



Does the site of a Malignant melanoma predict the likelihood of distant metastases

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ABSTRACT

Introduction: Malignant melanoma is a lethal skin cancer which is on the rise despite increasing education on sun awareness. It is most common in young Caucasian individuals however any age or ethnicity can be affected.

Discussion: There are four main types of malignant melanoma which include superficial spreading MM (most common), Nodular (most lethal), Acral lentiginous melanoma and Lentigo maligna melanoma. Once it has metastasized the prognosis is poor but new treatments are giving us much better outcomes.

Aim: The main aim of this study is to identify which MMs are most likely to metastasize based on the location with the two main groups being above neck and below neck.

Methods and results: forty-five patients were included in the study, 37 were below neck and 8 were above neck. Out of the 37 below neck MM patients, none had distant metastases, but 25% of the above neck MM patients had distant metastases.

Conclusion: This small study has demonstrated that above neck malignant melanoma is more likely to metastasize than below neck malignant melanoma despite advanced Tumor scores in the below neck subgroup.

Keywords: MM (malignant melanoma), SLNB (sentinel lymph node biopsy), metastasis

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How to cite this article:

Mohammed Al Abadie¹, Khaleeq-Ur Rehman, Mohammed Al-Rubaye, Faris Oumeish, Veena Shinde, Abigail Pugh, Dina Al Abadie. Does the site of a Malignant melanoma predict the likelihood of distant metastases. American Journal of Dermatological Research and Reviews, 2020, 3:22

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Introduction:

Malignant melanoma is one of the deadliest malignancies affecting mainly western populations but is on the rise despite increasing awareness on the adverse effects of the sun and others promoting adequate sun protection ¹. The number of new cases of melanoma is on the rise with the disease becoming increasingly more common in the Caucasian population. It is most common in New Zealand and in Australia ², which has the highest incidence of melanoma cases worldwide. It is currently the fifth most common cancer in the United States of America and is currently the fastest increasing cancer in males in the United Kingdom ¹.

Discussion:

Malignant melanoma is a type of skin cancer, which arises in the melanocytes and has many risk factors with sun exposure being the main denominator ¹. Other important risk factors that should always be sought and asked for in any person presenting with a lesion suspicious of a malignant melanoma (MM) include skin type (mainly skin type 1, freckly complexion and red hair), genetics (CDK4, CDKN2a gene mutations), immunosuppression and family history of skin cancer ^{1,2,3}. A large congenital melanocytic nevus is another important risk factor which if present needs to be monitored for any changes on a regular basis. Most types of MM demonstrate or allow a growth phase before the development of invasive disease, which is shown as an increase in size or change in shape of an irregularly pigmented macule or plaque ^{2,4}. This accounts for the majority of melanomas but not all of them. Many melanomas display a multitude of attributes such as an asymmetry and an irregularity of shape with a multitude of colors from brown to black. Most are larger than 0.6 cm in diameter and some also result in symptoms such as itching and bleeding. Melanomas are very aggressive and approximately one-third of patients will experience disease recurrence ⁵. The term metastatic dormancy is used to describe the time period between removal of the primary tumor

and the re-appearance of disease, This is particularly important in MM as this time period can extend to 10 years in localized melanoma ⁶. The first non-adjacent sites that malignant melanoma extends to are lymph nodes which is why offering sentinel lymph node biopsy (SLNB is a procedure offered to patients with stage IIa or more disease to detect whether nodes are affected) is imperative ⁷. The lungs are the most common organs for melanoma metastasis and it is thought that approximately 10% of melanomas metastasize to the respiratory system ⁸. Other common organs for melanoma metastasis include the liver and the brain ^{9,10}. Although the majority of melanomas develop in new moles, it has been suggested that thirty percent develop in pre-existing melanocytic naevi and that these normally have a BRAFV600E mutation ¹¹. There are four main types of MM and these include:

There are four main types of malignant melanoma ^{2,4}:

Nodular melanoma:

The fastest growing and most aggressive type of melanoma is the nodular melanoma. This type of melanoma does not have a growth phase prior to its development and appears as a pigmented nodule.

Lentigo maligna melanoma:

This type of melanoma may have demonstrates a growth phase prior to the development of invasive disease. It may have appeared as an irregularly pigmented and irregularly shaped macule (lentigo maligna) before the development of a nodular melanoma.

Acral lentiginous melanoma:

As the name suggests this type of melanoma occurs on the extremities (palms and soles) and similar to Lentigo MM it may have had a growth phase with an irregularly pigmented or irregularly shaped macule prior to the development of invasive disease. It more commonly occurs in people with more pigmented skin and is less common in Caucasians.

Superficial spreading malignant melanoma (Figure 1):

This type of melanoma is the most common type in Caucasians and like previous 2 types it is often preceded by a growth phase where the lesion presents with a change of colors or shape.

Lesions may be palpable and those that present with a nodule have a poorer prognosis as that implies deep dermal invasion. The histological picture of a patient we encountered with SSMM is depicted in the figure 2 and figure 3 below.



Figure 1: This is a superficial spreading malignant melanoma in the vertical growth phase (pT4a).

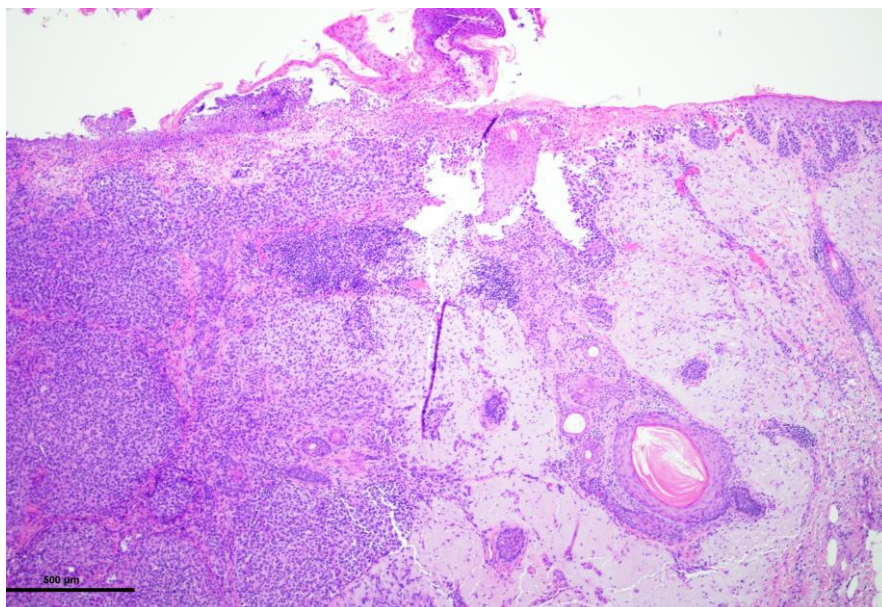


Figure 2: This photomicrograph is a low power (x40 mag.) image of an ulcerated superficial spreading malignant melanoma. On the right of the photograph, within the epidermis, there is a nested and lentiginous proliferation of melanocytes with Pagetoid ascension. This is the in-situ component. Towards the left of the image there are large dermal nests and solid sheets of similar atypical melanocytes with overlying ulceration. There is loss of the usual pattern of maturation, seen in benign melanocytic naevi. There is a patchy (non-brisk) lymphohistiocytic infiltrate at the peripheral of the tumour.

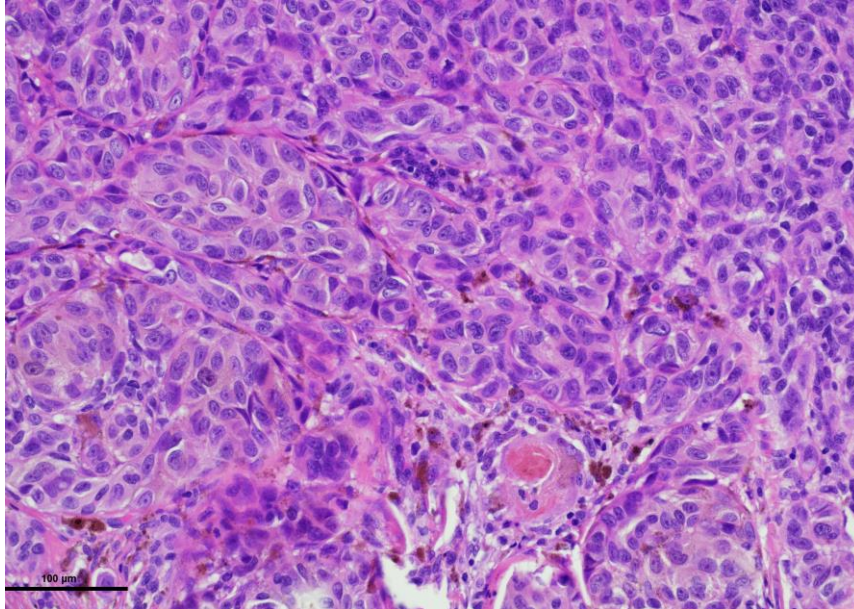


Figure 3: This is a higher power photomicrograph (x200 mag.) of the same case. There is a nested proliferation of atypical melanocytes in the dermis with scattered deposition of melanin pigmented. There is marked nuclear pleomorphism with prominent central nucleoli. Scattered intranuclear inclusions are also identified. There are occasional scattered dermal mitotic figures.

Aim of this study:

To identify which MM's are more likely to metastasize based on site as this is not a topic that has been looked into that often.

Methods:

A total of forty-five patients with new diagnoses of MM were included in the study. All the patients included had biopsy proven MM and were divided into two groups above neck (8) and below neck (37).

Results:

Out of the 37 patients with below neck MM, 10 had a diagnosis with melanoma in-situ and fifteen had a diagnosis of T1b or less so they were not eligible for sentinel lymph node

Biopsy (SLNB) or staging CT. Twelve patients with below neck MM had stage T2a or more disease so they were offered further investigations. Three out of those twelve refused SLNB. Nine of the patients with stage 2a or more underwent further investigations and only one was found to have a positive SLNB but none of them were found to have distant metastases. Eight patients were found to have above neck

MM including four melanomas in-situ. The remaining four patients all had stage 2a or more disease and were offered further investigations. Two of them refused SLNB and the remaining two accepted. They were both found to have positive nodes and distant metastases.

Conclusion:

Forty-five patients with new diagnoses of MM were studied and investigated over a period of 6 months and they were divided into two groups, which were above and below neck. Out of the thirty-seven below neck patients none of them had distant metastases and only one had positive nodes (2.7%). Out of the 8 above neck MM patients, two had positive nodes and distant metastases (25%). This study demonstrated that above neck malignant melanomas had a higher chance of spreading beyond the skin in comparison with below neck MM's. Despite there being significantly more patients with below neck advanced MM's, none of them had distant metastases and only one had positive nodes.

Conflicts of interest: There are no conflicts of interest in this manuscript

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