Primary Cutaneous Adenoid Cystic Carcinoma: A Case Report and Literature Review

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GOAL

To understand primary cutaneous adenoid cystic carcinoma (ACC) to better treat patients with the condition

OBJECTIVES

Upon completion of this activity, dermatologists and general practitioners should be able to:

1. Recognize the clinical presentation of primary cutaneous ACC.
2. Discuss the histologic presentation of primary cutaneous ACC.
3. Explain the differential diagnosis of primary cutaneous ACC.

CME Test on page 175.

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Primary cutaneous adenoid cystic carcinoma (ACC) is a rare tumor, with less than 50 cases reported to date. We report an additional case of primary cutaneous ACC arising on the scalp of a 57-year-old woman. The clinical presentation, histologic findings, and subsequent treatment are described. A brief review of the literature also is provided.

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Adenoid cystic carcinoma (ACC) is a well-known tumor of the salivary glands and oral cavity that accounts for 10% to 15% of all head and neck tumors worldwide.[1] In contrast, primary cutaneous ACC is a rare tumor, with less than 50 cases reported to date.[2-10] We report an additional case of primary cutaneous ACC and describe the

clinical presentation, histologic findings, and subsequent treatment. A brief review of the literature also is provided.

Case Report

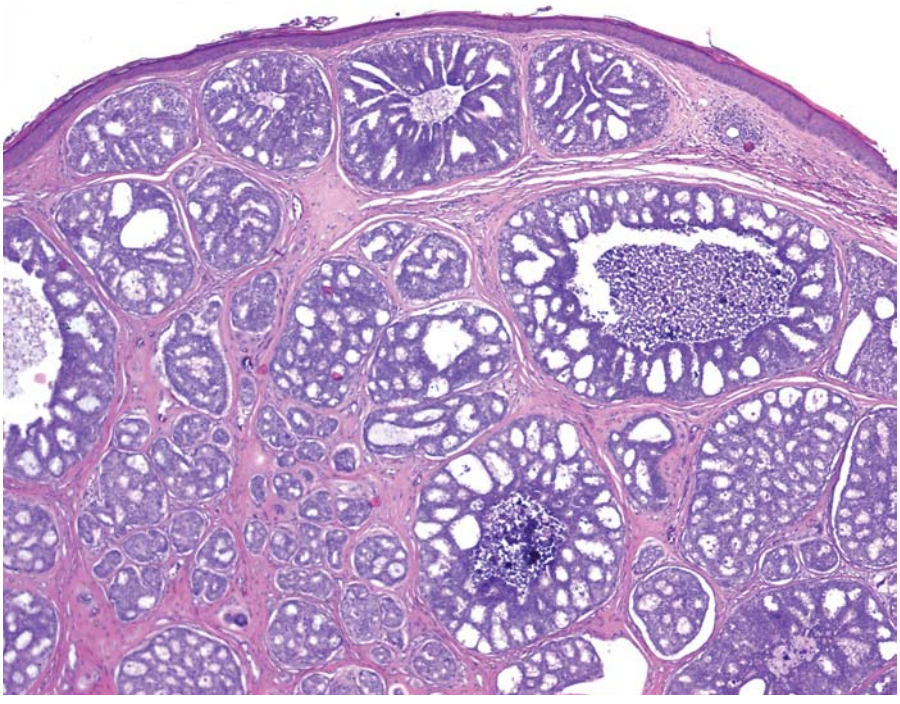
A 57-year-old white woman presented to her dermatologist with a one-year history of an enlarging flesh-colored nodule on the left side of the scalp. The patient's medical history was significant only for bradycardia and hypertension. The results of a biopsy of a tumor specimen revealed a large neoplasm composed of epithelial cells that filled the entire dermis (Figure). There was no connection between the tumor and the epidermis. The tumor cells were arranged in multiple lobules that varied in size and shape and that were separated by fibrous stroma. Some of the lobules showed cystic change and others showed ductal differentiation, imparting an overall cribriform appearance to the tumor. The tumor cells were small and basophilic in nature. Perineural invasion was not present. The findings were characteristic of ACC.

The patient underwent Mohs micrographic surgery for excision of the tumor. Clearance was achieved in 3 stages. The final defect measured 3.0×3.5 cm, extended through the periosteum, and primarily was closed. To rule out an extracutaneous primary site, computed tomography scans were obtained of the head, neck, chest, and abdomen. The scan results were unremarkable. The patient had no symptomatology of her head or neck. Results of an examination by an otolaryngologist revealed no abnormalities of the minor salivary glands, parotid glands, submandibular glands, tongue, oropharyngeal and nasal cavities, or ears. The patient then underwent 33 local radiation treatments to the scalp (total radiation dose of 5940 cGy) to decrease the possibility of recurrence. At 28 months postsurgery, she had no signs of recurrence.

Comment

ACC accounts for about 10% to 15% of head and neck tumors and most frequently occurs in the major and minor salivary glands; other sites that may be involved include the tracheobronchial tree, esophagus, lacrimal gland, ear canal, breast, uterine cervix, Bartholin glands, prostate, mucosal glands of the upper respiratory tract, and skin.[1,4,11] ACC of the head and neck usually is a slow-growing tumor. Local recurrences are frequent; and metastasis, which occurs in 21% to 54% of cases, tends to involve the lung, liver, bone, and brain.[12-14] Cutaneous metastasis from ACC of the head and neck is rare.[15,16]

Primary cutaneous ACC is a rare tumor that was first reported by Boggio in 1975.[2] Primary cutaneous ACC most commonly involves the scalp and presents as a slow-growing nondescript nodule. The local recurrence rate after excision is approximately 50%.[3,17] Nodal metastasis from primary cutaneous ACC is rare.[3,4] To our knowledge,



Multiple cystic lobules of epithelial cells impart an overall cribriform appearance in the histology of adenoid cystic carcinoma (H&E, original magnification ×4).

Immunohistochemistry for Primary Cutaneous Adenoid Cystic Carcinoma and Adenoid Basal Cell Carcinoma*†[17,19]

	Primary Cutaneous Adenoid Cystic Carcinoma	Adenoid Basal Cell Carcinoma
Cytokeratins	+	+
S-100 protein	+	−
Epithelial membrane antigen	+	−
Carcinoembryonic antigen	Variable	−
Amylase	+	−

*+ indicates positive stain; −, negative stain.
†The mucin present in both tumors will stain with periodic acid–Schiff, Alcian blue, and toluidine blue.[10,17]

5 cases of visceral metastasis from primary cutaneous ACC have been reported.[7,8]

Histologically, the tumor is composed of epithelial cells arranged into multiple lobules, many of which show cystic change and therefore impart a cribriform appearance to the tumor. There is no connection between the tumor lobules and the epidermis. The tumor displays an infiltrating pattern that fills the entire dermis and that frequently invades the subcutaneous tissue. Perineural invasion is seen in approximately one half of cases; vascular invasion occurs less commonly.[8,18,19] Basophilic mucinous material is present within the cystic lobules, and the stroma between the lobules is fibrous. The epithelial cells are small and basophilic with scant cytoplasm. Mitotic figures are rare. In addition to the cribriform areas, tubular foci sometimes are found.[15,18]

The main tumor that histologically may mimic primary cutaneous ACC is adenoid basal cell carcinoma. Both tumors are composed of small epithelial cells with minimal cytoplasm that are arranged into multiple cystic lobules, giving rise to an adenoid or cribriform appearance; additionally, both tumors contain abundant mucin. Adenoid basal cell carcinoma differs from primary cutaneous ACC in several ways: the tumor lobules may connect with the epidermis; perineural invasion is rare; peripheral palisading and retraction artifact may be present; and the stroma may be more cellular.[5,19] Immunohistochemical staining may be useful in distinguishing tumors that are difficult to differentiate based on the results of histologic evaluations (Table).[17,19]

The cell of origin for primary cutaneous ACC is not known. Many authors believe that primary cutaneous ACC arises from the eccrine gland or duct; however, primary cutaneous ACC also occurs in the ear canal, which does not contain eccrine glands. Furthermore, ACC can arise in a variety of different organs. Therefore, ACC likely has a different cell of origin in different locations in the body, all of which give rise to tumors with a similar histologic appearance.[5,8]

Treatment recommendations for primary cutaneous ACC consist of either wide local excision or Mohs micrographic surgery.[7-9,17,18] The high rate of perineural spread accounts for the large recurrence rate after local excision with minimal margins or without micrographic control. One group has used Mohs micrographic surgery using a toluidine blue stain (instead of the usual hematoxylin-eosin stain), which metachromatically stains the abundant mucin found within the tumor and may help to better delineate the tumor's margins.[10] Some patients have had adjuvant local radiation therapy to decrease recurrence rates,[7] but some clinicians find radiation to be ineffective.[18,19] Visceral metastases from primary cutaneous ACC either have been treated with chemotherapy or have been monitored radiographically.[7,8]

In summary, primary cutaneous ACC is a rare tumor and is much less common than ACC arising in other sites. Therefore, a diagnosis of primary cutaneous ACC should be considered only after an extracutaneous origin has been ruled out. Because ACC most frequently arises from the salivary glands (and less commonly from other locations in the head and neck or elsewhere in the body), a complete physical examination of the head and neck region, preferably by an otolaryngologist, should be performed. Additional imaging studies may be useful.

Because the risk of local recurrence is high, the authors recommend Mohs micrographic surgery for treatment of this tumor. Additionally, adjuvant radiation treatment may be helpful.

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