



## Review and comparison of body sites among patients with cutaneous malignant melanoma: an observational study

Anna Wolinska<sup>1</sup> · Stephanie Bowe<sup>1</sup> · Gregg Murray<sup>1</sup> · Sinead Collins<sup>1</sup> · Cliona Feighery<sup>1</sup> · Muireann Roche<sup>1</sup> · Aizuri Murad<sup>1,2</sup>

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Dear Editor,

The incidence of cutaneous malignant melanoma (MM) is increasing worldwide [1, 2]. Regular self-skin examination can assist in the early detection of MM. However, identifying new or changing lesions on non-visible body sites (NVBS) can be difficult. Often patients are unaware of lesions on NVBS which are identified incidentally during total body examination (TBE) by a dermatologist. Research investigating MM on NVBS is limited [3]. The aim of this study is to compare features of MM on NVBS to visible body sites (VBS) to add data to this patient cohort.

We performed a retrospective chart review identifying patients diagnosed with MM in our institution from 2019 to 2021. Patients were identified through multidisciplinary meeting records with data drawn from electronic reports and photography. Clinicopathological features were extracted, analysed, and delineated by year. NVBS was defined as areas including the posterior scalp, ears and neck, posterior shoulder, back, buttocks, posterior thigh, and plantar aspect of the feet. All other sites were considered VBS. Statistical analysis was performed using SPSS software.

A total of 162 patients were included in this study and 45% ( $n=73$ ) were male. Patients with MM on NVBS were significantly younger (median age = 59 years) compared to patients with MM on VBS (median age = 66.5 years) ( $p < 0.05$ ). Thirty-seven percent ( $n=60$ ) of lesions were found on NVBS. Twenty-eight percent ( $n=17$ ) of MMs on NVBS were identified incidentally on TBE in clinic by a dermatologist. There was a significantly higher number of patients with melanoma-in-situ on VBS ( $n=44$ , 27.1%) compared to NVBS ( $n=17$ ,

10.6%) ( $p < 0.01$ ). A higher proportion of patients with MM on NVBS had a Breslow thickness (BT)  $> 1$  mm ( $n=23$ , 38.3%), compared to VBS ( $n=30$ , 29.4%) (Table 1). Fifty-two percent ( $n=12$ ) of thicker tumours (range: BT 1.1–12 mm) were located on the back (Fig. 1).

This study has demonstrated that the number of MM diagnosed incidentally following TBE was higher than previously reported by Moran et al. [4]. Our study focused on a MM-specific cohort who potentially may have had lethal skin cancers missed in 28% of patients if TBE was not carried out. Our findings also show that patients are more likely to have non-invasive tumours detected on VBS but more advanced disease on NVBS, further emphasising the importance of TBE. Furthermore, younger patients are more likely to present with MM on NVBS. Although lesion directed assessments such as teledermatology are beneficial to reduce waiting times and allow quicker access for patients, this study suggests that a different strategy may be recommended for high-risk patients who should be enrolled in surveillance programs that encourage regular self-skin examination and periodic TBE by a consultant dermatologist. Notably, total body photography (TBP) has been utilised in high-risk populations with limited access to dermatology centres and has been associated with improved melanoma outcomes through earlier detection of thinner tumours [5, 6].

This study was limited by its retrospective design on a small number of patients from a single institution. Patient referral rate and attendance may be affected by the COVID-19 pandemic [7].

We recommend an increased emphasis on patient education in patients of all ages on the importance of self-examination which, when complemented by physician directed TBE, plays a valuable role in the early detection of MM, particularly on NVBS. This study provides some guidance in designing pathways to target high-risk groups to avoid delays in the diagnosis of MM. Further research to explore trends of MM on NVBS may enable targeted education campaigns in the future.

✉ Anna Wolinska  
annawolinska@alumnircsi.com

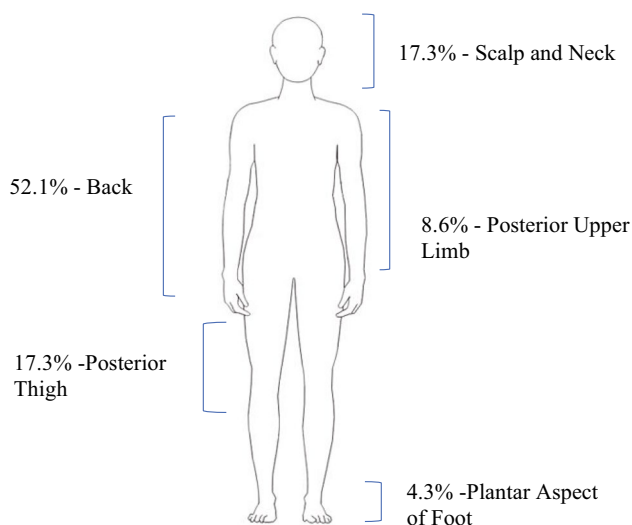
<sup>1</sup> Department of Dermatology, Our Lady of Lourdes Hospital, Drogheda, Co. Louth, Ireland

<sup>2</sup> UCD School of Medicine, Dublin, Ireland

**Table 1** Clinicopathological features of patients diagnosed with MM 2019–2021

Year	2019	2020	2021
<b>Total cases (n)</b>	52	61	49
<b>Total non-visible body sites (n)</b>	23 (44.2%)	22 (36.1%)	15 (30.6%)
Male (n)	15 (65.2%)	7 (31.8%)	8 (53.3%)
Female (n)	8 (34.7%)	15 (68.1%)	7 (46.6%)
Median age (years)	56	52	61
Breslow thickness			
In situ	10 (43.4%)	3 (13.6%)	4 (26.6%)
< 1 mm	6 (26%)	10 (45.4%)	4 (26.6%)
> 1 mm	7 (30%)	9 (40.9%)	7 (46.6%)
<b>Total visible body sites (n)</b>	29 (55.7%)	39 (63.9%)	34 (69.3%)
Male (n)	8 (27.5%)	18 (46.1%)	17 (50%)
Female (n)	21 (72.4%)	21 (53.8%)	17 (50%)
Median age (years)	72	65	67
Breslow thickness			
In situ	13 (44.8%)	20 (51.2%)	12 (35.2%)
< 1 mm	11 (37.9%)	8 (20.5%)	8 (23.5%)
> 1 mm	5 (17.2%)	11 (28.2%)	14 (41.1%)

The italic entries are the percentage figures (ie 23 cases on NVBS represent 44.2% of the total number of cases that year)

**Fig. 1** Location of MM on NVBS with BT > 1 mm

## Declarations

**Conflict of interest** The authors declare no competing interests.

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