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Diagnosis and Excision of a Solitary Trichoepithelioma

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Abstract

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Background: Solitary trichoepithelioma is a rare benign tumor of hair follicle origin. Although trichoepithelioma has a predilection for the face and neck, it is not usually found on the eyelids. It has similar clinicopathological features to basal cell carcinoma. Surgical excision and histopathologic analysis is helpful for correct diagnosis.

Case Report: A 59-year-old Caucasian female presented with a raised, reddish oval mass on the right lower eyelid. The mass had telangiectatic blood vessels on its surface, was non-pigmented and slightly umbilicated. It was in close approximation of the eyelid margin causing distortion and poor apposition of the lid to the globe. The mass was completely removed under local anesthesia using the tissue-sparing surgical technique known as shave biopsy. Histopathologic analysis confirmed the mass to be a trichoepithelioma.

Conclusion: Optometrists should be able to differentiate benign trichoepithelioma from basal cell carcinoma.

Keywords

trichoepithelioma, horn cyst, basal cell carcinoma, shave biopsy

INTRODUCTION

Skin cancer is one of the few cancers that have increased in incidence over the last decade.[1] The two most common non-melanoma skin cancers are basal cell carcinoma (BCC) and squamous cell carcinoma (SCC).[2] Roughly 40-50% of Americans who live to age 65 will develop a non-melanoma skin cancer.[2] Up to 5-10% of these cancers occur on the eyelids.[1]

Basal cell carcinoma is the cancer that is seen most routinely around the eyes, representing nearly 90% of the skin tumors within the periorbital area.[1] BCC rarely metastasizes but it can have devastating local effects which can impair both the aesthetic and function of the eyelids.[1] Although BCC is the most commonly seen tumor near the eyes, there are many skin lesions that can present in a similar fashion. Often it takes not only a careful clinical examination, but also a histological examination to reach a final diagnosis. One of these similarly presenting lesions is a trichoepithelioma. Trichoepithelioma is a rare tumor that originates from the walls of a hair follicle and shares many clinical characteristics with BCC, however it may be possible to distinguish the features of trichoepithelioma by morphological criteria alone.[3,4] Being familiar with the characteristics of BCC and trichoepithelioma can help greatly in reaching the correct diagnosis.

The management of these two lesions, however, can be quite different. Conventional management of BCC requires excision with a 3-4 millimeter margin beyond the suspected lesion edges and histological examination.[5] Depending on the location of the lesion, such as at the medial canthus, an excisional biopsy with frozen-section control (Moh's micrographic surgery) for BCC is required,[5,6] and then needs to be sent in for histological examination. On the other hand, trichoepithelioma, especially if located in the center of the lid, may only require a shave biopsy or minimal resection with incorporation of a smaller margin of healthy tissue.[4,7] This can help to conserve tissue and therefore facilitate any additional surgical reconstruction.[4,8] The recurrence rate for trichoepithelioma, even when treated with these tissue sparing techniques, appears to remain low.[4] Trichoepithelioma has also been treated successfully by non-surgical techniques such as argon laser and cryotherapy.[9,10]

CASE REPORT

A 59-year-old Caucasian female presented with a raised, oval mass located on the right lower eyelid (Figure 1). She described the lesion as being irritating and affecting her eyesight. The lesion was not painful but did occasionally itch. She first noticed the lesion one year earlier and it appeared to her that it was enlarging.

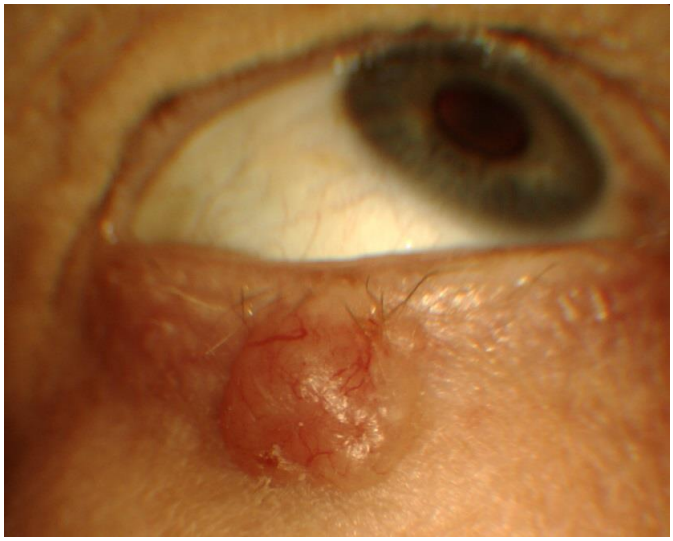

Figure 1: Raised oval lesion on right lower eyelid. Note the telangiectatic blood vessels on its surface and slight umbilication.

The patient's ocular health was significant for presbyopia, myopia and dermatochalasis. She denied having any previous skin lesions near the eyes. Her family ocular history was significant for cataracts. The patient's medical history was significant for boutonniere deformity (malposition of fingers and toes) and she denied any personal or familial history of skin cancer. Her current medications include 325mg of naproxen twice a day and 500 IU of vitamin D once a day.

Her best corrected visual acuities were 20/20 in the right eye and 20/20 in the left eye. Pupils were round, reactive to light and without a relative afferent pupillary defect. Her ocular motilities were full with no restrictions or pain on eye movement. Intraocular pressures were measured with an ICARE tonometer and found to be 18 mm Hg in each eye.

On slit-lamp examination, the mass came within close approximation of the eyelid margin (1-2 millimeters) causing distortion and poor apposition of the lid to the globe. It measured 0.8cm x 1.0cm x 0.5cm. It had telangiectatic blood vessels on its surface, was non-pigmented, and slightly umbilicated. It was reddish in color and showed a trace amount of hyperkeratosis inferiorly. There was no madarosis and the meibomian gland orifices were intact. Upon palpation, the mass felt firm and rubbery. It was attached at its base and was non-tender. The right lower eyelid did not appear or feel edematous. The remaining anterior segment examination revealed no other abnormalities. A posterior segment examination was not performed at this visit.

Due to the lesion's increasing size, eyelid margin interaction and overall suspicious appearance, surgical excision was recommended to completely remove the mass. A tissue-sparing deep shave excision under local anesthesia was performed as a same-day in-office procedure.

MANAGEMENT

After appropriate consent was obtained, the surgical site was prepped with povidone iodine 10% solution and draped in a sterile fashion. A subcutaneous injection of 2 ml of lidocaine 2% with 1:100,000 epinephrine was administered beneath the lesion in order to obtain local anesthesia. A #11 Bard-Parker blade was used to perform a deep shave biopsy sparing the adjacent lid and eyelid margin tissue. The surgical dissection was confined to the anterior lamella of the lid and carried down to the level of the epidermal-dermal junction. Cautery was used to control bleeding. The biopsy specimen was placed in formalin and sent to pathology. Sutures were not used to close the excision site. Instead, the biopsy site was left to heal by secondary intention. Erythromycin ophthalmic ointment was applied to the site post-surgically as a prophylactic antibiotic. The patient was instructed to continue using the ointment twice a day for one week.

HISTOPATHOLOGY

Pathological examination revealed that the mass was composed of proliferating basaloid islands of cells with peripheral palisades arranged in nests surrounded by stroma and fibroblasts (Figure 2 and Figure 3). There was no retraction artifact present. (A retraction artifact is a pulling away of the island of cells from the stroma and is more commonly seen in BCC than in trichoepitheliomas.[11])A horn (keratin) cyst was also present (Figure 2). Horn cysts, sometimes known as keratin-pearls represent immature hair structures.[8] The horn cysts can appear similar to those present in seborrheic keratosis or keratotic BCC making trichoepithelioma sometimes difficult to differentiate from BCC or even squamous cell carcinoma.[12] The final pathological results were consistent with a trichoepithelioma.

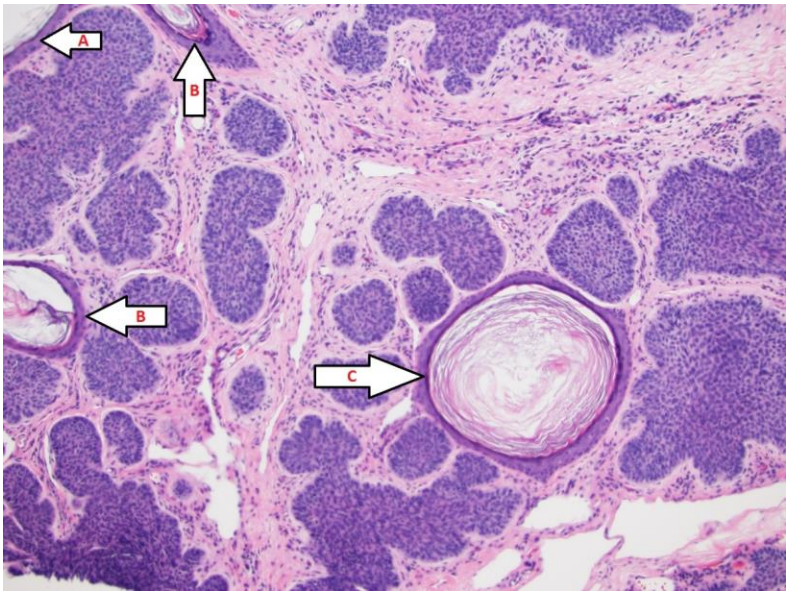

Figure 2: Pathological findings. Circumscribed basaloid lesion composed of mostly islands (nests) of cells. At the periphery of the islands, palisading of nuclei is noted, but there is no retraction artifact (pulling away of the islands of cells from the stroma). The stroma surrounding the islands shows fibroblasts. A horn cyst is present (arrow C). For orientation purposes: Arrow A points to the skin surface in the upper left corner. The B arrows identify two hair shafts confirming the hair follicle origin of this tumor.

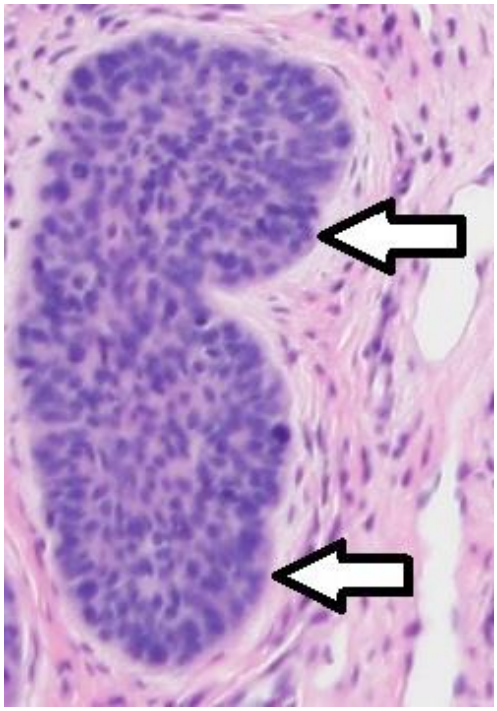

Figure 3: Magnified view of single island (nest) as seen in Figure 2. Arrows point to a single row of basaloid cells outlining an island (nest) of tumor cells.

FOLLOW UP

The patient returned to the eye clinic three weeks post-operatively and showed a markedly healed biopsy site (Figure 4). She felt as though her vision had improved since the removal of the lesion and she has had no side effects from the treatment. She also expressed satisfaction with the cosmetic outcome of the procedure. At a one-year follow-up there was no evidence of recurrence.

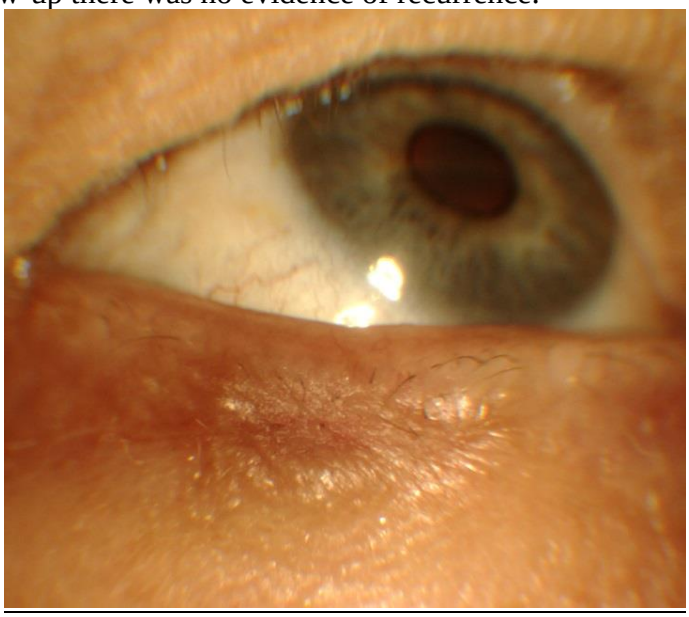

Figure 4: Three weeks post-operatively, incision healed well with no eyelid margin disruption.

DISCUSSION

Trichoepitheliomas originate from the basal cells within hair follicles and can present in either solitary form or multiple form subtypes.[13] Patients who present with many such lesions have multiple familial trichoepithelioma (MFT) which is transmitted by an autosomal-dominant mode of inheritance.[13] Because of lower penetrance and expressivity in men, women are more commonly affected by trichoepithelioma.[14] Recent genetic studies indicate that MFT is a phenotypic variant of Brooke-Spiegler syndrome in which patients present with trichoepitheliomas only.[15] Brooke-Spiegler syndrome is a rare inherited disorder manifesting itself as multiple adnexal cutaneous neoplasms which may include trichoepitheliomas.[15] Patients with MFT present clinically with multiple small benign skin-colored nodules which tend to be bilateral, symmetric and located at the center of the face, mostly around the nose, periorbitally and in the nasolabial folds.[16] Patients with these multiple lesions can be treated with varied success by

electrodessication, skin transplantation, laser therapy or topical 5% imiquimod cream.[14]

Solitary trichoepitheliomas follow no specific inheritance pattern but are more commonly seen in men and typically present in middle-aged individuals.[3] Solitary trichoepitheliomas can occur anywhere on the body and have a predilection for the face and neck, but very rarely involve the eyelids. In one large study of 678 lesions, none were found to affect the eyelids.[7] Solitary trichoepitheliomas commonly present as firm nodules that are typically less than 2 cm in diameter.[3] They also present with superficial telangiectasia and ulceration.[12] Due to this appearance, they are often difficult to differentiate from BCC. In one series of 83 patients who presented with trichoepitheliomas, 35% were improperly diagnosed as BCC.[17] Recent attempts to help distinguish BCC from trichoepitheliomas based on use of immunohistochemical markers have been of limited value.[18] In addition, trichoepitheliomas have the potential to transform into BCC, but this is rare.[13] However, rapid growth and ulceration in a pre-existing lesion may indicate malignant transformation.[13]

Clinical differences can be used to differentiate trichoepitheliomas and other lesions that have similar appearance to BCC but some may need further investigation in order to reach the correct diagnosis. Histologically, both trichoepitheliomas and BCC present with basaloid islands of uniform cells with peripheral palisading arranged in nests surrounded by stroma and fibroblasts. In contrast, trichoepitheliomas have the characteristic finding of horn cysts and a less structured hyaline material.[7] Horn cysts consist of concentrically laminated keratin which stand in stark contrast to other features. On the other hand, retraction artifact is more commonly seen in BCC than in trichoepithelioma making this a key differentiating finding.[11] As previously described, a retraction artifact is the separation of these islands of cells away from the surrounding stroma. There were no retraction artifacts in this case, which further helps confirm histologically that the lesion is a trichoepithelioma.

CONCLUSION

Solitary eyelid trichoepithelioma is a rare tumor of hair follicle origin. It has clinical and histological similarities to BCC. All these lesions should be biopsied and sent for histopathologic evaluation to obtain a definitive diagnosis and exclude malignancy. A more tissue sparing procedure such as an incisional (vs. excisional) biopsy utilizing a shave technique may be performed provided the lesion does not present in a high-risk location (such as the medial canthus or the eyelid margin), or manifest objective features suggesting malignancy. Since the lesion in this case did

not occur in a high-risk location, the decision to perform a deep shave excision had the benefit of preserving cosmetic appearance by not removing excessive normal tissue or causing an eyelid margin disruption.

REFERENCES

1. Totir M, Alexandrescu C, Pirvulescu R, Gradinaru S, Costache M. Clinical, histopathological and therapeutical analysis of inferior eyelid basal cell carcinomas. *J Med Life.* 2014;7(4):18-22.
2. *UV Exposure and Sun Protective Practices.* National Cancer Institute: Cancer Trends Progress Report. Accessed May 3, 2020. https://progressreport.cancer.gov/prevention/sun_protection
3. Gupta A, Ali MJ, Mishra DK, Naik MN. Solitary trichoepithelioma of the eyelid: a clinico-pathological correlation. *Int J Trichology.* 2015;7(2):80-81. doi: 10.4103/0974-7753.160119
4. Votruba M, Collins CMP, Harrad RA. The management of solitary trichoepithelioma versus basal cell carcinoma. *Eye*. 1998;12(1):43-46. doi: 10.1038/eye.1998.7
5. Swanson NA. Moh's surgery: techniques, indications, applications and the future. *Arch Dermatol*. 1983;119(9):761-773. doi: 10.1001/archderm.1983.01650330053014
6. Mehta PS, Halpern M, Ratner D, Harrison LB. Basal and squamous cell skin cancers. In: Harrison LB, Sessions RB, Hong WK, (eds). *Head and Neck Cancer*. 3rd ed. Wolters Kluwer; 2009:544-570.
7. Simpson W, Garner A, Collin JRO. Benign hair-follicle derived tumors in the differential diagnosis of basal-cell carcinoma of the eyelids: a clinicopathological comparison. *Br J Ophthalmol.* 1989;73(5):347-353. doi: 10.1136/bjo.73.5.347
8. Shields JA, Shields CL. *Eyelid, Conjunctival, and Orbital Tumors: An Atlas and Textbook*. 3rd ed. Wolters Kluwer; 2015:81.
9. Flores JT, Apfelberg DM, Maser MR, Lash H. Trichoepithelioma: successful treatment with argon laser. *Plast Reconsrtr Surg.* 1984;74(5):694-698.
10. Duhra P, Paul JC. Cryotherapy for multiple trichoepithelioma. *J Dermtol Surg Oncol*. 1988;14(12):1413-1415. doi: 10.1111/j.1524-4725.1988.tb01133.x
11. Patterson JW. *Weedon's Skin Pathology.* 4th ed. Churchill Livingstone Elsevier; 2016:913-914.
12. Karimzadeh I, Namazi M, Karimzadeh A. Trichoepithelioma: a comprehensive review. *Acta Dermatovenerol Croat.* 2018;26(2):162-165.
13. Kallam AR, Satyanarayana MA, Aryasomayajula S, Krishna BAR. Basal

cell carcinoma developing from trichoepithelioma: review of three cases. *J Clin Diagn Res.* 2016;10(3):17-19. doi: 10.7860/JCDR/2016/15432.7464

14. Mohammadi AA, Jafari SMS. Trichoepithelioma: a rare but crucial dermatological issue. *World J Plast Surg.* 2014;3(2): 142-145.
15. Grossmann P, Vanecek T, Steiner P, et al. Novel and recurrent germline and somatic mutations in a cohort of 67 patients from 48 families with Brooke-Spiegler syndrome including the phenotypic variant of multiple familial trichoepitheliomas and correlation with the histopathologic findings in 379 biopsy specimens. *Am J Dermatopathol.* 2013;35(1): 34-44. doi: 10.1097/DAD.0b013e31824e7658
16. Nagy N, Farkas K, Kemeny L, Szell M. Phenotype-genotype correlations for clinical variants caused by CYLD mutations. *Europ J Med Genetics.* 2015; 58(5): 271-278. doi: 10.1016/j.ejmg.2015.02.010
17. Gray HR, Helwig EB. Epithelioma adenoides cysticum and solitary trichoepithelioma. *Arch Dermatol.* 1963;87(1):102-114. doi: 10.1001/archderm.1963.01590130108018
18. Tebcherani AJ, de Andrade HF, Sotto MN. Diagnostic utility of immunohistochemistry in distinguishing trichoepithelioma and basal cell carcinoma: evaluation using tissue microarray samples. *Mod Pathol.* 2012;25(10):1345-1353. doi: 10.1038/modpathol.2012.96