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Case Report

Nodular trichoblastoma or basal cell carcinoma: A diagnostic dilemma of clinical significance

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ABSTRACT

Nodular Trichoblastoma (TB) is a rare and benign adnexal tumor originating from rudimentary hair follicles. Adnexal neoplasms show complex clinical and histological features. A panel of immunohistochemical (IHC) markers helps in distinguishing tumors of follicular origin from other cutaneous tumors especially Basal cell carcinoma (BCC). We herein describe the histological and immunohistochemical features of TB which clinically and histologically mimiced BCC.

1. Introduction

Trichblastomas are rare, benign adnexal neoplasms of hair germ origin. These tumors usually arise in the head or neck region and may undergo malignant transformation.[1,2] Because of its potential for malignant transformation; complete surgical excision with negative margins is highly recommended. Dermoscopically, clinically,and histologically sometimes it is very difficult to differentiate between BCC and TB, so in this case report we emphasize the role of various IHC markers including Ki-67/MIB-1 antibody Index at reaching definitive diagnosis so that patient can get appropriate therapy as TBs have better prognosis, lower chances of recurrence and very less likelihood of progression to malignancy.

2. Case History

A 60 year old male presented with a skin coloured ulcerated nodule just infront of left pinna to the Ear, Nose & Throat(ENT) outpatient department of our institute. Clincally the lesion was considered to be BCC and it was excised with wide local excision. The specimen was sent for histopathological examination.

Grossly the tumor was globular with a large ulcer in the center. On cut tumor was multi-nodular with homogenous grayish-white cut surface [Figure 1a,b].

Fig. 1: Clinical and gross specimen photograph of the patient revealing a relatively well circumscribed tumor with central ulceration

Histologically, representative Hematoxylin & Eosin stained sections revealed a cellular basaloid tumor located entirely in the dermis with no connections to the overlying

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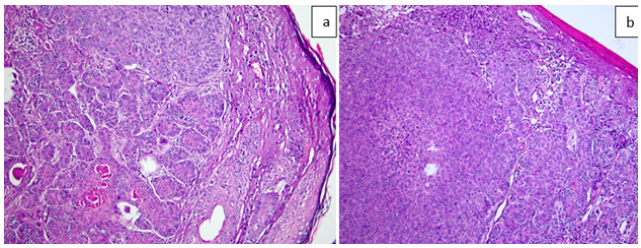

Fig. 2: a & b: Photomicrographs showing nodular islands of neoplastic basaloid cells having monotonous appearance just beneath the atrophic epithelium (H&E x 400).

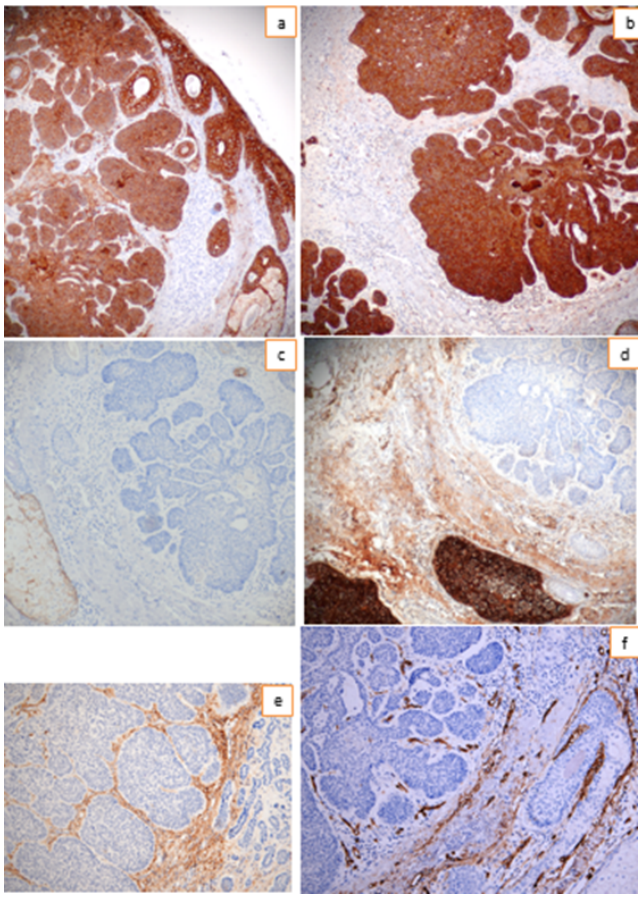

Fig. 3: a: Neoplastic cells showing diffuse and strong expression of AE1/AE3 (200 x magnification); **b:** Diffuse and strong HMWCK expression in the neoplastic cells characterstic of TB; **c:** Photomicrograph shows absence of CK7 expression in the tumor cells; **d:** Photomicrograph showing complete absence of EMA expression in the lesional cells whereas the adjoining sebaceous glands are acting beautiful internal controls; **e:** Photomicrograph showing CD10 positive stroma of the tumor characterstic of Trichoblatomas; **f:** Photomicrograph showing CD34 positive blood vessels and stroma.

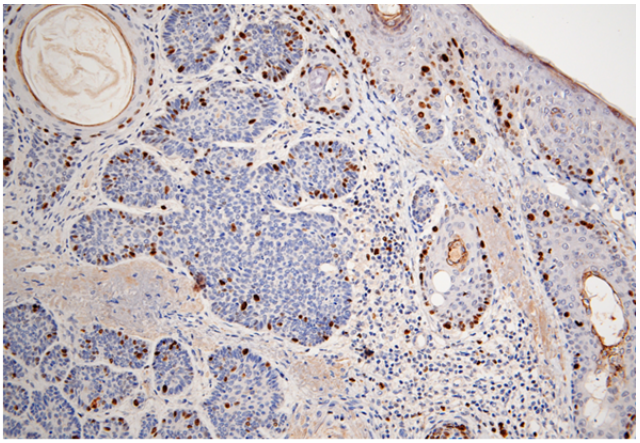

Fig. 4: Photomicrograph showing Ki-67 index of approximately 15-20% which is low in comparision to BCC in which the labeling index is 100%.

epidermis which was focally ulcerated. The neoplastic cells were cuboidal to spindled, arranged in variablly sized nests supported by finely hyalinized fibrovascular connective tissue stroma. Individual tumor cells showed round to oval basophilic nuclei, vesicular chromatin and inconspicuous nucleoli. Focal areas of the tumor revealed clefting [Figure 2a,b]. No significant cytological atypia or mitosis were seen. Few tumor nests revealed keratinization and calcification. Skin adnexa adjacent to the tumor revealed sebaceous gland hyperplasia.

On IHC, neoplastic cells showed diffuse and strong positivity for high molecuar weight cytokearatins (HMWCK), AE1/AE3 and p63 [Figure 3a,b]. There was complete absence of expression of CK7, HMB45, p16, CD117, S-100, EMA, and Melan-A thus ruling out the possibilites of poroma, and low grade adenoid cystic carcinoma [Figure 3c,d]. Surrounding delicate fibrovascular stroma revealed CD10 and CD34 positivity favouring TB over BCC [Figure 3e,f].

Ki-67 index was approximately 15% (24.5% at hot spots) as compared to 100% which is seen in BCC thereby ruling out the possibility of nodular basal cell carcinoma [Figure 4]. In our case inferiomedial margins were positive and at the report signout; reexcision with negative margins was highly recommended to prevent local recurrence or malignant transformation.

3. Disscusion

Trichoblastomas are are benign cutaneous adnexal tumors arising from rudimentary hair follicles. The term trichoblastoma was introduced by Headington in 1970 and in 1993, Ackerman et al. published a new classification of tumors of hair follicles describing TBs as benign tumors having sharp circumscription, smooth borders, and symmetrical growth patterns, and trichoepithelioma as a

superficial type of TBs.[3,4] Ackerman classified hair follicle-derived adnexal cutaneous tumors into the following five subgroups based on their predominant morphological features: hair follicle and hamartomas, infundibular and isthmic tumors, tumors of the external layer, tumors originating from the matrix layer, and prominent perifollicular mesenchymal tumors.[5] In 2018, according to the 4th World Health Organization Classification of skin tumors, hair follicle-associated neoplasms were classified into two subgroups: benign neoplasms and malignant neoplasms.[6] A majority of adnexal cutaneous neoplasms are uncommon and benign.[7]

TBs are more common among adults between the ages of 40s & 50s; however they can occur at any age group.[5] Rarely, these benign adnexal neoplasms have been reported to occur on the proximal extremities, trunk, and anogenital region.[8]

Basal cell carcinoma is relatively common malignancy of skin which is locally aggressive and generally do not metastasize, however complete surgical resection with postoperative radiotherapy is usually given to prevent local recurrences. Clinically basal cell carcinomas have variable appearances and commonly present as a pearly, pinkish nodules with a rolled border, and usually located in sun-exposed areas.[9] Rare case reports of Basal cell carcinoma originating from non sun exposed areas have been reported in literature.[10] Histologically Basal cell carcinomas are composed of basaloid nests having connections with the overlying epidermis and may exhibit varying growth patterns including infiltrative, micronodular, morpheaform etc. The cells show nuclear hyperchromasia, frequent mitosis and apoptosis. The tumor islands show characterstic clefting and myxoinflammatory stroma.[11]

4. Immunohistochemistry

Basal cell carcinoma shares similar histological features to trichoblastoma, including the presence of clefts between the epithelium and stroma, dermal epithelial nests, and peripheral pallisading arrangement of neoplastic cells thus mandating the need of immunochemistry to determine if the lesion is a basal cell carcinoma or trichoblastoma.[9] Literature review showed that Immunohistochemistry studies have concluded that trichoblastoma and basal cell carcinoma express similar cytokeratins, including B-cell lymphoma 2 (Bcl-2), tumor protein p53, and the follicular differentiation markers like follistatin and B-lymphoma Mo-MLV insertion region 1 (Bmi-1).[12–14] However, trichoblastoma stains positive for stromal cluster of differentiation (CD) antigen 10 and CD antigen 34 as well as pleckstrin homology-like domain family A member 1 (PHLDA1), a follicular stem cell marker, whereas the basal cell carcinoma does not.[13,14] Use of IHC panels in routine diagnosis of cutaneous adnexal tumors is controversial and performed rarely.

Our case posed a significant diagnostic challenge as our tumor showed nesting pattern, some hyperchromasia, focal cytological atypia and ulceration of the overlying epithelium; thus mimicking histologically as nodular Basal cell carcinoma, however a panel of IHC markers in conjuction with Ki-67 labelling index helped us in making the correct diagnosis of trichoblastoma. Trichoblastoma in our case revealed diffuse & strong PANCK, HMWCK, and p63 immunoreactivity along with stromal CD10 & CD34 expression. Basal Cell Carcinomas express cytokeratin profile similar to that of follicular germ cells but Ki-67 index helped in differentiating these two entities of clinical significance. Basal cell carcinomas have high proliferative index nearly 100% whereas TBs show lower Ki-67 i.e. approximately 20%-25%.[15,16]

5. Conclusion

Trichoblastomas and Basal cell carcinomas are close clinical and histological mimics resulting in diagnostic dilemmas for both clinicians and pathologists; however a panel of IHC markers and Ki-67 labelling index helps in reaching a definite diagnosis and appropriate therapeutic management of the patient without undue delay.

6. Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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References

1. Demant M, Saltvig I, Trøstrup H, Schmidt VJ, Hesselfeldt J. Don't Judge a Tumor by Its Biopsy! *Case Rep Dermatol*. 2020;12(3):266–74. doi:10.1159/000509764.
2. Stanoszek LM, Wang GY, Harms PW. Histologic Mimics of Basal Cell Carcinoma. *Arch Pathol Lab Med*. 2017;141(11):1490–502.
3. Headington JT. Differentiating neoplasms of hair germ. *J Clin Pathol*. 1970;23(6):464–71.
4. Ackerman A, Viragh PD, Chongchitnant N. Neoplasms with follicular differentiation. Philadelphia: Lea & Febiger; 1993. p. 359–420.
5. Ackerman A, Reddy V, Soyer H. Neoplasms with Follicular Differentiation. New York: Ardor Scribendi, Trichoblastoma; 2001. p. 405–622.
6. Elder DE, Massi D, Scolyer RA, Willemze R. WHO Classification of Skin Tumours. vol. 4. Lyon, France: IARC; 2018. p. 2018–195.
7. Alsaad KO, Obaidat NA, Ghazarian D. Skin adnexal neoplasms–part 1: an approach to tumours of the pilosebaceous unit. *J Clin Pathol*. 2007;60(2):129–44. doi:10.1136/jcp.2006.040337.
8. Patel P, Nawrocki S, Hinther K, Khachemoune A. Trichoblastomas Mimicking Basal Cell Carcinoma: The Importance of Identification and Differentiation. *Cureus*. 2020;12:e8272. doi:10.7759/cureus.8272.
9. Memije MEV, Luna EM, Almeida OPD, Taylor AM, and JCCG. Immunohistochemistry panel for differential diagnosis of basal cell carcinoma and trichoblastoma. *Int J Trichology*. 2014;6(2):40–4. doi:10.4103/0974-7753.138583.

10. Wang YJ, Tang TY, Wang JY, Huang YK, Wu YH. Genital basal cell carcinoma, a different pathogenesis from sun-exposed basal cell carcinoma? A case-control study of 30 cases. *J Cutan Pathol*. 2018;45(9):688–95. doi:10.1111/cup.13304.
11. Russell EB, Carrington PR, Smoller BR. Basal cell carcinoma: a comparison of shave biopsy versus punch biopsy techniques in subtype diagnosis. *J Am Acad Dermatol*. 1999;41(1):69–71.
12. Kim HC, Sohng SH, Shin DH, Choi JS, Bae YK. Immunohistochemical expression of cytokeratin 15, cytokeratin 19, follistatin, and Bmi-1 in basal cell carcinoma. *Int J Dermatol*. 2016;55(1):36–44. doi:10.1111/ijd.12771.
13. Chuang TY, Popescu A, Su WP, Chute CG. Basal cell carcinoma. A population-based incidence study in Rochester, Minnesota. *J Am Acad Dermatol*. 1990;22(3):413–7. doi:10.1016/0190-9622(90)70056-.
14. Battistella M, Peltre B, Cribier B. PHLDA1, a follicular stem cell marker, differentiates clear-cell/granular-cell trichoblastoma and clear-cell/granular cell basal cell carcinoma: a case-control study, with first description of granular-cell trichoblastoma. *Am J Dermatopathol*. 2014;36(8):643–50. doi:10.1097/DAD.0b013e31828a31ae.
15. Sexton M, Jones DB, Maloney ME. Histologic pattern analysis of basal cell carcinoma. *J Am Acad Dermatol*. 1990;23(6):1118–26.
16. Alsaad KO, Obaidat NA, Ghazarian D. Skin adnexal neoplasms - part 1: an approach to tumours of the pilosebaceous unit. *J Clin Pathol*. 2007;60(2):129–44.

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