Current Staging and Prognostic Factors in Melanoma

Edmund K. Bartlett, MD, Giorgos C. Karakousis, MD*

KEYWORDS

• Melanoma • Staging • Prognosis • Sentinel lymph node • Prognostic factors

KEY POINTS

- In the current (seventh) edition of the American Joint Commission for Cancer staging system, tumor thickness, ulceration status, and mitotic index categorize patients with stage I and II melanoma.
- Size (micro vs macro), number of nodal metastases, presence of satellitosis or in-transit disease, and primary tumor ulceration status categorize patients with stage III disease.
- For stage IV disease, location of distant metastases (skin/subcutaneous/nodal vs lung vs nonlung visceral) and increased lactate dehydrogenase levels categorize patients with M1 status.
- Other pathologic and clinical factors of the primary tumor have been reported with variable prognostic significance: presence of tumor-infiltrating lymphocytes, absence of regression, younger age, female gender, and extremity location have generally been associated with more favorable outcomes.
- Prognostic factors for sentinel lymph node positivity overlap but are not uniformly congruent with those for survival.

INTRODUCTION

The current (seventh) edition of the American Joint Commission on Cancer (AJCC) staging system for melanoma is now approaching its sixth year since publication and is based on 30,946 patients with stage I, II, and III melanoma and 7972 patients with stage IV melanoma from 17 major medical centers or independent cancer centers.[1] This article reviews the notable changes in the current staging system compared with the last and discusses this in the context of clinical management of patients.

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Department of Surgery, University of Pennsylvania, 3400 Spruce Street, 4 Silverstein, Philadelphia, Pennsylvania 19104, USA
* Corresponding author.
E-mail address: giorgos.karakousis@uphs.upenn.edu

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Tumor and patient factors are discussed that do not feature in the staging system but that nonetheless carry important prognostic significance.

MELANOMA STAGING SYSTEM

The current AJCC staging system for melanoma is shown in **Tables 1** and **2**.

Stage 0 Melanoma (Melanoma In Situ)

Melanoma in situ refers to a lesion that is not invasive to the dermis. These lesions are thought to have no metastatic potential and as such a carry an excellent prognosis, albeit with some small risk of local recurrence. A surgical excision margin for

Table 1
Seventh edition of the AJCC TNM (tumor, node, metastasis) staging categories for melanoma

T Classification	Thickness (mm)	Additional Stratification
Tis	NA	NA
T1	≤1.00	a: Without ulceration and mitoses <1/mm2 b: With ulceration or mitoses ≥1/mm2
T2	1.01–2.00	a: Without ulceration b: With ulceration
T3	2.01–4.00	a: Without ulceration b: With ulceration
T4	>4.00	a: Without ulceration b: With ulceration
N Classification	**Number of Metastatic Nodes**	**Metastatic Burden**
N0	0	NA
N1	1	a: Micrometastasis (identified on SLN biopsy) b: Macrometastasis (identified on clinical examination)
N2	2–3	a: Micrometastasis (identified on SLN biopsy) b: Macrometastasis (identified on clinical examination) c: In-transit metastases/satellites without nodal metastases
N3	4+ metastatic nodes, matted nodes, or in-transit metastases/satellites with nodal metastases	—
M Classification	**Site**	**Serum LDH Level**
M0	No distant metastases	NA
M1a	Distant skin, subcutaneous, or nodal metastasis	Normal
M1b	Lung metastases	Normal
M1c	All other visceral metastases Any distant metastasis	Normal Increased

Abbreviations: LDH, lactate dehydrogenase; NA, not available; SLN, sentinel lymph node.
From Edge SB, Byrd DR, Compton CC, editors. AJCC Cancer Staging Manual. 7th edition. New York (NY): Springer, 2010; with permission.