

## Limitation of Using Ultrasonography After Positive Sentinel Lymph Node Biopsy in a Patient with Melanoma in the Detection of Lymph Node Metastasis

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### ABSTRACT

Recent studies have shown that complete lymph node dissection (CLND) performed immediately did not improve the overall survival in patients with sentinel lymph node (LN)-positive melanoma. According to these results, nodal observation with ultrasonography becomes standard. However, it still has some limitations for detection of metastatic LNs. A 74-year-old woman was diagnosed with acral lentiginous melanoma of her left sole. The sentinel LN was positive for metastasis, but she refused CLND. Sixteen months after operation, ultrasonography showed an abnormal LN in the inguinal region. There was no other abnormal LNs around the LN. We resected the abnormal LN. The resected LN was black in color, and the adjacent LN that showed normal appearance in ultrasonography was also black. A recent study showed only 6.6% sensitivity in preoperative ultrasonographic detection of metastatic melanoma in a LN. We should keep in mind the limitation of ultrasonography for detection of a metastatic LN.

**Key words** lymph node dissection; lymph node metastasis; melanoma and ultrasonography

Recent studies have shown that complete lymph node dissection (CLND) performed immediately did not improve the overall survival in patients with sentinel lymph node (LN)-positive melanoma.<sup>1,2</sup> According to these results, the most standard therapeutic option in patients with sentinel LN-positive melanoma is currently nodal observation.<sup>3</sup> In patients in whom immediate CLND was not performed and who were carefully followed up with ultrasonography and computed tomography (CT), if metastasis and local and/or regional recurrence occur, systemic therapy or delayed CLND should be considered. Ultrasonography is useful for detection of LN metastases and depicts their

characteristic imaging features.<sup>4,5</sup> However, it still has some limitations for detection of metastatic LNs.

### PATIENT REPORT

A 74-year-old woman was diagnosed with acral lentiginous melanoma of her left sole, and she underwent complete resection and a sentinel LN biopsy 2 years ago (Fig. 1a). The sentinel LN was positive for metastasis, but there was no evidence of distant metastasis in CT (T3bN1aM0, stageIIIC, tumor thickness of 3.3 mm, AJCC ver. 8). She refused CLND because of the risk for development of postoperative lymph edema and received adjuvant therapy with nivolumab for 1 year. During this therapy, we performed careful follow-up with physical examination, CT and ultrasonography, and there were no findings of LN metastases and/or distant metastases were noted. Four months after finishing the adjuvant therapy, ultrasonography showed a round LN with 8 × 9 mm in size in the inguinal region and disappearance of the normal structure in the LN (yellow arrow in Fig. 1b). Physical examination showed no palpable LN in the inguinal region. The LN adjacent to this abnormal LN on the right side was 5 × 6 mm in size and had a normal shape with preservation of a normal hilus (red arrow in Fig. 1b). An increased vascular signature was observed for the former abnormal LN but not the latter. We considered that the abnormal LN was metastatic and performed LN biopsy. The resected LN was black in color and was occupied by metastatic melanoma cells histopathologically (yellow arrow in Fig. 1c). The adjacent LN that showed a normal appearance in ultrasonography was also black in color and exhibited metastatic foci of 5 mm in diameter histopathologically (red arrow in Figs. 1c and d). Because some intrapelvic lymph nodes were also slightly swollen and the patient refused inguinal and intrapelvic lymph node dissection, pembrolizumab was administered. Additionally, although she still has some swollen lymph nodes that have gradually enlarged, there is no distant metastasis 1 year after starting pembrolizumab.

### DISCUSSION

Recently, ultrasonography has become a standard tool for following up melanoma patients without immediate

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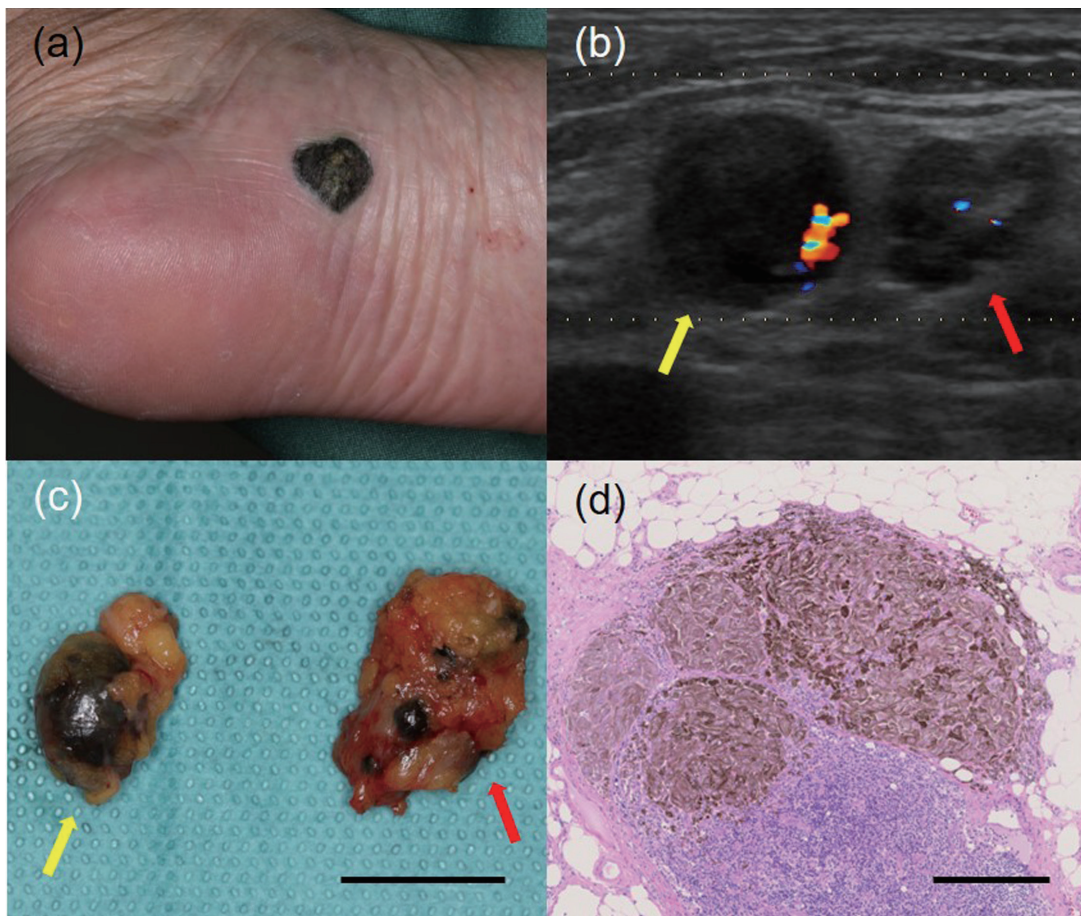
[higoto@tottori-u.ac.jp](mailto:higoto@tottori-u.ac.jp)

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Abbreviations: CLND, complete lymph node dissection; LN, lymph node



**Fig. 1.** (a) Primary lesion on her left sole. (b) A picture of sonography 4 months after finishing adjuvant therapy. Although the sizes of all lymph nodes were less than 1 cm, the left-side lymph node was round in shape and had an increased vascular signature. The right-side lymph node had the normal lymph node structure and did not have an increased vascular signature. Arrows show the same LNs with the same color arrow as those in Figs. 1b and c. (c) Resected LNs with a black color (bar = 1 cm). (d) Histopathological specimen of the LN with a red arrow (HE staining, bar = 250  $\mu$ m). HE, hematoxylin-eosin.

CLND even if the sentinel LN was positive for metastasis.<sup>1,2</sup> This strategy is beneficial for patients because immediate CLND does not prolong prognosis and has some complications.<sup>1,2</sup> Therefore, the use of immediate CLND is limited to regional disease control. According to the strategy, when LN distinct metastasis is found during the follow-up period, we should consider delayed CLND. Therefore, early detection of metastasis in LNs is important to minimize the influence of treatment delay on survival.

Ultrasonography is used for evaluation of the size, shape and vascular signature of LNs. Several studies have demonstrated the usefulness of ultrasonography of LNs for postoperative follow-up in melanoma patients.<sup>4,5</sup> Massive LN metastasis can be easily detected by ultrasonography as shown in our case. However, a recent study showed only 6.6% sensitivity in preoperative ultrasonographic detection of metastatic melanoma in

an LN, emphasizing the difficulty of its detection.<sup>6</sup> We should keep in mind the limitation of ultrasonography for detection of a metastatic LN in patients with SLN-positive melanoma. Recently developed techniques including elastography may be useful for improving the sensitivity.<sup>7,8</sup> We consider that immediate CLND is still one of the therapeutic options in patients with SLN-positive melanoma due to its excellent local control.<sup>1</sup> Local control is one of important factors for patients of melanoma without BRAF mutation, which is common in Asian and colored skin people, because therapeutic options are limited.<sup>9</sup> Because we sometimes experience conflicting results with the use of sonography, we should carefully select therapeutic options case by case for patients with SNB-positive melanoma.

*The authors declare no conflict of interest.*

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