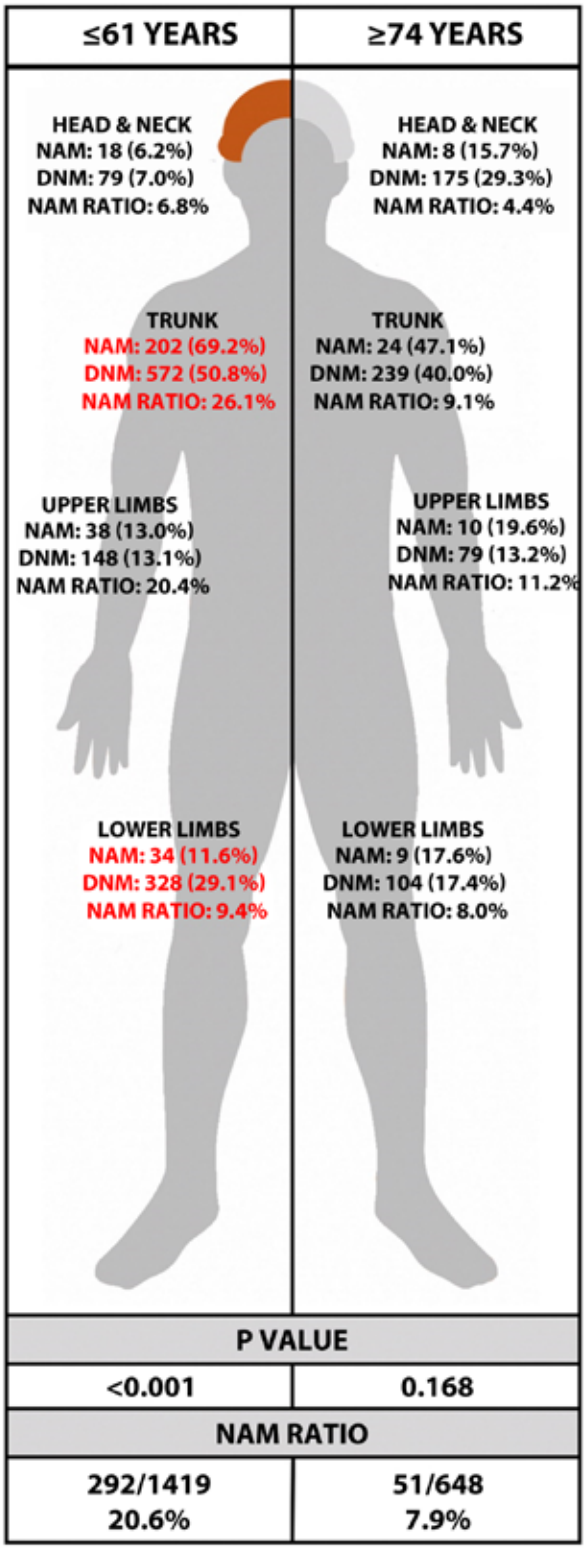

Figure 1. Ratio of nevus-associated versus de-novo melanoma according to body site and age-groups. DNM = de novo melanoma; NAM = nevus-associated melanoma.

Table 1. Demographic, clinical and histopathological features of nevus-associated vs. de-novo melanoma (NAM vs. DNM).

Variables			Nevus-association		NAM ratio	Total	p value
			NAM	DNM			
Age at excision (y)	≤50		176 (40.8%)	576 (24.3%)	**23.4%**	**752 (26.8%)**	<0.001
	51 - 61		116 (26.9%)	551 (23.2%)	**17.4%**	**667 (23.8%)**	
	62 - 73		88 (20.4%)	651 (27.4%)	**11.9%**	**739 (26.3%)**	
	≥74		51 (11.8%)	597 (25.1%)	**7.9%**	**648 (23.1%)**	
Sex	**M**		237 (55.0%)	1269 (53.4%)	**15.7%**	**1506 (53.7%)**	0.551
	F		194 (45.0%)	1106 (46.6%)	**14.9%**	**1300 (46.3%)**	
Location	**HN**		39 (9.0%)	350 (14.7%)	**10.0%**	**389 (13.9%)**	<0.001
	trunk		276 (64.0%)	1138 (47.9%)	**19.5%**	**1414 (50.4%)**	
	upper limbs		66 (15.3%)	320 (13.5%)	**17.1%**	**386 (13.8%)**	
	lower limbs		50 (11.6%)	567 (23.9%)	**8.1%**	**617 (22.0%)**	
Stage	**in situ**		203 (47.1%)	1183 (49.8%)	**14.6%**	**1386 (49.4%)**	0.3
	invasive		228 (52.9%)	1192 (50.2%)	**16.1%**	**1420 (50.6%)**	
	Breslow (mm)	*≤1*	*181 (79.4%)*	*881 (73.9%)*	*17.0%*	*1062 (74.8%)*	*0.107*
		>1 & ≤2	*27 (11.8%)*	*134 (11.2%)*	*16.8%*	*161 (11.3%)*	
		>2 & ≤4	*11 (4.8%)*	*87 (7.3%)*	*11.2%*	*98 (6.9%)*	
		>4	*9 (3.9%)*	*90 (7.6%)*	*9.1%*	*99 (7.0%)*	
	Ulceration superficial		*11 (4.8%)*	*106 (8.9%)*	*9.4%*	*117 (8.2%)*	*0.041*
Total			**431**	**2375**	**15.4%**	**2806**	

NAM, nevus-associated melanoma; *DNM*, de-novo melanoma; *y*, years; *M*, male; *F*, female, *HN*, head and neck; *mm*, millimeters.

To identify major independent factors associated with NAM status we constructed a multivariable logistic regression model with backward variables selection including sex, location, ulceration, Breslow and age categories. We demonstrated that melanoma located on the head and neck, trunk and upper limbs, respectively had 2.3 (95% confidence interval [CI]1.2 -4.5, P = 0.014), 3.2 (95% CI 2.1-5.1, P <0.001) and 3.5 (95% CI 2.0-6.1, P < 0.001) more odds to be NAM than those on the lower limbs. Also, melanomas in patients aged ≤61 years were more likely to be NAM than those in patients ≥74 years (≤50 years: OR: 3.3; 95% CI 2.0-5.3, p<0.001; 51-61 years: OR: 2.7; 95%CI:1.6-4.5, p<0.001).

Furthermore, we reported the prevalence of NAM and DNM according to the body site in two age groups: ≤61 years and ≥74 years (NAM ratio: 20.6% and 7.9%, respectively). We found significant differences between NAM and DNM only in the ≤61 years group, with higher prevalence of NAM on the trunk (69.2%, NAM ratio 26.1%) and DNM on the lower limbs (29.1%, NAM ratio: 9.4%) (Figure 1).

Conclusions

In conclusion, although we found a lower NAM prevalence than expected from literature data, our results confirm the association of NAM with younger age and trunk location [1]. We also demonstrated that body site differences of NAM distribution are enhanced before the sixth decade of life.

Together with previous studies, our findings further support the existence of 2 divergent pathways of melanoma development [8,10].

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