CASE REPORT

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A Case with Basal and Squamous Cell Carcinoma Collision Tumor Resulting in Nose and Eye Organ Function Loss

Burcu DOĞAN[a], Berkant Kemal ÇİÇEK[b], Hatice TURHAN[b], Elçin KADAN[c]

[a]University of Health Sciences Gülhane Faculty of Medicine, Department of Family Medicine, Ankara, Türkiye
[b]Gülhane Training and Research Hospital, Clinic of Home Health Services, Ankara, Türkiye
[c]Gülhane Training and Research Hospital, Clinic of Pathology, Ankara, Türkiye

ABSTRACT Collision tumors (CTs) are rare occurrences where different types of tumors coexist. Here, we present the case of a 90-year-old male patient diagnosed with a CT consisting of basal cell carcinoma and squamous cell carcinoma (SCC). The patient had no risk factors such as smoking and alcohol use, immunosuppressive disease, human papillomavirus or human immunodeficiency virus infection, solid organ transplantation, burn in the lesion area, arsenic exposure, or radiation exposure. However, exposure to sunlight (due to his outdoor occupation) and genetic predisposition (siblings diagnosed with unspecified types of skin cancer) were considered potential risk factors. This report is presented as a case of a basal and SCC CT causing extensive involvement in the facial region, resulting in loss of smell and vision.

Keywords: Carcinoma; skin neoplasms; tumor

Collision tumors (CT) can present as benign-benign, benign-malignant, or malignant-malignant. Malignant-benign associations are most common; malignant-malignant ones are rarest. The most prevalent association involves basal cell carcinoma (BCC) and benign tumors. Malignant associations often involve BCC with melanoma.[1,2] Squamous cell carcinoma (SCC) with other malignancies is extremely rare.[3]

In predominantly malignant CTs, tumors are generally larger, and patients tend to be older.[4] It was reported that patients with CTs containing BCC combinations were predominantly male, elderly, and the lesions were often located in the head and neck region due to cumulative ultraviolet radiation (UVR) exposure.[5]

BCC, the most common skin cancer, mostly develops in the head and neck.[6] BCC causes local invasion and rarely metastasizes. Risk factors for developing BCC include male sex, higher number of moles, Fitzpatrick Type 1 and 2 skin types, intermittent UVR exposure, tanning bed use, solid organ transplant, psoralen and ultraviolet A.[7] SCC is the second most common skin cancer. SCC risk factors include older age, male sex, fair skin, immunosuppression, actinic keratosis, solid organ transplant, human papilloma virus and chronic sun exposure.[8]

Our review found six cases of BCC-SCC CTs. Our case stands out due to its larger tumor size.[9-14]

CASE REPORT

A 90-year-old male patient presented with a massive CT measuring approximately 15×11 cm on his face, covering his nose and eyes. The patient did not have risk factors such as smoking and alcohol use, im-

Correspondence: Burcu DOĞAN
University of Health Sciences Gülhane Faculty of Medicine, Department of Family Medicine, Ankara, Türkiye
E-mail: burcutdogan@hotmail.com

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munosuppression, human papillomavirus (HPV) or human immunodeficiency virus infection, organ transplantation, burns in the lesion area, or radiation exposure. The patient had 7 siblings, 3 boys and 4 girls. All three brothers had skin cancer, but the histopathology of their tumors was unknown. The patient was referred for genetic testing but could not have the test. As a truck driver, he had prolonged sun exposure. His history suggested that genetic predisposition and prolonged sun exposure were potential risk factors.

The patient with a raised lesion measuring 0.5 cm×0.5 cm on the tip of the nose presented to the dermatology clinic on March 19, 2021. On the same day, the lesion was excised by plastic surgery. Pathology showed an SCC-BCC CT (Figure 1: pathology image from March 19, 2021) (first operation). The histopathologic follow-up revealed a fragile and fragmented cross-sectional face of the sample. In hematoxylin and eosin stained sections, two independent but adjacent tumor components were observed side by side. The predominant tumor component was SCC, characterized by poorly differentiated areas. The tumor was persistent at the deep surgical margin, leading to its classification as a CT.

1.5 months later, a recurrent lesion measuring approximately 1.5×1.5 cm appeared on the left wing of the nose, partially obstructing the left nasal passage. Plastic surgery excised the lesion on January 10, 2022. Pathology results confirmed recurrent SCC+BCC CT (second operation). The second tumor was rich in areas of BCC.

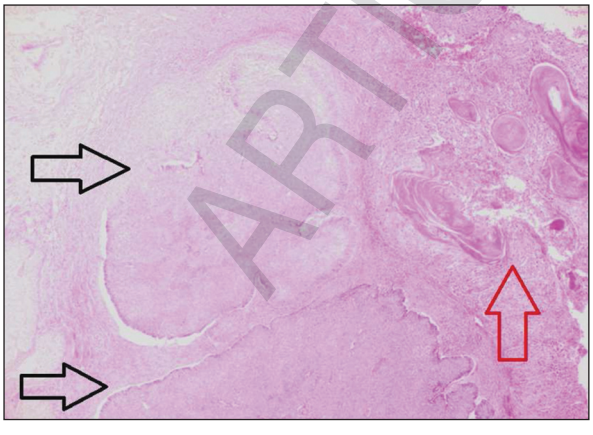

FIGURE 1: Biopsy specimen from March 19, 2021, H&E, x4, The tumor consists of both squamous cell carcinoma and basal cell carcinoma. Foci of squamous cell carcinoma (vertical arrow) and basal cell carcinoma (horizontal arrow) located adjacent to each other. The squamous carcinoma component shows keratin pearls and full-thickness atypia, while the basal cell carcinoma component shows peripheral palisading and retraction.

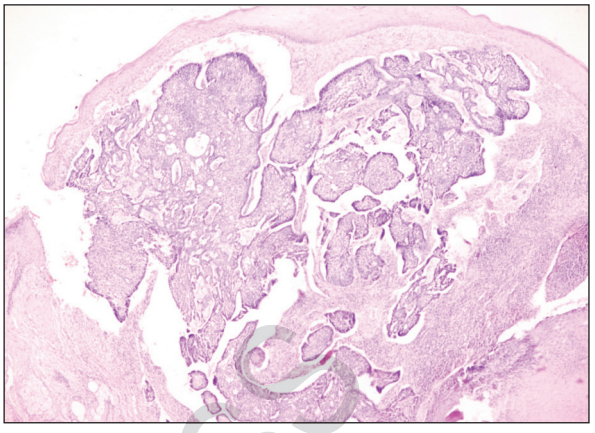

FIGURE 2: Biopsy specimen from January 10, 2022. Second biopsy specimen, H&E, x4, The predominant component of the second tumor was basal cell carcinoma.

FIGURE 3: The patient's photo.

2 months later, another lesion recurred at the tip of the nose. The lesion was resected again on March 2, 2022. The pathology result reported a recurrent CT consisting of SCC and BCC (third operation).

The tumor recurred again, and a biopsy was performed on June 28, 2022. Due to the recurrence ob-

served in the pathology results, the patient, who was advised to undergo surgery, declined the recommended procedure. Upon reapplication on February 7, 2023, the patient was evaluated by a council consisting of plastic and reconstructive surgery, otorhinolaryngology, ophthalmology, radiation oncology, medical oncology, and radiology. Tumoral involvement was observed in the nasal dorsum, maxilla anterior wall, lacrimal ducts, and left inner canthal region. Wide total excision and free flap repair were advised. Postoperative chemotherapy and radiotherapy were planned. It was explained that anesthesia could be risky, there could be continued complaints of tearing after surgery, and the patient might not be able to breathe through the nose. It was further explained that if the patient refused the operation, palliative chemotherapy and radiotherapy could be considered. The patient and their relatives declined the proposed operation due to the risk of vision loss. He refused chemo and radiotherapy, and the nasal mass grew.

The maxillofacial computer tomography image taken on January 29, 2023 is labeled as Figure 4. With the written and verbal consent of the patient and his son, photographs were taken. The photograph of the patient's final condition is shown.

FIGURE 4: The maxillofacial collision tumor image taken on January 29, 2023.

After the surgeries, the tumor margins could not be cleared. The patient underwent surgery three times, and a fourth operation was planned, but the patient refused further treatment. There were no signs of distant or lymphatic metastasis of the tumor. The patient experienced loss of smell and vision, requiring home care since August 2023. During our examinations and wound care services, it was observed that the large tumoral mass on his face had become exudative. Culture results showed the growth of Pseudomonas aeruginosa and Proteus hauseri, and appropriate treatment was administered. An HPV polymerase chain reaction test was performed, yielding a negative result. On January 3, 2024, while at home, the patient passed away due to sudden cardiac arrest.

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

DISCUSSION

CTs involving BCC and SCC are rare. BCC-SCC CTs mostly occur in the head and neck due to UV exposure.[5]

These rare tumors can be aggressive and invasive. For instance, Li et al. reported a case where a BCC-SCC CT metastasized to distant organs, an unusual outcome for BCC.[9] This highlights BCC-SCC CTs' metastatic potential. That tumor, measuring 18×14×9 cm, was comparable to ours.

In comparison, other reported cases of BCC-SCC CTs demonstrate significant variability in tumor size and clinical outcomes. For example, one case involved a 71-year-old woman with a lesion measuring 2.7×2.6 cm on her palm, which responded positively to treatment.[15] Another case described a tumor measuring 1.6×1.4 cm, successfully treated with surgical excision.[11] Additionally, Hallett et al. reported a CT measuring 1.5×1.5 mm, further illustrating the spectrum of tumor sizes documented in the literature.[12] In contrast, the mass in our patient is exceptionally large compared to these reported cases.

CTs are not only rare but also infrequently involve malignant-malignant associations. Among such associations, BCC-SCC combinations represent an exceptionally rare subset, as exemplified by our case.[1]

Despite undergoing three surgical resections, the tumor in our patient recurred each time and continued to increase in size, indicating aggressive local invasion. Potential factors contributing to these recurrences include unclear surgical margins, local microinvasion, or other unidentified mechanisms. This progression led to severe complications, including loss of vision and smell, further highlighting the case's severity.

The advanced age of the patient, combined with the recurrent and locally invasive nature of the tumor, likely contributed to the poor prognosis. The involvement of critical facial structures, including the nose and eyes, resulted in the loss of key functions, such as smell and vision. The persistence of tumor at the surgical margins after each resection emphasizes its aggressive behavior, which appears more invasive than typical cases of isolated BCC or SCC.

Given the high recurrence potential of BCC-SCC CTs, particularly in older patients, a multidisciplinary approach to treatment and close postoperative follow-up are essential to improving clinical outcomes.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Burcu Doğan;* ***Design:*** *Burcu Doğan;* ***Control/Supervision:*** *Burcu Doğan, Hatice Turhan;* ***Data Collection and/or Processing:*** *Burcu Doğan, Elçin Kadan;* ***Analysis and/or Interpretation:*** *Burcu Doğan, Hatice Turhan, Berkant Kemal Çiçek;* ***Literature Review:*** *Burcu Doğan, Elçin Kadan;* ***Writing the Article:*** *Burcu Doğan, Berkant Kemal Çiçek;* ***Critical Review:*** *Burcu Doğan, Berkant Kemal Çiçek;* ***References and Fundings:*** *Burcu Doğan, Berkant Kemal Çiçek;* ***Materials:*** *Burcu Doğan, Hatice Turhan, Berkant Kemal Çiçek.*

REFERENCES

1. Boyd AS, Rapini RP. Cutaneous collision tumors. An analysis of 69 cases and review of the literature. Am J Dermatopathol. 1994;16(3):253-7. PMID: 7943631.
2. Cohen PR, Calame A. multiple skin neoplasms at one site (MUSK IN A NEST): a comprehensive review of basal cell carcinoma and benign or malignant "collision" tumors at the same cutaneous location. Clin Cosmet Investig Dermatol. 2020;13:731-41. PMID: 33061513; PMCID: PMC7532883.
3. Piérard GE, Fazaa B, Henry F, Kamoun MR, Piérard-Franchimont C. Collision of primary malignant neoplasms on the skin: the connection between malignant melanoma and basal cell carcinoma. Dermatology. 1997;194(4):378-9. PMID: 9252769.
4. Fikrle T, Divisova B, Pizinger K. Clinical-dermoscopic-histopathological correlations in collision skin tumours. Indian J Dermatol. 2021;66(6):577-82. PMID: 35283495; PMCID: PMC8906304.
5. Blum A, Siggs G, Marghoob AA, Kreusch J, Cabo H, Campos-do-Carmo G, et al. Collision skin lesions-results of a multicenter study of the International Dermoscopy Society (IDS). Dermatol Pract Concept. 2017;7(4):51-62. PMID: 29230351; PMCID: PMC5720595.
6. Cives M, Mannavola F, Lospalluti L, Sergi MC, Cazzato G, Filoni E, et al. Non-melanoma skin cancers: biological and clinical features. Int J Mol Sci. 2020;21(15):5394. PMID: 32751327; PMCID: PMC7432795.
7. Heath MS, Bar A. Basal cell carcinoma. Dermatol Clin. 2023;41(1):13-21. PMID: 36410973.
8. Corchado-Cobos R, García-Sancha N, González-Sarmiento R, Pérez-Losada J, Cañueto J. Cutaneous squamous cell carcinoma: from biology to therapy. Int J Mol Sci. 2020;21(8):2956. PMID: 32331425; PMCID: PMC7216042.
9. Li R, Lee G, Huang M, El-Sherief A. Rare basal cell metastasis of a basal-squamous skin collision tumour to the lung and axillary lymph node. BMJ Case Rep. 2019;12(10):e231487. PMID: 31585957; PMCID: PMC6782041.
10. Braunstein J, Holz FG, Löffler KU. Kollisionstumor [Collision tumor]. Ophthalmologe. 2018;115(1):71-3. German. PMID: 28168439.
11. Lee IS, Hong IP, Lee HK. Basal cell carcinoma and squamous cell carcinoma in a single tumor in the anterior auricular area. Arch Craniofac Surg. 2020;21(4):257-60. PMID: 32867417; PMCID: PMC7463126.
12. Hallett GE, Holden AM, Mitchard J, Colbert SD. Basal-squamous cell carcinoma collision tumour in the facial region. Advances in Oral and Maxillofacial Surgery. 2021;4:100181. doi: 10.1016/j.adoms.2021.100181
13. Erdoğan Düzcü S, Astarcı HM, Çukur S, Aksel F. Keratoacantoma like squamous cell carcinoma and basal cell carcinoma, collision tumor in the skin. Medeniyet Medical Journal. 2019;34(1):104-10. doi:10.5222/MMJ.2019.43402
14. Ayva SK, Tepeoglu M, Gunduz O, Yazici I, Bozdogan O. A Case of two synchronous cutaneous collision tumors. Gazi Medical Journal. 2017;28(2):127-8. http://dx.doi.org/10.12996/gmj.2017.35
15. Lam C, Fuller C, Flamm A, Billingsley EM. Collision tumor of basal and squamous cell carcinoma of the palm. J Clin Aesthet Dermatol. 2019;12(4):28-30. PMID: 31119007; PMCID: PMC6508484.