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Combined Tumor of Basal Cell Carcinoma and Seborrheic Keratosis Identified During Stage I of Mohs Micrographic Surgery

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Abstract

An 88-year-old man with a history of basal cell carcinoma (BCC) was treated with electrodesiccation and curettage (ED&C) but developed a suspected recurrence at the same site eight months later. Repeat diagnostic biopsy demonstrated BCC without evidence of seborrheic keratosis (SK). During Mohs micrographic surgery (MMS), Stage I revealed superficial BCC integrated within an SK, favoring classification as a combined tumor. Stage II was negative for residual BCC, and the defect was repaired with primary closure. This case highlights the potential for clinically and histologically distinct cutaneous neoplasms to coexist within the same lesion and underscores the value of thorough histopathologic evaluation during MMS.

Categories: Pathology, Dermatology
Keywords: basal cell carcinoma, biophenotypic, collision tumor, colonized, combined, mohs micrographic surgery

Introduction

Combined tumors are neoplastic lesions characterized by the coexistence of two distinct, intimately intermingled neoplastic cell populations within the same anatomic site [1]. Although each component may occur commonly in isolation, their simultaneous presentation in a superimposed fashion can result in overlapping clinical, dermoscopic, and histopathologic features, posing a diagnostic challenge. We report a case of a combined tumor composed of recurrent basal cell carcinoma (BCC) and seborrheic keratosis (SK), identified during Stage I of Mohs micrographic surgery (MMS), a tissue-sparing technique involving staged excision and comprehensive histologic assessment of surgical margins. Recognition of distinct neoplastic components is essential for accurate histopathologic evaluation and classification.

Case Presentation

An 88-year-old man with an extensive history of nonmelanoma skin cancer presented to the clinic for a routine skin examination. Eight months earlier, the patient had been diagnosed with BCC and treated with electrodesiccation and curettage (ED&C). During the current examination, he expressed concern about a possible recurrence at the previously treated site (Figure *1*, arrow). Clinically, the lesion demonstrated erythema and scaling. Dermoscopy revealed prominent telangiectasias, hyperpigmentation, and comedo-like openings. A repeat diagnostic biopsy confirmed BCC, and the patient was subsequently scheduled for MMS.

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FIGURE 1: Clinical presentation of the recurrent lesion at the site of a previously treated basal cell carcinoma (arrow).

During Stage I of MMS, histopathologic examination revealed a combined tumor composed of superficial BCC and SK, with basaloid tumor nests intimately associated with the acanthotic SK component (Figure *2*). The BCC demonstrated characteristic basaloid nests, peripheral palisading, and tumor-stromal retraction. The SK component exhibited regular epidermal acanthosis, papillomatosis, hyperkeratosis, and horn cyst formation, with the cysts composed of bland keratinocytes. There was no irregular pseudoepitheliomatous hyperplasia or epidermal effacement characteristic of reactive epidermal changes. Stage II of MMS was negative for residual BCC, and the final surgical defect was closed primarily.

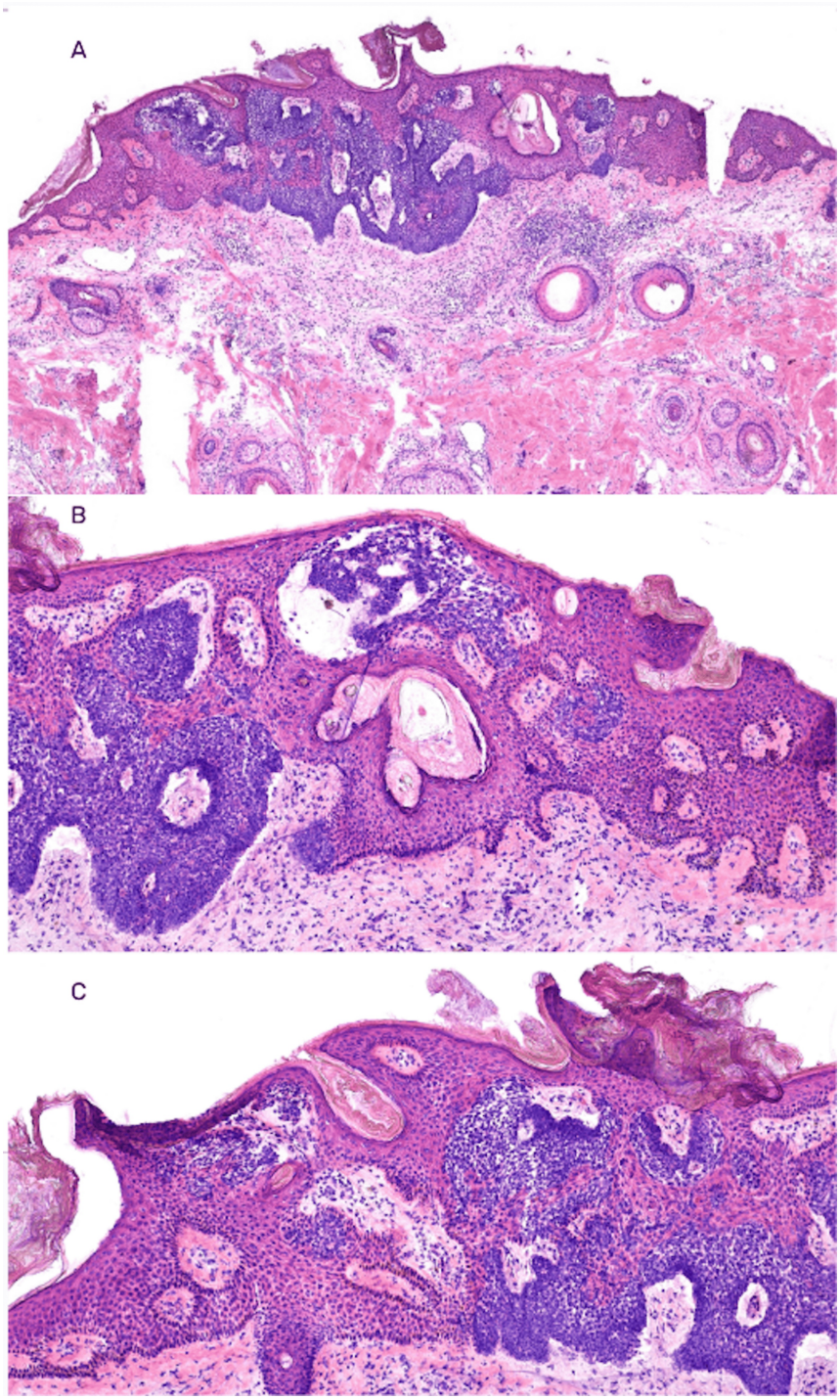


FIGURE 2: Histopathologic findings from a horizontal Mohs frozen section obtained during Stage I of Mohs micrographic surgery (MMS), demonstrating a combined tumor consisting of superficial basal cell carcinoma (BCC) and seborrheic keratosis (SK): (A) hematoxylin and eosin, ×40; (B and C) hematoxylin and eosin, ×100.

Discussion

A classification framework is useful when evaluating tumors composed of multiple distinct cell populations. The four generally accepted categories include collision, combined, colonized, and biophenotypic tumors. Collision tumors consist of distinct cell populations situated adjacent to one another with well-defined boundaries, whereas combined tumors contain two admixed tumor cell populations. Colonized tumors consist of one tumor cell population permeating a tumor of a different cell type while remaining confined

within its boundaries. Finally, biophenotypic tumors consist of two distinct cell populations descended from a common progenitor that demonstrate overlapping immunohistochemical and molecular features [2].

Several mechanisms have been proposed for the development of these tumors. One possibility is the coincidental occurrence of two tumors in the same area, supported by the observation that the most common combined tumor comprises two commonly encountered entities: a melanocytic nevus and BCC. The second most common combined neoplasm is BCC and SK [3]. In addition, prior local changes or trauma, such as ultraviolet radiation exposure or scarring, may be associated with the development of additional tumors. Finally, the induction theory proposes that one cell population can induce the transformation of another through paracrine effects [4].

These tumors may involve malignant and benign cell types, malignant and malignant cell types, or two benign cell types [3]. BCC and SK have been documented in several series of coexisting cutaneous neoplasms, with Blum et al. identifying 18 of 77 collision skin lesions and Boyd and Rapini identifying 8 of 69 collision tumors with this pairing [3,4]. Ishida et al. similarly described superficial BCC arising within SK, highlighting the potential for these distinct neoplastic components to demonstrate a close histopathologic association [5]. Although these tumors have historically been described broadly as collision tumors, distinctions between collision, combined, and colonized tumors depend on the histopathologic relationship between their components [2]. In the present case, the intimate association of BCC nests with the acanthotic SK component favors classification as a combined tumor rather than a collision tumor.

Clinically, dermoscopy demonstrated findings associated with both BCC and SK. Prominent telangiectasias are a recognized dermoscopic feature of BCC, whereas comedo-like openings are characteristic of SK and correspond histopathologically to pseudohorn cysts [6,7]. The repeat diagnostic biopsy identified BCC, while the SK component was subsequently identified during Stage I of MMS. Histopathologic findings, including regular acanthosis, papillomatosis, hyperkeratosis, and horn cyst formation, further supported a distinct SK component rather than reactive epidermal changes associated with prior treatment. These findings emphasize the value of careful clinical and histopathologic correlation in identifying distinct neoplastic components during MMS.

Conclusions

Combined tumors consist of two distinct, intimately intermingled neoplastic populations within the same lesion and may include benign and malignant components. BCC and SK are among the more commonly reported tumor combinations, although their coexistence may not always be apparent on initial evaluation. This case highlights the value of careful clinical and histopathologic correlation in accurately identifying and classifying coexisting neoplasms.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Acquisition, analysis, or interpretation of data: Alekhya Gurram, Kush Maheshwari, Richard F. Wagner, Brandon P. Goodwin

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Disclosures

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