

# Metastatic Melanoma and Prostatic Adenocarcinoma in the Same Sentinel Lymph Node

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## PRACTICE POINTS

- Immunohistochemical stains play a vital role in the detection of tumor collision phenomena as well as identification of histologic sources of metastases.
- Thorough histopathologic examination of biopsy specimens in the context of a patient's clinical history remains paramount in obtaining an accurate diagnosis, enhancing the possibility of more effective treatment of earlier disease.

To the Editor:

Sentinel lymph node (SLN) biopsies routinely are performed to detect regional metastases in a variety of malignancies, including breast cancer, squamous cell carcinoma, Merkel cell carcinoma, and melanoma. Histologic examination of an SLN occasionally enables detection of other unsuspected underlying diseases that typically are inflammatory in nature. Although concomitant hematolymphoid malignancy, particularly chronic lymphocytic leukemia, has been reported in SLNs, collision of 2 different solid tumors in the same SLN is rare.<sup>1,2</sup> We report a unique case documenting collision of both metastatic melanoma and prostatic adenocarcinoma detected in an SLN to raise awareness of the diagnostic challenges occurring in patients with coexisting malignancies.

A 71-year-old man with a history of metastatic prostatic adenocarcinoma to the bone presented for treatment of a melanoma that was newly diagnosed by an outside dermatologist. The patient's medical history was notable for radical prostatectomy performed 15 years prior for

treatment of a prostatic adenocarcinoma (Gleason score unknown) followed by bilateral orchiectomy performed 7 years later after his serum prostate-specific antigen (PSA) level began to rise, with no response to goserelin (a gonadotropin-releasing hormone agonist) therapy. Two years prior to the diagnosis of metastatic disease, his PSA level started to rise again and the patient received bicalutamide with little improvement, followed by 8 cycles of docetaxel. His PSA level improved and he most recently was being treated with abiraterone acetate. The patient's latest computed tomography scan showed that the bony metastases secondary to prostatic adenocarcinoma had progressed. His serum PSA level was 105 ng/mL (reference range, <4.0 ng/mL) at the current presentation, elevated from 64 ng/mL one year prior.

Recently, the patient had noted a changing pigmented skin lesion on the left side of the flank. The patient described the lesion as a "black mole" first appearing 2 years prior, which had begun to ooze, change shape, and become darker and more nodular. A shave biopsy revealed a primary cutaneous malignant melanoma at least 3.4 mm in depth with ulceration and a mitotic rate of 15/mm<sup>2</sup>. No molecular studies were performed on the melanoma. Standard treatment via wide local excision and sentinel lymphadenectomy was planned.

Lymphoscintigraphy revealed 3 left draining axillary lymph nodes. The patient was treated with wide local excision and left axillary SLN biopsy. Five SLNs and 3 non-SLNs were excised. Per protocol, all SLNs were examined pathologically with serial sections: 2 hematoxylin and eosin-stained levels, S-100, and melan-A immunohistochemical stains. No residual melanoma was identified in the wide-excision specimen. Examination of the left axillary SLNs revealed metastatic melanoma in

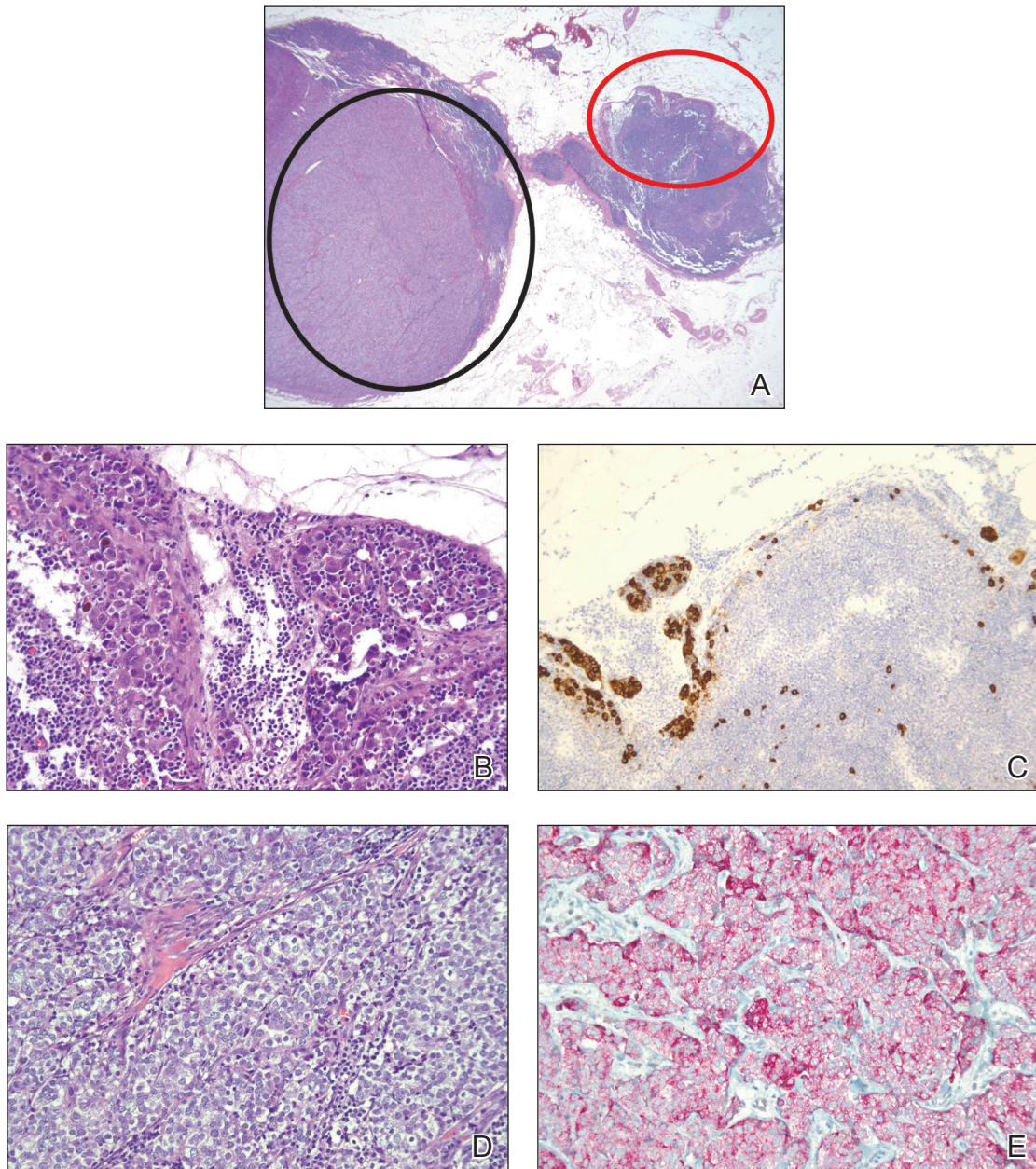
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3 of 5 SLNs. Two SLNs demonstrated total replacement by metastatic melanoma. A third SLN revealed a metastatic malignant neoplasm occupying 75% of the nodal area (Figure, A). S-100 and melan-A immunohistochemical staining were negative in this nodule but revealed small aggregates and isolated tumor cells distinct from this nodule that were diagnostic of micrometastatic melanoma (Figures, B and C). The tumor cells in the large nodule were

histologically distinct from the melanoma and were instead composed of nests of epithelioid cells with clear cytoplasm (Figure, D). Upon further immunohistochemical staining, this tumor was strongly positive for AE1/AE3 keratin and PIN4 cocktail (cytokeratin 5, cytokeratin 15, p63, and p504s/alpha-methylacyl-CoA-racemase)(Figure, E) with focal positivity for PSA and prostatic acid phosphatase, diagnostic of metastatic adenocarcinoma of prostate origin.



An effaced lymph node showed a large epithelioid tumor representative of metastatic prostatic adenocarcinoma (circled in black) and smaller aggregates of different-appearing cells representative of micrometastatic melanoma (circled in red)(A)(H&E, original magnification  $\times 12.5$ ). Pigmented atypical cells of melanoma were seen (B)(H&E, original magnification  $\times 200$ ). Melan-A staining demonstrated positivity in pigmented cells of melanoma (C)(original magnification  $\times 100$ ). Clear epithelioid cells of prostatic adenocarcinoma were seen (D)(H&E, original magnification  $\times 200$ ). PIN4 immunohistochemical staining demonstrated positivity in clear cells of prostatic adenocarcinoma (E)(original magnification  $\times 200$ ).

A positron emission tomography scan performed a few days after the discovery of metastatic prostatic adenocarcinoma in the SLNs showed expected postoperative changes (eg, increased activity from procedure-related inflammation) in the left side of the flank and axilla as well as moderately hypermetabolic left supraclavicular lymph nodes suspicious for viable metastatic disease. Subsequent fine-needle aspiration of the aforementioned lymph nodes revealed metastatic prostatic adenocarcinoma. The preoperative lymphoscintigraphy at the time of SLN biopsy did not show drainage to the left supraclavicular nodal basin.

Based on a discussion of the patient's case during a multidisciplinary tumor board consultation, the benefit of performing completion lymph node dissection for melanoma management did not outweigh the risks. Accordingly, the patient received adjuvant radiation therapy to the axillary nodal basin. He was started on ketoconazole and zoledronic acid therapy for metastatic prostate adenocarcinoma and was alive with disease at 6-month follow-up.

The finding of both metastatic melanoma and prostate adenocarcinoma detected in an SLN after wide excision and SLN biopsy for cutaneous melanoma is a unique report of collision of these 2 tumors. Rare cases of collision between 2 solid tumors occurring in the same lymph node have involved prostate adenocarcinoma as one of the solid tumor components.<sup>1,3</sup> Detection of tumor collision on lymph node biopsy between prostatic adenocarcinoma and urothelial carcinoma has been documented in 2 separate cases.<sup>1</sup> Three additional cases of concurrent prostatic adenocarcinoma and colorectal adenocarcinoma

identified on lymph node biopsy have been reported.<sup>1,3</sup> Although never proven statistically, it is likely that these concurrent diagnoses are due to the high incidences of prostate and colorectal adenocarcinomas in the general US population; they are ranked first and third, respectively, for cancer incidence in US males.<sup>4</sup>

As demonstrated in the current case and the available literature, immunohistochemical stains play a vital role in the detection of tumor collision phenomena as well as identification of histologic source of the metastases. Furthermore, thorough histopathologic examination of biopsy specimens in the context of a patient's clinical history remains paramount in obtaining an accurate diagnosis. Earlier identification of second malignancies in SLNs can alert the clinician to the presence of relapse of a known concurrent malignancy before it is clinically apparent, enhancing the possibility of more effective treatment of earlier disease. As has been demonstrated for lymphoma and melanoma, in rare cases awareness of the possibility of a second malignancy in the SLN can result in earlier initial diagnosis of undiscovered malignancy.<sup>2</sup>

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