Malignant Basomelanocytic Tumor: A Case Report

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Cutaneous combined tumors have been described as having various types of adnexal and/or neuroendocrine differentiation, however, combined tumors composed of keratinocytes and melanocytes are extremely rare. We describe a malignant cutaneous neoplasm with combined phenotypical features of basal cell carcinoma and malignant melanoma, also known as a malignant basomelanocytic tumor. This is the first report of a combined-type malignant basomelanocytic tumor in an Asian patient.

Key Words: Malignant basomelanocytic tumor, Malignant melanoma, Basal cell carcinoma

INTRODUCTION

Cutaneous combined tumors exhibit various types of adnexal and/or neuroendocrine differentiation. According to Boyd et al.,¹ basal cell carcinoma/melanocytic nevi or basal cell carcinoma/seborrheic keratosis combinations are the most common patterns. This result is not surprising because basal cell carcinoma and melanocytic nevi are the most common tumors found on histopathological evaluation.² However, combined tumors composed of keratinocytes and melanocytes are extremely rare.³ We describe a malignant cutaneous neoplasm with combined phenotypical features of basal cell carcinoma and malignant melanoma, also known as a malignant basomelanocytic tumor.⁴

CASE REPORT

A 76-year-old female presented with a 3.5×2.5 cm, pigmented, protruding mass on her left thigh one year in duration (Fig. 1). The mass was painless and there were no additional palpable masses on the rest of her body, nor were relevant trauma or family history reported. Initial biopsy revealed a malignant tumor showing an intermingled pattern of melanocytic and basaloид differentiation with positive immunoreactivity for Human Melanoma Black-45 (HMB-45)/S-100 and cytokeratin 5/6 (CK5/6). PET-CT was negative for lymph node and/or distant metastasis. Wide excision with surgical margins

Fig. 1. Gross appearance. The tumor was 3.5×2.5 cm sized, pigmented and protruded from the patient’s left thigh.
Fig. 2. Histologically, tumor cells show basal cell carcinoma-like features such as cleft artifact and surrounding palisaded basophilic cells, with rather prominent nucleoli (H&E, ×200).

Fig. 3. Tumor cells are diffusely and strongly positive for cytokeratin 5/6 (CK5/6) similar to the normal epidermis (A), and are also diffusely and strongly positive for Human Melanoma Black-45 (HMB-45), a marker for melanoma (×200) (B).

of at least 3 cm and a split thickness skin graft were performed. Post-excision recovery was unremarkable. The pathology of the specimen was as follows. Tumor cells showed basal cell carcinoma-like features such as cleft artifact and surrounding palisaded basophilic cells, while also having rather prominent nucleoli (×200, hematoxylin and eosin (H&E); Fig. 2). Tumor cells were diffusely and strongly positive for CK5/6, similar to normal epidermis, and were also diffusely and strongly positive for HMB-45, the marker for melanoma (×200; Fig. 3). In summary, the features indicated a combined tumor with features of both malignant melanoma; tumor thickness, 3 mm, Clark level, IV; tumor stage, T4a, N0, M0), and basal cell carcinoma.

DISCUSSION

Although the etiology of composite tumors remains unclear, several hypotheses have been proposed. First, one neoplasm can induce the development of a second tumor. Neoplasms secrete a growth mediator, and its paracrine effects can cause a second tumor to grow. Keratinocytes secrete a growth mediator that promotes the growth of melanocytes, and neoplastic keratinocytes cause tumors of melanocyte origin. Second, two tumors can coincidentally grow together. The case of collision tumors supports this hypothesis. Boyd et al., performed a retrospective evaluation of 40,000 cutaneous biopsies, yielding 69 examples of collision tumors. A combination of melanocytic nevus and basal cell carcinoma was the most common. Because basal cell carcinoma and melanocytic nevus are the most common tumors, they are most likely to form collision tumors. Third, each composite tumor may be differentiated from one stem cell. Pluripotent stem cells have the capacity of self-renewal and can give rise to phenotypically diverse cells. Fourth, the field cancerization theory suggests that there is a high risk of developing two neoplasms within potential skin lesions associated with ultraviolet light, or burn scars. A number of reports of composite tumors in the head and neck region after high exposure to ultraviolet light support this claim.

The terminology used to define composite tumors was recently clarified to include collision, colonized, combined and biphenotypic tumors, which are defined as follows:

1) Collision tumors - Two separate and distinct neoplasms are distinguishable and the two components are usually sharply demarcated (no mixed cells) within the tumor.

2) Colonization tumors - These tumors consist of one tumor cell population infiltrating and colonizing an underlying second tumor cell population. The colonizing tumor cells do not extend beyond the dermal component of the second tumor cell population. More specifically, these tumors often represent melanoma in situ colonizing a basal cell carcinoma. The underlying neoplasm may act as a conduit for spread of another neoplastic cell throughout the initial neoplasm.

3) Combined tumors - A tumor composed of two distinct populations of cells that are intermingled, which may require immunohistochemistry analysis for identification. Each cell population contains a different immunophenotypic pattern. Basomelanocytic tumors and squamomelanocytic tumors are also classified as combined tumors.

4) Biphenotypic tumors - A tumor arising from a common stem cell precursor that has evolved into two phenotypically-distinct tumors. These tumors co-express phenotypically different immunohistochemical markers and features of two divergent cell populations on electron microscopy. Rosen et al. report-
ted the only documented case of a true biphenotypic tumor. In our case, the tumor was composed of both malignant melanoma cells (HMB-45 positive) and palisaded basophilic cells, indicating basal cell carcinoma, and thus classified as a combined tumor. Combined malignant melanoma-basal cell carcinoma tumors are also called malignant basomelanocytic tumors. Malignant basomelanocytic tumors have been reported in only about 100 cases worldwide, and this is the first report in an Asian population. Clinical features and treatment of malignant basomelanocytic tumors generally follows guidelines for malignant melanoma; prognosis is influenced by the tumor depth of malignant melanoma.6,9

REFERENCES