Melanoma and mantle cell lymphoma in a single collision tumor

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ABSTRACT

The simultaneous occurrence of two different neoplasms is uncommon, and collision tumors are even rarer. We describe a cutaneous collision tumor of melanoma and mantle cell lymphoma presenting synchronously in a previously healthy individual.

KEYWORDS Collision; lymphoma; melanoma

Collision tumors denote the rare occurrence of two or more tumors that are histologically different at the same anatomical site. They can occur due to two different tumors arising from the same organ or due to metastasis from a different site.¹ The association between cutaneous melanoma and non-Hodgkin's lymphoma (NHL) has been previously reported.² We describe a cutaneous collision tumor of melanoma and mantle cell lymphoma (MCL) presenting synchronously in a previously healthy patient.

CASE REPORT

A healthy 61-year-old man presented with a growing lesion over the nape of his neck for the past year associated with fatigue and unintentional weight loss. Physical examination showed a 1-cm pigmented lesion over the posterior neck with palpable submandibular and supraclavicular lymph nodes. Complete blood counts were unremarkable. Initial punch biopsy revealed melanoma with a Breslow thickness of 0.92 mm (*Figure 1a*). Wide surgical excision of the skin lesion revealed a superficial spreading type of melanoma, Breslow thickness of 1.2 cm, with infiltration of small to medium-sized CD 20+ lymphoid cells. A sentinel lymph node biopsy of the left supraclavicular node showed effacement of nodular architecture by sheets of B lymphocytes diffusely positive for CD20, CD5, and BCL2 and

partially positive for cyclin D1 and CD43; no involvement with melanoma was shown. A Ki67 stain showed 40% positivity. Fluorescent in situ hybridization showed the presence of t(11;14) (q13;q32) between the *IGH* gene and the *CCND1* gene, consistent with MCL. Bone marrow biopsy revealed extensive involvement with MCL (*Figures 1b, 1c*). Cytogenetics showed 25% to 33% of cells with an interstitial deletion of 13q, 11;14 rearrangement and 10% of cells with deletion of 17p (TP53 locus). A positron emission tomography-computed tomography scan showed diffuse lymphadenopathy involving the cervical, supraclavicular, mediastinal, hilar, internal and external iliac, and inguinal lymph nodes and uptake in the palatine tonsils (*Figure 2a*).

The patient was started on R-hyper CVAD therapy with rituximab, cyclophosphamide, vincristine, doxorubicin, and dexamethasone alternating with high-dose methotrexate and cytarabine and received four doses of prophylactic intrathecal methotrexate. After completion of six cycles of chemotherapy, a repeat positron emission tomography scan showed no lymphadenopathy or abnormal metabolic uptake (*Figure 2b*). Repeat bone marrow biopsy showed a low normocellular marrow with complete remission. The decision was made to proceed with autologous stem cell transplant after conditioning with carmustine, etoposide, cytarabine, and melphalan. He successfully underwent the transplant and is currently doing well.

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Figure 1. Biopsy results. **(a)** Skin lesion showing nests of malignant cells in the epidermis and dermis with ovoid nuclei, pale eosinophilic cytoplasm, and pigment deposition, consistent with malignant melanoma (hematoxylin and eosin, 20 $\times$). **(b)** Specimen showing atypical small to medium-sized lymphoid cells infiltrating the adipose tissue (hematoxylin and eosin, 10 $\times$). **(c)** Lymphoid cells in the adipose tissue of the neck skin excision specimen showing diffuse positivity for CD20 (hematoxylin and eosin, 10 $\times$).

DISCUSSION

The simultaneous occurrence of MCL and melanoma in the skin has not been previously reported. Two cases of nodal involvement of melanoma along with MCL have been described.^{1,3} A few cases of chronic lymphocytic leukemia along with melanoma have also been reported.^{1,4-6} There is an increased risk of second malignancies in patients with melanoma, which include melanoma recurrence, NHL, breast cancer, and prostate cancer.⁷ A study by Riou et al identified malignancies in almost 8.1% of melanoma patients, with a 1.8% incidence of lymphoma.⁸ A pooled analysis of retrospective studies by Lens and Newton-Bishop showed a statistically significant increased risk of NHL among survivors of cutaneous melanoma and vice versa.²

Various mechanisms have been considered to explain the association between melanoma and NHL. Chronic immunosuppression and immunodeficiency from the disease itself

Figure 2. Positron emission tomography-computed tomography scan **(a)** before treatment showing increased metabolic uptake in multiple locations and **(b)** after treatment showing resolution of previously noted increased metabolic uptake.

or treatment could lead to the loss of tumor surveillance. An environmental etiology such as ultraviolet B exposure, which reduces T-cell reactivity, or contact with pesticides or hair dyes has also been proposed. Additionally, certain genetic abnormalities such as alterations in the locus containing the P16 tumor suppressor gene, which normally inhibits cyclin-dependent kinase, and hereditary susceptibility could be factors. The coexisting malignancies in our patient could have developed due to any of the above mechanisms, except treatment.^{9,10}

The identification of two separate malignancies may present difficulties with regards to treatment decisions. In our patient, the melanoma did not require further treatment given the absence of nodal involvement, and he was appropriately treated for MCL.

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