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CASE REPORT

Concurrent Nasal Sebaceous Carcinoma and Right-Hand Squamous Cell Carcinoma: A Case Report and Literature Review

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Abstract: Cutaneous squamous cell carcinoma (cSCC) is the second most common nonmelanoma skin cancer with an increasing incidence. Sebaceous carcinoma (SC) is a rare, highly aggressive malignant tumor of cutaneous appendage origin, mainly occurring in the head and neck region (most commonly in the ocular area), and extremely rare in the nasal region. A literature review showed that only 3 cases of collision tumors composed of SC and squamous cell carcinoma (SCC) have been reported previously, and there is no report of concurrent SC and cSCC in different sites of the same patient. Combined with a literature review, this paper reports an 84-year-old female patient with progressive ulcerative skin lesions on the right hand and nose for 5 years. Initial biopsy suggested cSCC of the hand and sebaceous adenoma of the nose. After surgical excision, postoperative pathology and immunohistochemistry confirmed well-differentiated cSCC of the right hand and SC of the nose. Oncology consultation recommended adjuvant radiotherapy for nasal SC after surgery, which was refused by the patient's family due to her advanced age; no recurrence or metastasis was observed in either of the two lesions during the 5-month postoperative follow-up period. By analyzing this rare case of multicentric primary cutaneous malignant tumors combined with relevant literature, we emphasize that elderly patients with long-standing chronic skin lesions require comprehensive screening to avoid missed diagnosis. Accurate diagnosis relies on pathology and immunohistochemistry, surgical resection is the main treatment, and long-term follow-up is crucial. This case enriches the clinical data on concurrent SC and cSCC, providing references for their diagnosis and treatment.

Keywords: cutaneous squamous cell carcinoma, sebaceous carcinoma, case report, treatment

Introduction

Cutaneous squamous cell carcinoma (cSCC) is the second most common nonmelanoma skin cancer (keratinocyte carcinoma), with an increasing incidence trend.[1,2] Currently, confirmed risk factors for cSCC consist of ultraviolet radiation, advanced age, fair skin, immunosuppression, chemical exposure, and chronic inflammation.[3–7] While most cSCC cases can be successfully cured through surgical resection, a subset carries a higher risk of recurrence, metastasis, and mortality—studies have shown that patients diagnosed with cSCC face a 3.7% risk of metastasis and a 2.1% risk of disease-specific mortality.[8] Early identification of cSCC is therefore crucial.

Sebaceous carcinoma (SC) is a rare malignant tumor of cutaneous appendage origin, which is divided into periocular sebaceous carcinoma (PSC) and extraocular sebaceous carcinoma (ESC).[9] Compared with cSCC, SC is a far rarer but highly aggressive malignant tumor. An epidemiological study on the US population showed that the overall incidence rate of SC is 2.63 per million person-years.[10] The etiology and pathogenesis of SC have not been fully elucidated. UV radiation damage, advanced age, genetic predisposition (particularly in Muir-Torre syndrome [MTS]), and immunosuppression are recognized as risk factors for SC development.[11–14] SC rarely develops local regional or distant metastasis and is associated with a favorable overall survival. Age, gender, tumor size, tumor grade, and tumor stage are all prognostic factors for this disease, while the impact of ethnicity, primary tumor site, and urban-rural differences on prognosis remains controversial.[15–17]

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Clinically, SC is predominantly found in the head and neck region, with the ocular area being the most common site, while SC arising in the nasal region is extremely rare.[9,10,15] The metastasis rate of extraocular SC is 1.8%, and that of periocular SC is 12.5%.[9] The 3- to 5-year disease-specific mortality rate is 18% for the extraocular type and 25.6% for the periocular type.[9] Most of the reported nasal SCs occur in elderly male patients, which is consistent with the epidemiology of SC (Table 1).[18–28] Only one patient in the reports had metastasis indicated by CT examination, while the rest had no metastasis and all achieved a good prognosis after surgical treatment.[18–28]

Herein, we describe a rare case of concurrent SC of the nose and cSCC of the hand. Only 3 cases of collision tumors composed of SC and squamous cell carcinoma (SCC) have been reported in the existing literature, and the simultaneous occurrence of SC and SCC in different sites of the same patient is reported for the first time in the literature with this case.[29–31]Given the rarity and misdiagnosis risk of these two concurrent cutaneous malignancies, this case underscores the urgency of proactive clinical screening and accurate differential diagnosis.

Case Presentation

We admitted an 84-year-old female patient who complained of local ulceration on the ring finger of her right hand after wearing a ring more than 5 years ago, accompanied by mild pain and discomfort. She had received topical treatment with fusidic acid cream, Kangfuxin Liquid and mupirocin ointment after the onset of the disease, but all showed poor efficacy. The skin lesion on her right hand gradually enlarged, proliferated and elevated, with an ulcer forming in the center of the lesion, and the pain also gradually worsened. Meanwhile, we noticed a skin tumor on her nose. Further inquiry about the patient's medical history revealed that this tumor had also been present for more than 5 years without any subjective symptoms. After the nasal neoplasm appeared, the patient self-administered topical iodophor for treatment with no improvement, and the skin lesion gradually enlarged over time.

The patient had a history of Meniere's disease, cholelithiasis and sleep disorder, and had been taking alprazolam tablets orally for a long time to aid sleep. She had no other significant past medical history or history of facial or hand trauma. There was no family history of cancer either. She had an unremarkable personal and social history with no smoking or drinking habits.

Clinical examination revealed a tender, firm, fixed nodule measuring approximately 2 cm × 1 cm at the base of the right ring finger. The lesion was pale red with well-defined borders and showed central ulceration (Figure 1). In addition, a firm, fixed non-tender nodule measuring about 1.5 cm × 1 cm was present on the nasal tip, with regular borders and central ulceration (Figure 2). No similar lesions were identified elsewhere on the body. The initial clinical diagnoses were cSCC and basal cell carcinoma (BCC).

We performed biopsies on both masses. Pathological examination results showed that the morphological features of the right-hand mass were consistent with cSCC, while those of the nasal mass were consistent with sebaceous adenoma. Meanwhile, we conducted clinical and radiological screenings for the patient, and no abnormal lesions or distant metastases were detected. After excluding surgical contraindications, the patient subsequently underwent local excision of the nasal mass and local excision of

Table 1 Reported Cases of Nasal Sebaceous Carcinoma in the Literature

	Authors	Year	Country	Sex	Age	Site	Size	Treatment
1	Misago[27]	2001	Japan	M	54	Nasal ala	2.5cm*2cm	Excison
2	Dasgupta[22]	2001	United Kingdom	M	60	Nasal vestibule	0.5cm	Excison
3	Murphy[28]	2004	United Kingdom	M	71	Nasal ala and nasal septum	–	Excison
4	Pleitz[18]	2014	United States	M	Elder	Nasal dorsum	3×2cm	Excison
5	Braunlich[24]	2019	United States	M	71	Nostril	–	Excison
6	Coquillard[25]	2019	United States	F	56	Nasal ala	0.5cm	Excison
7	Kholaki[19]	2020	United States	M	69	Nasal vestibule	4×6mm	Excison
8	Calvão[23]	2020	Portugal	M	72	Nasal ala	3×3cm	Excison
9	Tavanafar[21]	2022	Iran	F	86	Nasal ala	–	Excison
10	Sukumaran[20]	2024	Malaysia	M	80	Nasal dorsum	7×7 cm	Non-invasive conservative treatment
11	Bae[26]	2025	Korea	F	91	Nasal ala	2cm	Excison

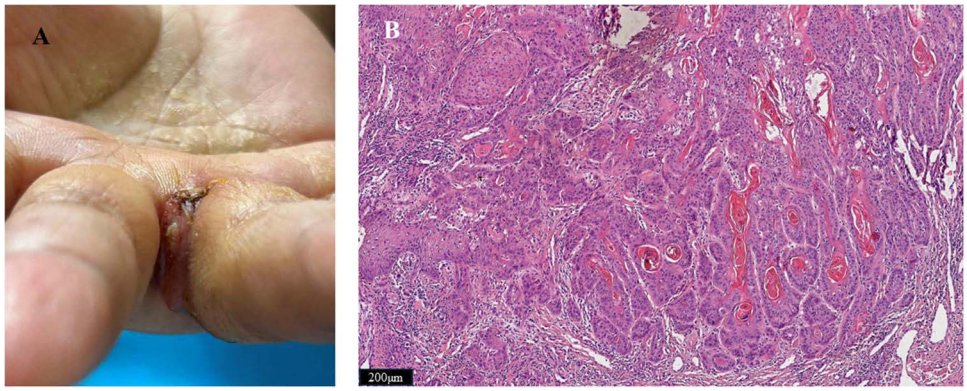

Figure 1 (**A**) Photograph showing mass of the right hand. (**B**) Hematoxylin and eosin-stained section showing well-differentiated squamous cell carcinoma (original magnification x 10).

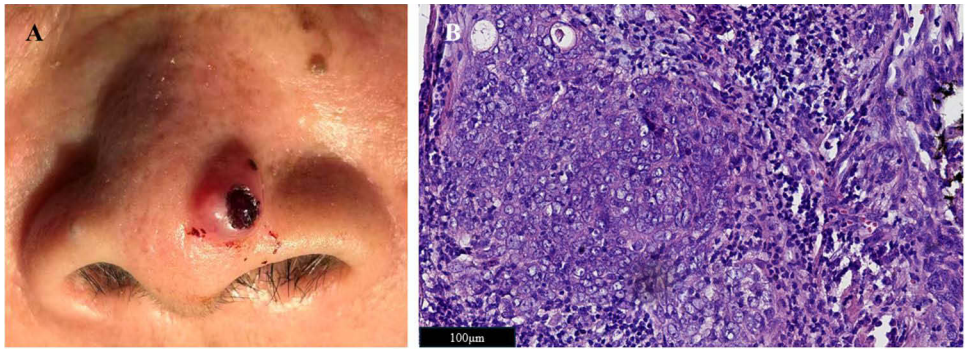

Figure 2 (**A**) Photograph showing mass of the nose. (**B**) Hematoxylin and eosin-stained section showing sebaceous carcinoma (original magnification x 40).

the right-hand mass. Intraoperative frozen section examination of the right-hand mass indicated negative surgical margins (including the surrounding and basal edges), and postoperative pathological examination confirmed it as well-differentiated SCC. The patient refused intraoperative frozen section examination for the nasal mass. Postoperatively, pathological examination and immunohistochemical testing were performed, with the immunohistochemical results showing CKpan (+), EMA (+), P40 (+), P63 (+), AR (+), BER-EP4 (-), S-100 (-), and Ki-67 (+, approximately 30%) (Figure 3). Combining the morphological features of hematoxylin-eosin (HE)-stained sections and the immunohistochemical staining results, the final diagnosis was confirmed as SC.

Given the high recurrence risk of SC, oncology consultation recommended adjuvant radiotherapy (RT) for the patient 4 weeks after surgical resection of the nasal malignant tumor. The patient recovered uneventfully after the operation with no complications. During subsequent follow-up, the patient's family declined the recommended adjuvant radiotherapy due to her advanced age. To date, the patient has been followed up for more than 5 months postoperatively, with no recurrence of the skin tumors at either site, and continues to undergo regular follow-up.

Discussion

CSCC is the second most common nonmelanoma skin cancer with increasing incidence.[1,2] SC is a rare, highly aggressive cutaneous appendage malignancy, mostly occurring in the head and neck (predominantly ocular) and extremely rarely in the nose.[9,10,15] A literature review revealed only 3 previously reported collision tumors of SC and SCC, with no reports of concurrent SC and cSCC in different sites of the same patient.[29–31] Combined with a literature review, we report an 84-year-old female with 5-year progressive ulcerative lesions on the right ring finger and nasal tip.

The concurrent occurrence of nasal SC and cSCC of the right hand in an elderly female is extremely rare clinically, and its pathogenesis is presumed to be closely related to systemic and local risk factors. The right-hand cSCC is

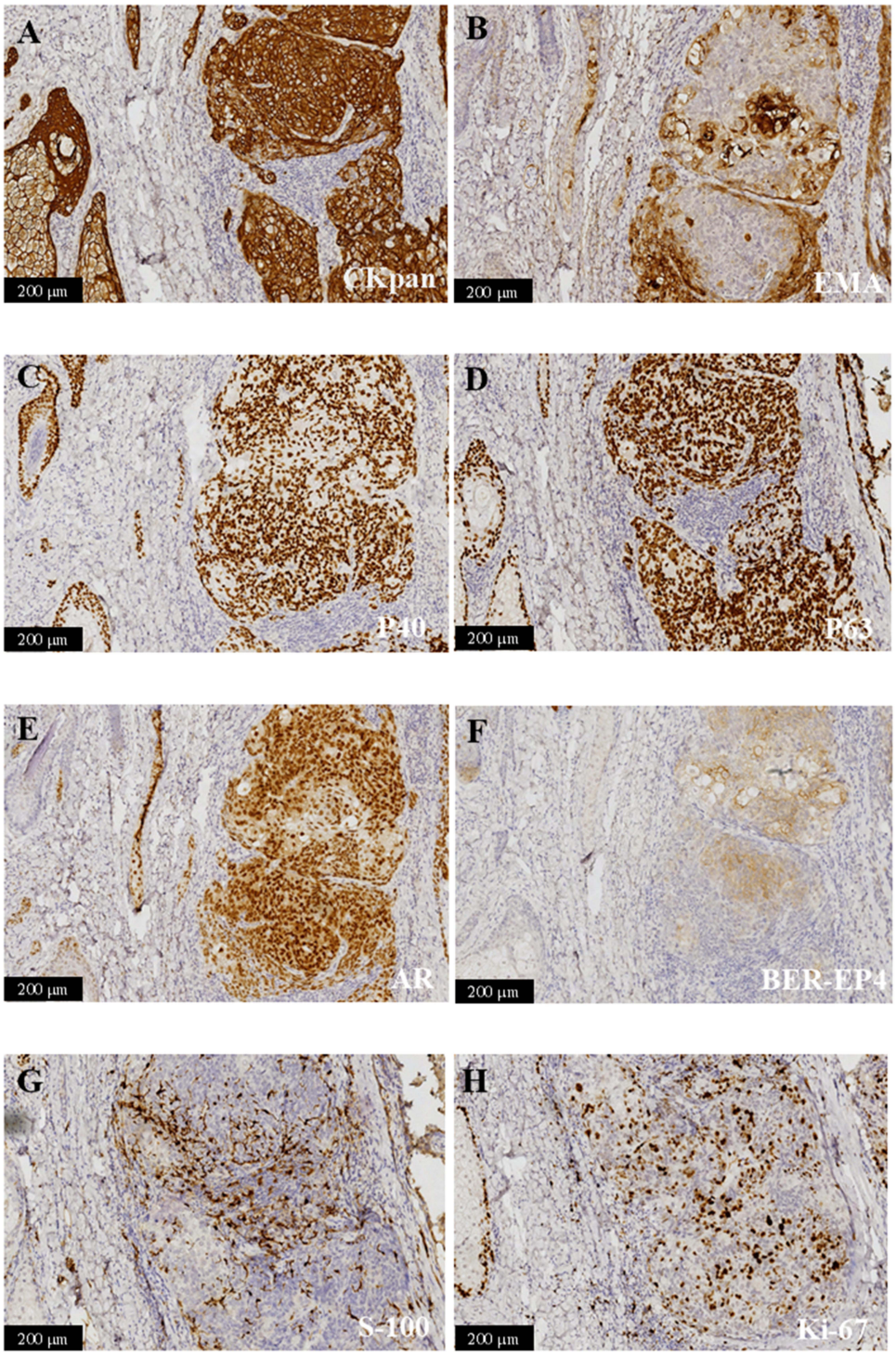

Figure 3 (**A**) The neoplastic cells are positive for CKpan (x 20); (**B**) Neoplastic cells are positive for EMA (x 20); (**C**) Neoplastic cells are positive for P40 (x 20); (**D**) Neoplastic cells are positive for P63 (x 20); (**E**) Neoplastic cells are positive for AR (x 20); (**F**) Neoplastic cells are negative for BER-EP4 (x 20); (**G**) Neoplastic cells are negative for S-100 (x 20); (**H**) Neoplastic cells are partially positive for Ki-67 (×25).

considered to be associated with her advanced age and local chronic irritation caused by long-term ring wearing, which is consistent with the conclusion in previous studies that "advanced age and local chronic inflammation are risk factors for cSCC".[3–7] The nasal SC is presumed to be associated with ultraviolet radiation and advanced age, both of which are major risk factors for SC.[11–14] As a systemic risk factor, advanced age (84 years) can induce natural skin aging and

impaired immune function of the body, leading to senescent cells evading immune surveillance and abnormally accumulating in tissues to form a tumor-promoting microenvironment, thereby significantly increasing the susceptibility to cutaneous carcinogenesis.[32] Meanwhile, photoaging induced by excessive ultraviolet exposure is also an important predisposing factor for the development of cutaneous malignant tumors.[33] Integrating clinical, pathological, and immunohistochemical findings, both tumors are confirmed as independent primary malignant neoplasms (not metastatic lesions), supporting the diagnosis of multicentric primary cutaneous malignancies. Their pathogenesis is presumably associated with the synergistic interaction between systemic age-related factors and local site-specific stimuli.

Clinically, cSCC, SC, and BCC often require differentiation from one another. The clinical diagnosis of cutaneous tumors is challenging. In most cases, histopathological examination can assist in confirming the diagnosis. When histopathological findings are inconclusive, immunohistochemical (IHC) testing is typically used to validate the diagnosis. EMA, adipophilin, androgen receptor, BerEP4, and CK7 staining are recommended to differentiate SCC, SC, and BCC.[34,35] In the present case, preoperative biopsy initially suggested a sebaceous adenoma; however, a definitive diagnosis of SC was established only after comprehensive histological and IHC evaluations following complete surgical resection. This scenario exemplifies a common clinical conundrum: the overlapping clinicopathological features between SC and benign sebaceous tumors often render differentiation based on clinical presentation and routine pathological assessment unreliable. Recent molecular research has identified several distinguishing features between SC and sebaceous adenomas, including reduced cholesterol biosynthesis, elevated TP53 mutation frequencies, specific copy number gains (predominantly on chromosomes 6, 8q, and/or 18), and a high tumor mutation burden (TMB > 10 mutations per megabase).[36] These molecular alterations show promise as potential biomarkers for distinguishing malignant from benign sebaceous neoplasms.

Regarding treatment choices, the selection of therapeutic strategies for both tumors in this case was based on current clinical guidelines and the patient's individual condition. For SC, whether PSC or ESC, complete micrographically controlled surgery (MCS) of the primary tumor remains the standard of care, with adjuvant or therapeutic radiotherapy as a supplementary option to reduce recurrence risk.[37] Currently, there is no established standard treatment protocol for advanced, inoperable, or metastatic SC, and options such as local treatments and systemic therapies (including chemotherapy and immunotherapy) may be taken into account.[37]

For cSCC, surgical treatment is the first priority; for low-risk lesions where surgery is not feasible or advisable, non-surgical modalities such as radiotherapy, photodynamic therapy, and cryosurgery can be adopted.[38] For patients with advanced cSCC who are not amenable to curative surgery or radiation therapy, immune checkpoint inhibitors have recently been approved for clinical use.[39,40] Both lesions in this patient were surgically excised. However, postoperative pathological examination of the nasal lesion revealed residual tumor at the basal margin. After consultation with the Department of Oncology, adjuvant radiotherapy was recommended for the nasal SC to reduce the risk of local recurrence, but this was declined by the patient's family owing to the patient's advanced age.

In terms of prognosis, the 5-month postoperative follow-up showed no recurrence or metastasis in this patient. For SC patients, post-treatment clinical follow-up should be performed every six months, with a minimum duration of three years.[9] For cSCC patients, regular follow-up is mandatory, with intervals based on risk stratification: once yearly for low-risk cases, every 3–6 months for the initial 2 years in high-risk cases, and every 3 months for the first 2 years in advanced patients.[41] This patient will continue to undergo regular follow-up to monitor for long-term recurrence and metastasis.

Despite the clinical insights provided by this case, several gaps remain in the management of concurrent SC and cSCC, highlighting the need for future research directions to establish standardized treatment guidelines. First, large-scale retrospective or prospective studies are needed to collect more clinical data on multicentric primary cutaneous malignancies involving SC and cSCC, to clarify their epidemiological characteristics, pathogenesis, and prognostic factors. Second, further research on molecular biomarkers (such as TP53 mutations and specific copy number gains) is required to validate their clinical value in the differential diagnosis of SC and benign sebaceous tumors, and to explore their potential role in guiding treatment selection and prognosis prediction. Third, standardized treatment protocols for advanced, inoperable, or metastatic SC need to be established through multi-center clinical trials, evaluating the efficacy and safety of systemic therapies such as immunotherapy and chemotherapy. Fourth, studies focusing on the optimal follow-up strategies for elderly patients with multiple primary cutaneous malignancies are necessary, considering their poor tolerance to adjuvant therapy and complex comorbidities. Finally, research on the prevention of such malignancies should be strengthened, especially for high-risk

populations (such as the elderly and those with long-term local irritation or excessive ultraviolet exposure), to reduce the incidence of multicentric primary cutaneous malignancies. These research efforts will help fill the current clinical gaps and provide evidence for establishing standardized diagnosis and treatment guidelines, ultimately improving the clinical management and prognosis of patients with such rare diseases.

Conclusion

This article reports a rare case of concurrent nasal SC and hand SCC. Both tumors were resected surgically. This case provides several important clinical insights. First, local chronic irritation is a modifiable risk factor for cSCC, and avoiding long-term mechanical irritation (such as improper jewelry wearing) may reduce the risk of skin cancer in susceptible populations. Second, elderly patients with chronic skin lesions require comprehensive systemic screening to avoid missed diagnosis of multiple primary cancers, especially asymptomatic lesions. Third, immunohistochemical staining is indispensable for the differential diagnosis of SC from other cutaneous malignant tumors, and accurate histological typing directly guides treatment decisions.

In view of the clinical value of this case and the existing gaps in the management of concurrent SC and cSCC, several forward-looking research implications should be emphasized. Further studies should focus on collecting more cases of concurrent SC and cSCC through multi-center collaboration, to clarify the epidemiological characteristics and potential pathogenic mechanisms of such multicentric primary cutaneous malignancies. Further studies should also verify the effectiveness of targeted interventions for modifiable risk factors (such as avoiding long-term local irritation) in reducing the incidence of cSCC in high-risk populations, so as to formulate more targeted prevention strategies. In addition, further studies should explore the optimization of preoperative diagnostic protocols for SC, especially the clinical application of molecular biomarkers (such as TP53 mutations), to improve the accuracy of preoperative differentiation between SC and benign sebaceous tumors and reduce misdiagnosis. Finally, further studies should focus on establishing standardized treatment and follow-up guidelines for elderly patients with multiple primary cutaneous malignancies, combining their tolerance to adjuvant therapy and comorbidity status, to achieve individualized management and improve long-term prognosis. These research efforts will help translate the clinical insights from this case into practical clinical guidance, and provide more evidence for the diagnosis, treatment and prevention of such rare diseases.

Ethics Approval and Consent for Publication

The case report adhered to the ethical principles outlined in the Declaration of Helsinki. A written informed consent was obtained from the patient's family for publication of this study and any accompanying image. Institutional ethical approval was not required to publish this case details.

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Disclosure

The author reports no potential conflicts of interest in this work.

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