Desmoplastic Trichoepithelioma: An Uncommon but Diagnostically Problematic Benign Adnexal Tumor

Dear Editor,

I read an interesting recent article by Karimzadeh et al. (1) in an earlier issue of your journal, who provided a comprehensive review addressing a relatively rare benign tumor originating from the hair follicles – trichoepithelioma (TE). They rightly claimed that trichoepithelioma can be divided into the following 3 subgroups: a) multiple familiar TE, b) solitary non-hereditary TE, and c) desmoplastic trichoepithelioma (DTE). I would like to stress that the last category represents a distinct variant with some unique clinical and particularly histopathological characteristics. However, Karimzadeh et al. (1) did not provide any further information on DTE in their review. In my opinion, this variant of TE deserves special mention. The main reason is that it histomorphologically mimics infiltrative (morpheic) basal cell carcinoma (BCC) and can be challenging to differentiate for pathologists, particularly in small biopsies (2-5). Therefore, I report the case of young woman with two simultaneously growing DTEs with emphasis on the histopathology of this tumor.

A 32-year old woman presented with two skin lesions arising on the left side of the forehead and on the right side of the neck. She claimed they had been present for one year. On gross examination, the lesion arising on the forehead was flat, whitish, and about 10 mm in diameter. The lesion on the neck was flat, light brownish, and 6 mm in diameter. A total surgical extirpation was performed. At a low magnification, both lesions histologically mimicked infiltrative (morpheic) BCC of the skin. However, more detailed inspection of individual microscopic features excluded this diagnosis. The tumors were composed of narrow lines and irregular strands of basaloid epithelial cells embedded in a dense stroma (Figure 1). Neoplastic aggregates grew within the dermis and were not attached to the surface epidermis. In the larger lesion, they extended into the subcutaneous fat. No ulceration was

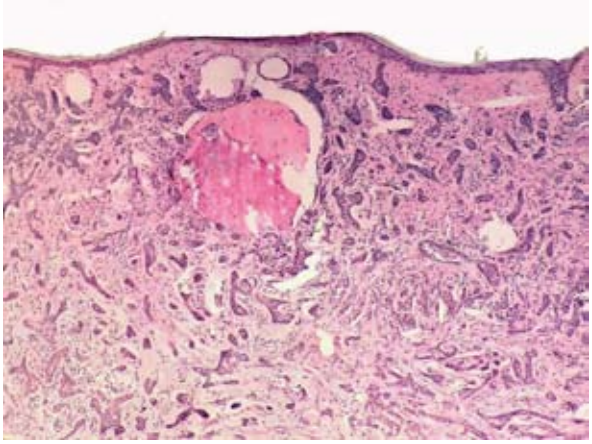

Figure 1. Multiple narrow, irregular strands of basaloid tumor cells embedded in a dense collagenous stroma. In the center a single focus of ossification can be seen (conspicuous pink-reddish nodule). Above it, two small epithelial cysts and diminutive focus of calcification are visible (hematoxylin and eosin, magnification ×100).

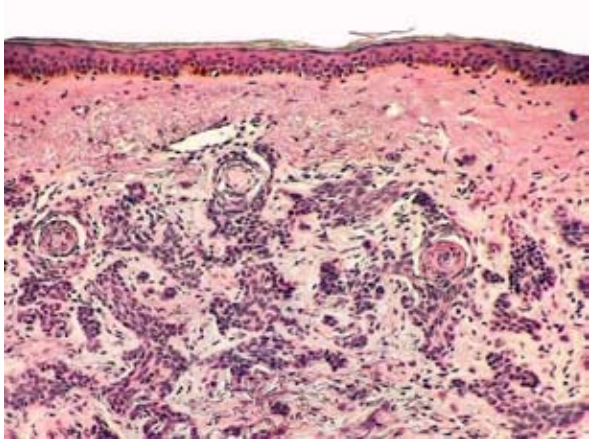

Figure 2. Detail of tumor nests composed of bland appearing epithelial cells. Three of them show an abortive follicular (hair bulb) differentiation. Peripheral palisading and the tumor-stroma retraction phenomenon are absent (hematoxylin and eosin, magnification ×200).

present. At high magnification, the tumor cells presented a bland appearance with prominent oval nuclei and scant cytoplasm (Figure 2). There were some signs that abortive follicular (hair bulb) differentiation occurred. Nuclear pleomorphism and mitotic figures as well as peripheral palisading and tumor-stroma retraction phenomenon were not present. Furthermore, sporadic keratinous cysts lined by stratified squamous epithelium were found. The stroma was densely collagenous, hypocellular, without solar elastosis, and without any inflammatory infiltration. Foreign body type granulomas with multinucleated giant cells were sometimes present, usually in relation to disrupted keratinous cysts. Calcifications were observed in both lesions, and ossification also occurred in the larger tumor. Immunohistochemically, the tumor was positive for high molecular weight cytokeratin (clone 34bE12) and epithelial antigen (clone BerEP4) (Figure 3). A few cells immunoreactive for cytokeratin 20 (CK20, clone Ks20.8) were observed within tumor aggregates. The Ki-67 proliferation index (clone MIB-1) did not exceed 10%. A spectrum of histomorphological findings of both lesions were consistent with DTE. Resection margins were intact and no local recurrence has been observed at the time of this writing.

The differential diagnosis between DTE and infiltrative BCC is sometimes exceedingly difficult, even when assessed by a dermatopathology expert. However, establishing the correct diagnosis is crucial for clinicians, as the first entity represents a benign adnexal tumor with an excellent prognosis, while the latter is a high-risk variant of BCC that requires much more stringent clinical management. As we have already pointed out, both tumors share many histomorphological features. Firstly, they both consist of small strands and thin cords of basaloid epithelial cells in a densely sclerotic stroma. Several attempts have been made to provide reliable and reproducible criteria for their differentiation. An excellent description of various histopathological features that help to discriminate DTE from infiltrative BCC has been published by Costache et al. (3). They studied samples from 19 DTEs and 18 infiltrative BCCs. They revealed that the most reliable findings that favored a diagnosis of DTE rather than infiltrative BCC were as follows: architectural symmetry and well-circumscribed lesions, depression in the center of the tumor, connection of tumor aggregation to infundibula, at least one sign of follicular, infundibular, or sebaceous differentiation, granulomatous giant cell reaction due to rupture of keratinous cysts, foci of calcification and ossification, no tumor-stroma clefting, absence of solar elastosis, and association with melanocytic nevus. Another set of criteria also thought to provide significant diagnostic evidence for DTE was the lack of connection of neoplastic nests to the surface epidermis, the clefts between the peritumorous stroma and the surrounding dermis, and the presence of cut artefacts (knife marks) in histologic sections. In challenging cases, immunohistochemical stains for CK20 and androgen receptors can be helpful in discriminating between DTE and BCC. While TEs usually contain at least a few CK20-positive Merkel cells and are negative for androgen receptors, BCCs are mostly negative for Merkel cells and positive for androgen receptors (2,3). However, the diagnostic limitation of these markers should be kept in mind. For example, an expression of androgen receptors is often focal and sometimes completely absent in BCCs (2). On the other hand, many TEs have very low density of colonizing Merkel cells, which may require serial sections for reliable detection (2). Along with histopathology, clinical aspects have also to be taken into consideration when deciding on the final diagnosis. DTE occurs mainly in young and middle-aged women and has a predilection for the face, principally for the cheeks (4,5). In contrast, an age of the onset is much higher and a prevalence of women much lower in cutaneous BCCs (6).

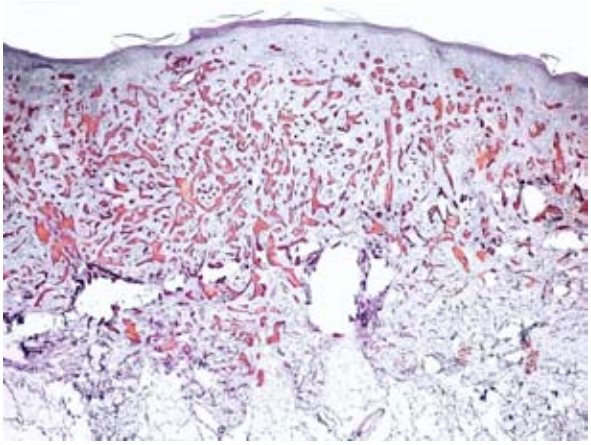

Figure 3. Strong immunoreactivity to epithelial antigen in neoplastic tissue. There is no contact of the tumor with surface epidermis, but an extension into the subcutaneous tissue is apparent (clone BerEP4, magnification ×100).

Overall, DTE is an uncommon adnexal tumor and its aggressive histological features can cause diagnostic uncertainty and confusion with infiltrative BCC. Distinguishing of these two structurally similar but biologically completely different tumor entities often requires a comprehensive diagnostic approach that includes the complexity of histopathological, immunohistochemical, and clinical findings.

References:

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Vladimír Bartoš

Department of Pathology, Faculty Hospital in Žilina, Žilina, Slovakia

Corresponding author:
Vladimír Bartoš, MD, PhD, MPH
Deapartment of Pathology
Faculty Hospital in Žilina
Vojtecha Spanyola 43
012 07 Žilina
Slovakia
vladim.bartos@gmail.com

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