Case Presentation

Cystic panfolliculoma of the conchal bowl

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Abstract

Panfolliculomas are rare, benign follicular neoplasms showing differentiation toward all components of the hair follicle. Cystic panfolliculoma (CPF), a histologic variant, is uniquely characterized by epidermal invagination. This lesion is uncommon, with fewer than 25 cases reported in the literature. Clinically and histologically, it can mimic other tumors, including basal cell carcinoma and trichoblastoma, complicating diagnosis. We describe a case of CPF arising in the right conchal bowl of an 84-year-old man, along with a brief review of similar cases.

Introduction

Panfolliculoma is a rare benign adnexal neoplasm demonstrating differentiation toward all components of the hair follicle, including the infundibulum, isthmus, stem, bulb, and hair matrix.[1,2] It is histologically classified into 3 subtypes: superficial, nodular, and cystic. Cystic panfolliculoma (CPF) is characterized by a keratin-filled epidermal invagination lined by cells representing the full spectrum of follicular differentiation.[2] CPF is rarely reported and most commonly presents as a solitary, asymptomatic lesion on the head and neck.[3,4]

Case Synopsis

An 84-year-old man with a history of atopic dermatitis was referred to dermatology by audiology for an asymptomatic lesion on the right ear detected during a routine hearing examination. Physical examination revealed an invaginated, hyperkeratotic nodule on the right conchal bowl (**Figure 1**). A shave biopsy demonstrated a keratin-filled cystic structure with epithelial differentiation toward the inner and outer root sheaths, as well as the hair matrix (**Figure 2**). Histologic findings were consistent with CPF. The lesion extended to the biopsy margins, and the patient was referred for complete surgical excision. No recurrence has been noted to date.

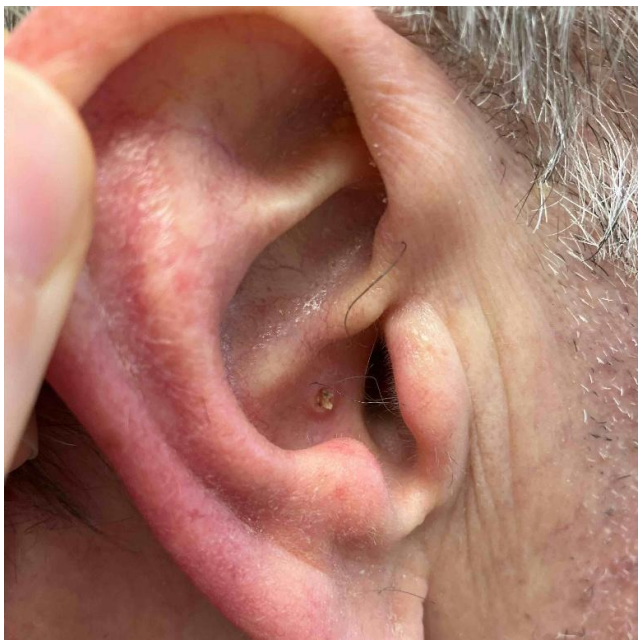

Figure 1. *Invaginated hyperkeratotic nodule on the right conchal bowl.*

Case Discussion

Panfolliculoma is defined histologically by differentiation toward all segments of the hair follicle, including the infundibulum, isthmus, stem, and bulb.[1,2] CPF is distinguished from other subtypes by the presence of a cystic component with overlying epidermal invagination.[2] These lesions lack cytologic atypia and often contain trichohyalin granules, pale outer root sheath cells, and abortive hair shaft formation.

Since its first description by Hoang and Levenson,[2] fewer than 25 cases have been reported. CPF typically oc-

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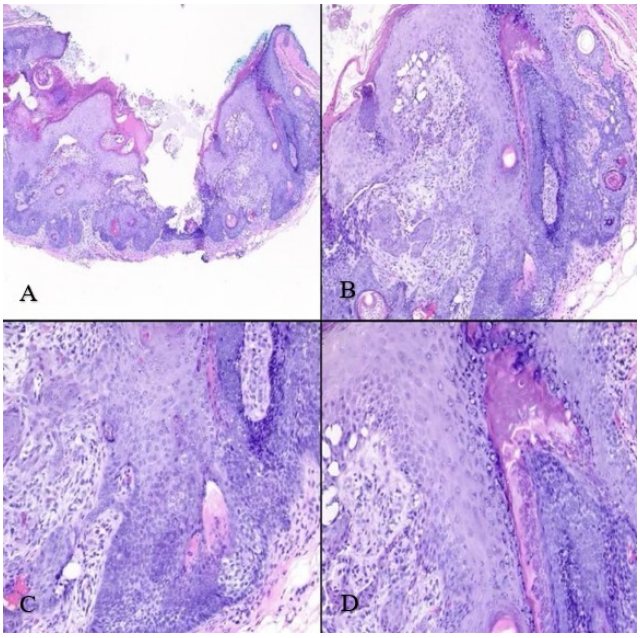

Figure 2. *Histopathologic findings of cystic panfolliculoma.* ***(A)*** *Epidermal invagination with differentiation toward all components of the hair follicle (hematoxylin-eosin, original magnification ×4).* ***(B)*** *Inner root sheath differentiation demonstrated by trichohyaline granules (hematoxylin-eosin, original magnification ×10).* ***(C)*** *Outer root sheath differentiation shown by clear cell change (glycogenated cells) (hematoxylin-eosin, original magnification ×20).* ***(D)*** *Hair matrix differentiation evidenced by basaloid germinative and shadow cells (hematoxylin-eosin, original magnification ×20).*

curs in older adults and affects both sexes equally.[3,4] Lesions most commonly involve the scalp, face, or neck and may present as nodules, cysts, plaques, or papules.[4] Clinical differential diagnoses include trichoblastoma, basal cell carcinoma (BCC), and squamous cell carcinoma.[2-8] CPF is rarely reported in younger patients; the youngest case described involved a 14-year-old boy.[9]

Histologically, CPF may resemble trichoblastoma but can be distinguished by the presence of infundibular differentiation and a less prominent stromal component.[2,5] CPF also mimics BCC, which demonstrates peripheral palisading and stromal clefting, features absent in CPF.[4] Unlike BCC, CPF lacks cellular atypia and displays well-demarcated ledges surrounding the basaloid component.[4] CPF may also resemble follicular hamartomas, but it is characterized by a cyst wall lined with infundibular and sebaceous epithelium, as well as rudimentary follicular structures.[3]

While hematoxylin-eosin staining can establish the diagnosis, special and immunohistochemical stains may aid in differentiating CPF from other entities when diagnostic ambiguity exists. Accurate distinction is critical, as it may influence treatment selection.[8,9] Outer root sheath differentiation can be demonstrated using periodic acid–Schiff stain, which highlights glycogenated cytoplasm.[8] Cytokeratin 5/6 may also identify outer root sheath differentiation.[4,6] Germinative cells frequently stain positive for BerEP4, although this marker may not be available in all institutions.[6] The surrounding stroma is typically fibrotic and CD34-positive, and CD34 staining may also highlight the epithelial component.[2-4,6]

The pathogenesis of CPF remains unclear. Some have proposed that interactions between undifferentiated progenitor cells and dermal fibroblasts contribute to lesion development.[10,11] Fukuyama et al[10] applied a panel of immunohistochemical stains, including CK10, CK13, CK14, CK15, hair-hard keratin (AE13), and EpCAM, to a single CPF case and mapped positive cells within the tumor. In their study, fibroblastic dermal cells were preferentially located near CK13-positive, CK15-negative epithelial cells, suggesting a role for epidermal–mesenchymal interactions in CPF pathogenesis.[11] Patel et al[9] reported a trichoblastoma with follicular germinative differentiation, further emphasizing the need for accurate diagnosis and treatment of rare benign and malignant lesions to ensure appropriate management.[12-14]

Conclusion

CPF is a rare adnexal tumor that should be considered in the differential diagnosis of solitary cutaneous lesions demonstrating follicular differentiation. Because clinical morphology can vary, CPF is often mistaken for more common cutaneous neoplasms. Accurate histopathologic evaluation is essential to distinguish CPF from other follicular tumors. Recognition of this entity can prevent misdiagnosis and guide appropriate management.

Potential conflicts of interest

The authors declare no conflicts of interest.

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