# Synchronous bilateral axillary sentinel lymph node metastases in a patient with truncal melanoma

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***Key words:*** melanoma; sentinel lymph node biopsy; tattoo.

## INTRODUCTION

Sentinel lymph node (SLN) biopsy is an integral step of melanoma staging and is considered a strong prognostic indicator for long-term survival. Predicting lymphatic drainage of primary cutaneous lesions has been of academic interest since the late 19th century when Sappey hypothesized that drainage does not cross the sagittal midline.[1] Several studies have since refuted Sappey's work by showing cutaneous malignancies with multiple lymphatic basin drainage (MLBD) patterns, some crossing the midline.[2-9] Although MLBD is commonly seen in primary truncal melanomas, the occurrence of SLN metastasis in multiple lymphatic basins is not common. We report a case of synchronous positive bilateral axillary SLN metastasis in a patient with primary cutaneous melanoma on the posterior trunk and review what is known about SLNs in melanoma patients with MLBD.

*Abbreviations used:*

MLBD: multiple lymphatic basin drainage
SLN: sentinel lymph node

## CASE REPORT

A 33-year-old man with prior tanning bed use presented with a pigmented lesion on his midthoracic back that had increased in size over the past 2 years. He had no significant past medical or surgical history and denied a family history of skin cancer.

The patient had a Fitzpatrick skin phototype II with a 1 cm oval black papule with well-demarcated borders located slightly to the left of the midline back at the T2 level. A large tattoo with black, red, and blue ink was present on the left upper back adjacent to the black papule. This was the patient's only tattoo. The remainder of his skin examination was unremarkable with approximately 20 small banal nevi scattered throughout his trunk and extremities.

Histopathology of a shave skin biopsy revealed nodular melanoma with cytological atypia, lack of maturation, confluent and pagetoid growth within the epidermis, and rete bridging. The atypical melanocytes stained positive for SOX10 and Melan-A. The lesion was diagnosed as a stage pT2a non-ulcerated melanoma with a Breslow thickness of 1.4 mm. Via intraoperative gamma probe and blue dye injections, SLNs were identified in the right and left axillae. On gross examination, the right axillary SLN appeared normal and the left axillary SLN was grossly pigmented. On histopathology, the right

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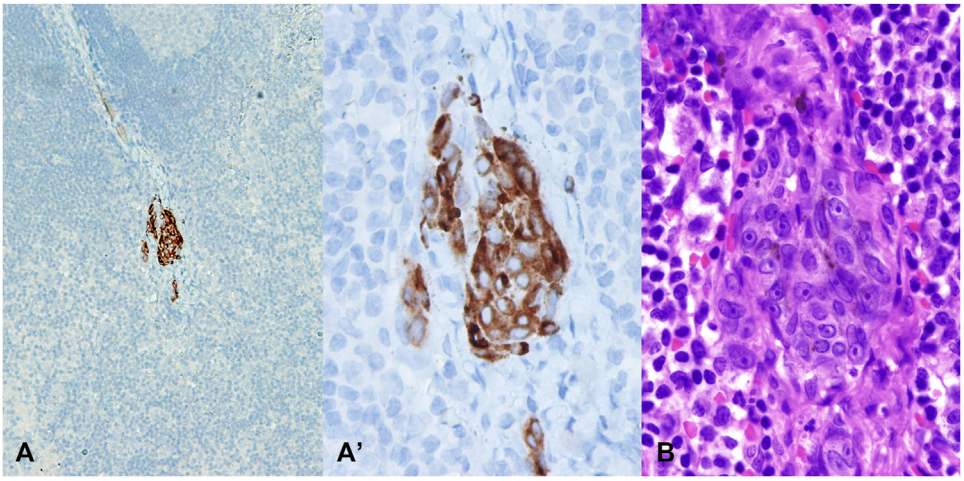


**Fig 1.** Right axillary sentinel lymph node with focus of melanoma. **A,** Melan-A immunohistochemistry; original magnifications: ×100 and ×400. **B,** Hematoxylin and eosin stain; original magnification: ×400.

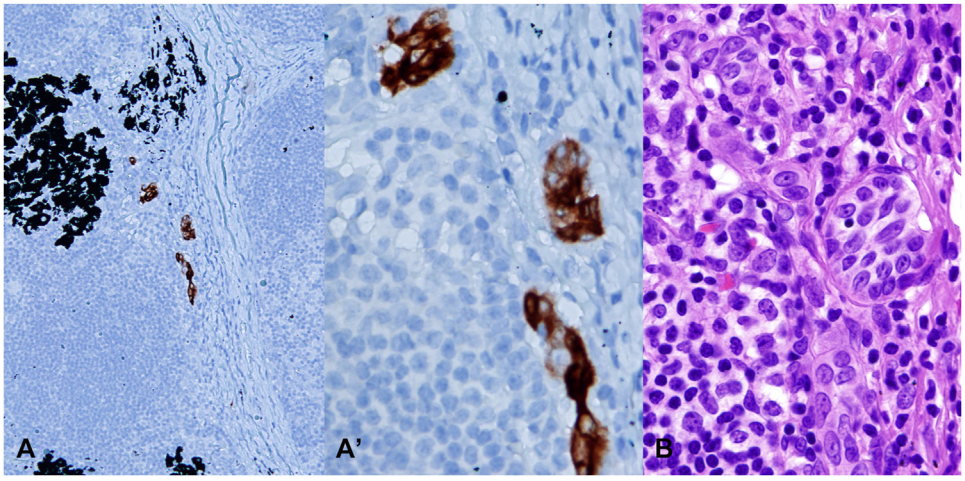


**Fig 2.** Left axillary sentinel lymph node with tattoo pigment and focus of melanoma. **A,** Melan-A immunohistochemistry; original magnifications: ×100 and ×400. **B,** Hematoxylin and eosin stain; original magnification: ×400.

axillary SLN showed a microscopic focus of atypical subcapsular melanocytes with irregular nuclear membranes, pleomorphism, and retained melanin pigment that stained positive for Melan-A and S100 (Fig 1). The left axillary SLN showed intensely chromatic tattoo pigment-laden sinus histiocytes with a microscopic focus of atypical melanocytes with nuclear enlargement, pleomorphism, and prominent nucleoli that stained positive for Melan-A and S100 (Fig 2). Brain magnetic resonance imaging and total-body positron emission tomography scan showed no signs of distant metastasis. The patient received a final diagnosis of stage IIIA melanoma (pT2a pN2a M0).

Since the patient only had micrometastatic lymph node disease, completion lymph node dissection was not performed. Bilateral axillary ultrasound surveillance was performed every 4 months. The patient completed 12 cycles of adjuvant nivolumab without complications. At the time of this case report (32 months after diagnosis), the patient had no evidence of disease.

## DISCUSSION

With the advent of preoperative lymphoscintigraphy, it is increasingly being recognized that patients exhibit unique lymphatic drainage pathways that cross Sappey's lines.[2] MLBD is a well-recognized phenomenon among patients undergoing SLN biopsy (Table I), particularly in primary truncal melanomas, with an incidence ranging from 11% to 35%.[2-7] Axillary drainage is found in over 90% of truncal

**Table 1.** Studies evaluating multiple lymphatic drainage basins, sentinel lymph node positivity, and prognostic indicators in patients with melanoma

| Study, year | Institution | *N* | MLBD, % | % MLBD w/ primary truncal lesion | +SLN in >/= 2 basins, % | MLBD a/w SLN positivity, other factors a/w SLN positivity | MLBD a/w prognosis | Factors a/w worse prognosis |
|---|---|---|---|---|---|---|---|---|
| Dale, 1997[7] | JWCI | 3603 | 11 (406/3603) | 80 (324/406) | 3 (120/3603) | N/A | N/A | -Pos SLN in MLBD associated with decreased 1-, 3-, 5-year survival, decreased median survival |
| Porter, 2000[6] | MDACC | 281 | 31 (86/281) | 100‡ | 3 (8/281) | Yes<br>-Tumor thickness<br>-Ulceration | N/A | N/A |
| Jacobs, 2003[4] | UIC | 122 | 32 (39/122) | 100‡ | 3 (4/122) | No<br>-Tumor thickness<br>-Clark level | N/A | N/A |
| Jimenez, 2005[5] | MSKCC | 266 | 29 (76/266) | 100‡ | 2 (4/266) | No | Decreased DFS and OS | -Breslow thickness<br>-SLN metastasis<br>-Ulceration |
| McHugh, 2006[2] | UM | 423 | 23 (98/423) | 100‡ | N/A | No<br>-Younger age<br>-Thicker lesions<br>-Mitotic rate | No | N/A |
| Melstrom, 2014[9] | MSKCC, MIA, UM | 97 | 100† | 70 (68/97) | 100† | N/A | N/A | -Positive SLN in MLBD associated with recurrent disease (56%) |
| Howard, 2017[8] | JWCI | 259 | 100* | 87 (226/259) | 7 (17/259) | No | No | -Higher T-stage<br>-Ulceration<br>-Older age<br>-Lymph node positivity |
| Ribero, 2017[3] | UT | 312 | 35 (108/312) | 100‡ | N/A | Yes | No | -Thicker tumors<br>-Ulceration<br>-Number of positive lymph nodes |

*a/w*, Associated with; *DFS*, disease free survival; *JWCI*, John Wayne Cancer Institute; *MDACC*, M.D. Anderson Cancer Center; *MIA*, Melanoma Institute of Australia; *MLBD*, multiple lymphatic basin drainage; *MSKCC*, Memorial Sloan Kettering Cancer Center; *OS*, overall survival; *SLN*, sentinel lymph nodes; *UIC*, University of Illinois at Chicago; *UM*, University of Michigan; *UT*, University of Turin, 6 Italian referral centers.

*This study was a propensity matched-pair analysis in which 259 patients with MLBD were paired with 259 patients with single lymphatic basin drainage.

†97 patients with at least one positive SLN in at least 2 lymphatic drainage basins.

‡These studies only evaluated primary truncal melanomas.

cases having MLBD, with 57% to 82% showing bilateral axillary drainage.[3,4] There is conflicting data as to whether MLBD impacts SLN positivity and disease prognosis. Some studies identified increased rates of SLN positivity in patients with MLBD, whereas others failed to detect an association (Table I).[2-6,8] MLBD was associated with decreased survival in only 1 of 4 studies (Table I).[2,3,5,8]

Melanoma SLN positivity in 2 or more lymphatic drainage basins is relatively uncommon, with an overall reported incidence of 3% to 7% (Table I).[4-8] Data on the prognostic significance of patients with positive SLN metastasis in MLBD is limited. Dale et al[7] found that in patients who underwent dissections of 2 or more lymphatic basins, positive SLN in MLBD was associated with decreased 1-, 3-, and 5-year and median survival. Melstrom et al[9] found that 56% of patients with positive SLN in MLBD developed recurrent disease (the majority of recurrences were distant metastasis). Moreover, patients with stage IIIA and IIIB melanoma with metastasis in MLBD had a median survival of 41 months—a prognosis comparable to stage IIIC disease.[9] Although these studies suggest a worse prognosis in patients with positive SLNs in MLBD, whether this poses an increased risk for further metastasis or mortality compared with positive SLN in single lymphatic basin drainage remains unclear.[2,3,5,8] Optimal management for patients with positive SLNs in MLBD basins will require further research.

**Conflicts of interest**

None disclosed.

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