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Case Studies

An Unusual Morphological Presentation of Cutaneous Squamous Cell Carcinoma Mimicking Microcystic Adnexal Carcinoma: A Diagnostic Pitfall

Yasmine L. Ibrahim[a] Stéphanie Lambert[c] Dmitry V. Kazakov[d] Gürkan Kaya[b]

[a]Department of Clinical Pathology, University Hospital of Geneva, Geneva, Switzerland; [b]Department of Dermatology and Venereology, University Hospital of Geneva, Geneva, Switzerland; [c]Department of Otorhinolaryngology, University Hospital of Geneva, Geneva, Switzerland; [d]Department of Pathology, Medical Faculty Hospital, Charles University, Pilsen, Czech Republic

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Abstract
Cutaneous squamous cell carcinoma (SCC) exhibiting microcystic adnexal carcinoma-like differentiation is an extremely rare tumor that shows both squamous and ductal differentiation. This tumor is often misdiagnosed clinically and histologically and is confused with other malignant and benign cutaneous neoplasms. It usually occurs in middle-aged to older adults. Here, we report a case of SCC with microcystic adnexal carcinoma-like differentiation on the left chin of a 71-year-old male. The histopathological examination revealed a nodular tumor infiltrating the dermis, subcutaneous fat, and striated muscle tissue, consisting of both prominent atypical squamous differentiation and foci of duct-like structures.

Introduction

Cutaneous squamous cell carcinoma (SCC) is a malignant neoplasm originating in the epidermis in which the neoplastic cells show variable squamous differentiation [1]. Most cases arise on the sun-exposed skin of elderly people. Microcystic adnexal carcinoma (MAC) is a distinctive malignant appendageal tumor [2]. This neoplasm is locally aggressive and

Dr. Yasmine Lucile Ibrahim
Department of Clinical Pathology, University Hospital of Geneva
Rue Gabrielle-Perret-Gentil, 4
CH-1205 Geneva (Switzerland)
E-Mail yasminelucile.ibrahim@hcuge.ch

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deeply infiltrating, mostly occurring on the face. Rarely, low-grade SCC shows unusual histological aspects including focal (pseudo)ductal differentiation, thus resembling MAC and causing a diagnostic challenge. Here, we present a rare case of SCC located on the chin mimicking MAC.

Case Report

A 71-year-old male was admitted to the Department of Otorhinolaryngology, Head and Neck Surgery, University Hospital of Geneva, Geneva, Switzerland, with a nodular lesion that was soft in consistency and located on the left paramedian part of the chin. It had been present for over 25 years and showed recent growth (6 months), producing purulent material after being incised 1 month before. Clinical examination showed a cutaneous lesion measuring 3 x 2 cm, and the clinical differential diagnosis was infected epidermoid cyst and subcutaneous neoplasm.

The patient's previous medical and surgical history included a cholecystectomy, and an upper gastrointestinal bleeding developed on a gastric ulcer. Laboratory examination was unremarkable. An ultrasound investigation revealed a dermal and subcutaneous, mostly well-encapsulated cystic lesion measuring 2.3 cm in its greatest dimension and 1.07 cm in thickness. The lesion showed an irregular, deep border lying in close proximity with the aponeurosis.

An incisional biopsy of the lesion was performed. Histologically, the specimen showed an atypical squamous cell proliferation arising from the epidermis and extending to the dermis, consistent with an invasive, moderately to well-differentiated SCC.

A facial magnetic resonance imaging and a neck computed tomography scan were performed to assess any eventual tumoral extension in the maxillary bone and locoregional lymph nodes. The radiological analysis revealed a suspected, poorly circumscribed, ulcerated, cutaneous, and subcutaneous lesion of the chin invading the perimaxillary striated muscle tissue without any osseous involvement. Two bilateral parotid lesions consistent with Warthin tumors were also radiologically detected.

Seventeen days after biopsy, a radical resection of the tumor followed by local reconstruction with a rhomboid graft was performed. Histologically, the excision material revealed an ulcerated squamous cell tumor consisting of some clear cells and microcystic structures filled with eosinophilic keratinous material. There were also micronodules showing some prominent ductal differentiation resembling MAC, associated with foci of calcification. The tumor invaded the whole dermis, subcutaneous fat, and striated muscle tissue in the form of atypical squamous cells, micronodules, and cords (Fig. 1). The tumoral depth was evaluated to be 1.7 cm, and the resection margins were free of tumor. There was only 1 image of perineural tumoral invasion.

The tumor cells showed diffuse immunostaining for pancytokeratins and p63. The focal ductal structures were highlighted by the expression of epithelial membrane antigen and carcinoembryogenic antigen (Fig.1). The tumor cells were negative for cytokeratin 7, cytokeratin 20, Ber-EP4 (Ep-CAM), and androgen receptor.

This histological aspect was highly reminiscent of cutaneous MAC but with areas with pure squamous differentiation consistent with an invasive SCC mimicking MAC.

There was no further treatment. A clinical and ultrasonographic surveillance were performed every 3 months. The patient was followed up at 3 and 6 months postoperatively and showed no suspected cervical lymphadenopathy. The parotid lesions remained unaltered. A squamous papilloma of the right anterior oropharyngeal pillar has been detected and biopsied at 6 months during the follow-up.

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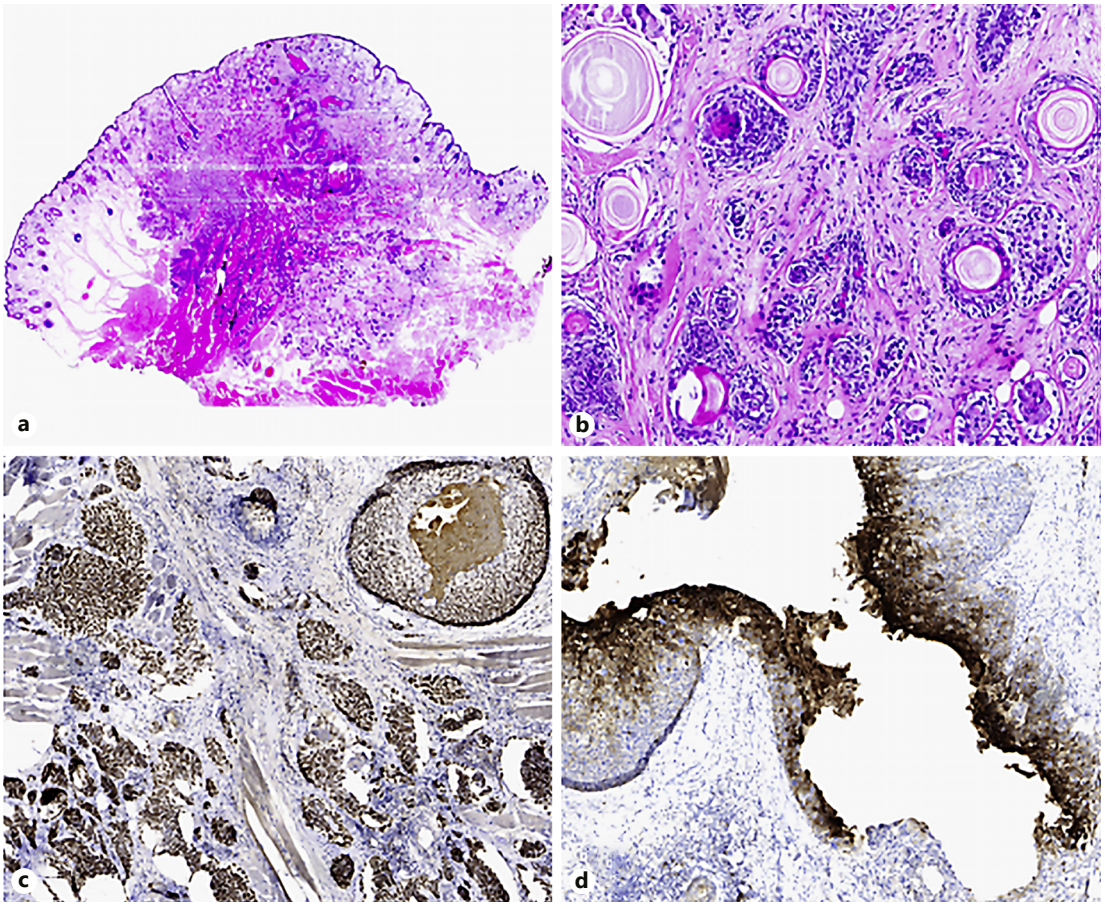

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Fig. 1. a Photomicrographs of the squamous cell carcinoma at low magnification, showing a squamous cell tumor arising from the epidermis and extending to the dermis, subcutaneous fat, and striated muscle tissue. H&E. Original magnification, ×1. **b** High magnification showing squamous tumor cells with some clear cells forming microcystic structures and micronodules with ductal differentiation. H&E. Original magnification, ×20. **c** p63 immunostaining confirms the squamous nature of the tumor cells. Original magnification, ×10. **d** Epithelial membrane antigen immunostaining highlights the ductal differentiation. Original magnification, ×10.

Discussion

Both cutaneous SCC and MAC are infiltrating tumors that can sometimes be difficult to be distinguished one from another clinically and histologically. MAC occurs predominantly on the head and neck, in the centrofacial region, and mainly in the white population [3]. It is a slowly growing, indurated nodule, plaque, or partially cystic lesion that has often been present for many years. Radiation therapy is a possible etiologic factor [3–5]. This tumor is usually asymptomatic without ulceration and is often unnoticed. Sometimes, symptoms such as numbness, burning, paresthesia, and tenderness appear, usually caused by the high frequency of perineural invasion [3, 4]. MAC is a locally aggressive tumor that deeply invades the adjacent tissue and rarely metastasizes [6, 7]. Histologically, MAC is composed of keratin-filled cysts, nests, and cords of bland basaloid and/or squamoid cells with the formation of ductal structures within a desmoplastic stroma. These ducts and nests can show tail-like appearances [3, 6]. There is no connection to the epidermis. In general, tumor aggregates are

smaller as the tumor invades more deeply. Typically, there are no cytologic atypia, mitoses, or tumoral necrosis, but infiltrative growth and perineural invasion are a feature [6, 8].

The histologic differential diagnosis includes malignant tumors such as SCC with MAC-like differentiation, squamoid eccrine ductal carcinoma, morpheiform basal cell carcinoma, eccrine porocarcinoma with squamous differentiation, and other benign adnexal tumors such as trichoadenoma, desmoplastic trichoepithelioma, and syringoma [2, 3]. Misdiagnosis can easily occur, especially as a result of an inadequately small biopsy specimen that does not involve the deeper portion of the tumor.

Rarely, cutaneous SCC has an unusual morphological presentation with some focal MAC-like differentiation as in our case. Histologically, it is characterized by an infiltrative pattern of atypical cells forming cords, minute nests, micronodules, and foci of duct-like structures with a prominent desmoplastic stromal reaction resembling MAC. Ductal differentiation is highlighted by epithelial membrane antigen and carcinoembryogenic antigen immunostaining. It is important to know that, despite the invasive nature of MAC, the tumor cells are cytologically bland with rare to absent mitoses and a lack of cell necrosis, whereas the tumor cells in cutaneous SCC show moderate to high-grade cytologic atypia with the presence of variable mitotic activity and with or without tumoral necrosis. Moreover, a proper sampling or serial sections will often reveal an in situ component in SCC.

Another rare tumor known as squamoid eccrine ductal carcinoma has been described exhibiting both squamous and adnexal ductal differentiation [9, 10]. The cell origin of this tumor is controversial as it may represent a SCC arising from the eccrine ducts or a subtype of eccrine carcinoma with squamous differentiation, or it could be considered a biphenotypic carcinoma. It has been classified as a variant of cutaneous SCC and as a type of eccrine carcinoma. It usually occurs in elderly adults, on sun-damaged skin, particularly in the head and neck region. Histologically, squamoid eccrine ductal carcinoma is a poorly demarcated tumor showing a biphasic appearance and an infiltrative growth in the dermis and sometimes subcutaneous tissue. Superficially, the tumor has the same aspect as a well-differentiated SCC with epidermal connection and eventually a background of SCC in situ or actinic keratosis. In the deeper portion, there are cords and strands with sweat duct differentiation in a desmoplastic stroma. Cytologic atypia is moderate to severe. Although morphologically our tumor resembled squamoid eccrine ductal carcinoma, the presence of multiple keratin cysts suggested a SCC with MAC-like differentiation.

Cutaneous SCC with MAC-like features is an unusual cutaneous neoplasm, which should be considered in the differential diagnosis of any MAC-like tumors. However, to make the correct diagnosis, it is important to demonstrate its biphasic growth component and especially the presence of highly atypical cells.

Pathologists should be aware of this underrecognized phenomenon showing histologic features of SCC with MAC-like differentiation.

Statement of Ethics

The patient gave his informed consent for this publication.

Disclosure Statement

The authors have no conflicts of interest to disclose.

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