Introduction

Trichoepithelioma (TE) was first categorized by Headington and French, who described ten cases. They considered the outer sheath of the hair follicle as the site of origin of the lesion. It is an uncommon tumor differentiating toward hair follicles, usually multiple and often familial with a disproportionate prevalence in females. The lesions usually appear at puberty and are small rounded and rather translucent. Cheeks, eyelids and nasolabial folds are common sites but other parts of the face and upper trunk and arms may be affected. Individual tumors reach a limiting size but the number may increase over the years. Continued growth and ulceration raise a suspicion of change to basal cell carcinoma. Two extensive series of cases have been reported by Brownstein and Shapiro, Ingrish and Reed agree that the trichilemmoma is usually an asymptomatic and solitary tumor of the face that often occurs later in life. When multiple, it may represent one of the clinical features of Cowden disease.

Case Report

A 52-year-old male reported with the chief complaint of multiple growths on the face for 25 years. On examination multiple dome shaped growths of varying sizes from 5 mm to 2 cm, soft to firm in consistency, non tender, non indurated were observed. In addition the patient had multiple brownish black pigmentations on the hands and back. No other contributory medical history was reported by the patient. The patient was moderately built and vital signs were within the clinically acceptable range. With the above features a clinical differential diagnosis of neurofibromatosis was considered. Two lesions, one from region lateral to the left ala of the nose and one lesion from above the right eyebrow, were excised. The gross specimen was 1.2 × 1 × 1 cm in size and brownish black in color. Histopathological examination of the lesion revealed cystic areas that consist of central keratinaceous material surrounded by basophilic cells resembling basal cell carcinoma. Two lesions composed basaloid cells showing peripheral palisading arranged in solid islands, adenoid and lace-like pattern, surrounded by a moderately cellular stroma and condensation of mesenchymal cells around tumor islands in some areas. Cystic areas contain keratin surrounded by basophilic cells and proliferations from the wall of the horn cyst. Due to the varying histopathological features of the specimens obtained during the initial biopsy procedure, surgical excision of the lesions located on the right eyebrow and
forehead region were carried out [Figure 4a]. The gross specimens which measured approximately 1 × 1 × 0.5 cm contained cheesy material within [Figures 4b and c]. Histopathological examination of the lesion on the eyebrow revealed solid areas resembling basal cell epithelioma with cribriform pattern [Figures 5a and b] and central melanin pigmentation [Figure 5c]. Whereas histopathological examination of the lesion on the forehead revealed central keratin filled cystic areas, lined by stratified squamous epithelium with cells with eosinophilic cytoplasm and a vesicular nuclei, basal cells with hyperchromatic nuclei and a granular layer [Figure 6a]. Cord-like proliferation of basaloïd cells was seen in one area of the lining [Figures 6b and c]. Based on the above histopathological findings a diagnosis of multiple trichoepithelioma was made.

Differential diagnosis considered in this case were TE, Trichofolliculoma and basal cell carcinoma (BCC). Trichofolliculoma represents aborted and disrupted attempt at follicle formation, which commonly affects adults and presents as a solitary lesion on the face. Usually a dome-shaped nodule showing a central pore with wool like tuft of immature, usually white hair is highly diagnostic. The present case presented multiple lesions and none showed the central pore with immature hair and hence the diagnosis of trichofolliculoma was ruled out.

BCC may show similar features but the characteristic retraction artifact seen in BCC was absent and the presence of papillary–mesenchymal bodies, which is characteristic of TE was seen in the present case.

**Discussion**

TE is a benign cutaneous tumor that originates from hair follicles and may be solitary or multiple, familial or non-familial. TE is an extremely rare condition; dermatopathology laboratories in the US have reported only 2.14 to 2.75 cases per year. Although both males and females receive equal genes (autosomal dominant), females are most affected because of low penetrance.

The lesion of TE is usually well circumscribed on
histologic examination.\[10\] Horn cysts represent the most characteristic histologic feature, though absent in some lesions which consist of a fully keratinized center surrounded by basophilic cells. Frequently few layers of cells with eosinophilic cytoplasm and large, oval, pale, vesicular nucleus situated between the basophilic cells may be seen. As the second major component of multiple TEs, tumor islands composed of basophilic epithelial cells similar to basal cell epithelioma are arranged in a lace-like or adenoid pattern. These tumor islands show peripheral palisading of cells, surrounded by moderate number of fibroblasts. Both adenoid and solid areas show invaginations which contain numerous fibroblasts resembling hair papillae called the papillary mesenchymal bodies which is an important differentiating feature.\[10\]

In trichoblastomas, CD10 typically highlights the peritumoral stroma, including papillary mesenchymal bodies, with minimal patchy staining of basaloid cells. In contrast, in BCC, the stroma is negative and basaloid cells variably stain strongly positive with CD10. Diffuse Bcl-2 positivity is reported in BCC, whereas the basal layer alone is highlighted in TE. However some authors have found this to be variable and unreliable in practice.\[11\]

**Trichoepithelioma variants**

The desmoplastic variant, as its name indicates, is characterized by a prominent, sclerotic stroma.\[12\] It occurs in the same population as the classic type and presents as a plaque located in the same anatomical areas as the classic form. Histologically, it shows narrow strands of tumor cells, a desmoplasic stroma, and keratinous cysts. Pleomorphism, palisading, or peripheral clefting are not seen. Features favoring desmoplastic TE include a rim of compact collagen around groups of epithelial cells, granulomas, calcification of cornified cells within cysts, absence of necrotic neoplastic cells, and only rare mitotic figures. In contrast to BCC, fibroblasts surrounding TE nests do not express the matrix metalloproteinase stromelysin-3 (ST-3).\[13\] The solitary giant variant is characterized by deep involvement of the reticular dermis and subcutaneous tissue.

### Management

Slow growth is characteristic of TE. Solitary lesions can be excised. In the case of multiple tumors, this surgical approach may not be feasible. Split-thickness skin grafting, dermabrasion, electro-surgery and laser surgery have been proposed, but the results of these procedures vary.\[14\] Management of either form (i.e., solitary, multiple/hereditary) by superficial biopsy is usually adequate. Solitary lesions are treated by local excision with 2 mm margin with subcutaneous layer deep to the tumor. Multiple lesions maybe left untreated with follow up. However it is best to remove all lesions if it is practical to do so.

When the multiple facial lesions are surgically flattened by dermabrasion or laser therapy, they tend to re-grow into elevated papules or nodules.\[15\] This re-growth may occur rapidly within months, or it may take several years. Partial destruction is usually followed by re-growth. The persistence or recurrence of tumors is a complication, and scarring may occur after treatment. Partial removal may result in persistence or recurrence. In the present case, the patient has now been followed up for 3 years, with no signs of recurrence till date.

Any suspicion of malignant change calls for adequate excision and histopathological examination. Although rare, tumors can transform into high-grade carcinomas and mixed (epithelial/sarcomatous) tumors.\[16\] Familial TE has shown an aggressive, recurrent behavior in rare cases.

Some patients find a prolonged cosmetic improvement to be worthwhile even if repeated procedures are necessary.

### References

1. Brownstein MH, Shapiro L. Trichilemmoma: Analysis of 40 new cases. Arch Dermatol 1973;107:866-9.
2. Ingrish FM, Reed RJ. Trichilemmoma. Dermatol Int 1968;7:182-90.
3. Lever WF, Shaumburg-Lever G. Histopathology of the skin. 5th ed. Philadelphia: J B Lippincott Co.; 1975. p. 522-3.
4. Headington JT, French AJ. Primary neoplasms of the hair follicle. Histogenesis and classification. Arch Dermatol 1962;86:430-41.
5. Brownstein MH, Mehregan AH, Bikowski JB. Trichilemmomas in Cowden’s disease. JAMA 1977;238:26.
6. Matt D, Xin H, Vortmeyer AO, Zoua Z, Burg G, Boni R. Sporadic trichoepithelioma demonstrates deletions at q92.3. Arch Dermatol 2000;136:657-60.
7. Zhang XJ, Liang YH, He PP, Yang S, Wang HY, Chen JJ, et al. Identification of the cylindromatosis tumour-suppressor gene responsible for multiple familial trichoepithelioma. J Invest Dermatol 2004;122:658-64.
8. Yeltok SJ, Echejoh GO, Mohammed AM, Ituem AM, Ingoche MI, Dades OT. Multiple familial trichoepithelioma: A case report and review of literature. Niger J Clin Pract 2010;13:230-2.
9. Salhi A, Bornholdt D, Oeffner F, Malik S, Heid E, Happle R, et al. Multiple familial trichoepithelioma caused by mutations in the cylindromatosis tumor suppressor gene. Cancer Res 2004;64:5113-7.
10. Sindu SK, Wavelin SH, Wilkinson JD. Multiple familial trichoepitheliomas. Cuts 1999;63:239-40.
11. Nilsson M, Undén AB, Krause D, Malmqwist U, Raza K, Zaphiropoulos PG, et al. Induction of basal cell carcinomas and trichoepitheliomas in mice overexpressing GLI-1. Proc Natl Acad Sci USA 2000;97:3438-43.
12. Moynihan GD, Skrokov RA, Huh J, Pardes JB, Septon R. Desmoplastic trichoepithelioma. J Am Acad Dermatol 2011;64:438-9.
13. Thewes M, Worret WI, Engst R, Ring J. Stromelysin-3: A potent marker for histopathologic differentiation between desmoplastic trichoepithelioma and morphea-like basal cell carcinoma. Am J Dermatopathol 1998;20:140-2.
14. Shaffelburg M, Miller R. Treatment of multiple trichoepithelioma with electrosurgery. Dermatol Surg 1998;24:1154-6.
15. Rosenbach A, Alster TS. Multiple trichoepitheliomas successfully treated with a high energy, pulsed carbon dioxide laser. Dermatol Surg 1997;23:708-10.
16. Wallace ML, Smoller BR. Trichoepithelioma with an adjacent basal cell carcinoma, transformation or collision. J Am Acad Dermatol 1997;37:343-5.

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