

# Squamomelanocytic Tumor: A Case Report and Further Insights Into Its Possible Histogenesis

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**Abstract:** We report a case of combined squamomelanocytic tumor of the skin. Clinically, the lesion was felt to be a squamous cell carcinoma. Histologically, it was characterized by large epithelioid cells admixed with basaloid cells with central squamous differentiation. Immunohistochemical staining showed both cell populations to be reactive with Melan A, BERP4, and Pan Keratins. Ultrastructural studies revealed simultaneous features of squamous differentiation (dense cytoplasmic tonofilaments with well-developed desmosomes) and melanocytic differentiation (mature/pigmented melanosomes) in the same cell population. This is the second reported case in the English literature with documented biphenotypic or divergent differentiation at the ultrastructural level. The behavior of squamomelanocytic tumor is uncertain given the rarity of reported cases.

**Key Words:** squamomelanocytic tumor, squamous cell carcinoma, malignant melanoma, biphenotypic tumor

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## INTRODUCTION

Squamomelanocytic tumor (SMT) is an uncommon cutaneous neoplasm composed of an admixture of melanocytic and squamous cellular phenotypes. In the large literature review on cutaneous collision tumors, Boyd and Rapini<sup>1</sup> found 0 SMTs of 69 collisions. In a series of 78,000 primary cutaneous cancers, Pierard et al<sup>2</sup> identified 106 basosquamous carcinomas and 0 SMTs. In fact, Novick et al<sup>3</sup> reported the first case of squamous cell carcinoma (SCC) admixed with malignant melanoma (MM). Ever since, numerous terms have been used to describe SMT, such as combined, colliding, biphasic, contiguous, or colonizing. Furthermore, some authors reported tumors that arose adjacent to one another as combined tumors, whereas other tumors that were intimately intermixed were called collision tumors, and in a few cases, both terms were used.<sup>4</sup> In a case series from 1999, Pool et al<sup>5</sup> described 4 cutaneous

neoplasms composed of an admixture of 2 cell populations including both melanocytic and squamous phenotypes which they referred to as “squamomelanocytic tumor.” The authors were the first to introduce SMT as a unique clinicopathological entity. To date, a total of 11 similar cases of SMT were reported in the English literature. True biphenotypia as defined by Braun-Falco<sup>4</sup> includes coexpression of different immunohistochemical markers and/or ultrastructural evidence of differentiation in 2 different cell lines within the same cell. Herein, we report a rare case of true biphenotypic SMT exhibiting squamous and melanocytic phenotypes. Additional immunohistochemical and ultrastructural studies are presented to provide further insights into the proposed histopathogenic pathway underlying the development of this tumor.

## CLINICAL CASE

A 78-year-old man presented to the Dermatology clinic for a left retroauricular “mass”. A shave biopsy was performed. Gross examination showed a flat piece of skin measuring 0.6 × 0.4 × 0.1 cm with a centrally located crusted pink papule measuring 0.5 × 0.4 cm. Low-power magnification showed a nodular proliferation with bulbous edges centered in the superficial dermis. The mass was focally connected to the overlying epidermis without evidence of ulceration. The neoplasm infiltrated the dermis as irregular bulbous projections (Fig. 1). On high-power examination, the tumor consisted of sheets and irregular nests of large atypical heavily pigmented epithelioid and/or dendritic cells with scant cytoplasm intermingled with basaloid cells and atypical squamoid cells with dark nuclei and abundant eosinophilic cytoplasm. Some of these cells showed intercellular desmosomal bridges. Squamous differentiation (Keratin pearls with heavy pigmentation) was present centrally. The actual depth of the tumor was difficult to ascertain because it was centered in the dermis with only focal connection to the epidermis. Atypical mitotic figures were identified without evidence of necrosis (Fig. 1). No evidence of atypical melanocytic proliferation was present in the overlying epidermis. Adjacent skin showed moderate solar elastosis. Both types of lesional cells (basaloid and epithelioid/dendritic) showed positive immunoreactivity with melanocytic marker, MART-1, and epithelial markers, Keratin AE1/AE3 and Ber-EP4, simultaneously (Fig. 2). Ultrastructural studies by transmission electron microscopy revealed dense cytoplasmic tonofilaments with well-developed desmosomes features of squamous differentiation. Mature/pigmented melanosomes were identified in the same

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