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Derived and Imitated: Trichoblastoma

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Mini Review

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Abstract

Trichoblastoma can be cogitated as a skin adnexal tumour enunciating a predominant follicular differentiation. Initially scripted by Headington in 1976, the benign tumefaction depicts a histology congruent of hair follicular basaloid or germinative cells. Trichoblastoma is contemplated as an exceptional, sporadic, benign tumour arising from the hair germ, partially or completely recapitulating the follicular evolution. Trichoblastoma is a cogent, generic term for neoplasm derived from follicular germinative cells appearing in the skin and subcutaneous fat. Lesions of trichoblastoma cogitate as gradually progressive nodules exceeding one centimetre in magnitude, commonly emerging within the deep dermal and subcutaneous tissue, particularly on the face, scalp and pelvic girdle. Malignant transformation is enunciated although trichoblastoma does not exemplify an aggressive neoplasm. Composite lesions comprising of a trichoblastoma in conjunction with tumefaction such as apocrine poroma, seborrheic keratosis, inverted follicular keratosis, verruca vulgaris or eccrine poroma are delineated.

Keywords: Trichoblastoma; Peritumoural; Tumours

Introduction

Disease Characteristics

An infrequent, benign, dermal adnexal tumour with hair follicular differentiation, trichoblastoma occurs predominantly in the geriatric population. The head and neck region, trunk, proximal extremities [1], genital area and rarely distal extremities are implicated. The tumour has a gradual biological progression and miniature dermal nodules or papules of 30 millimetres magnitude are cogitated clinically [2].

Cellular constituents of the exceptional, benign neoplasm trichoblastoma, differentiates along the pleuripotent germinative cells of hair follicle. Tumour aggregates of trichoblastoma simulate a basal cell carcinoma as tumour cells of dual neoplasm depict identical differentiation. Trichoblastoma is often considered as a benign counterpart of basal cell carcinoma. Tumour cells demarcate towards a follicular bulb and hair papillae.

Trichoblastoma can infrequently co-exist with adjunctive neoplasm such as syringocystadenoma papilliferum, trichopeithelioma, nevus sebaceous or associated sebaceous tumours. Multiple lesions of trichoblastoma may contain appended foci of basal cell carcinoma. An estimated 18.1% instances of trichoblastoma are concordant with basal cell carcinoma [2,3]. Convergent foci are delineated at the periphery of tumour nodules, extraneous to the encompassing fibrous stroma. Basal cell carcinoma can be cogitated as trichoblastic carcinoma when appearing in conjunction with trichoblastoma. However, a trichoblastic carcinoma can emerge from a pre-existing benign trichoblastoma and the malignant neoplasm displays an augmented

metastatic potential Comprehensive surgical eradication is a preferred therapeutic modality with an extensive histopathology to eliminate a possible concurrence of basal cell carcinoma [2,3].

Histological Elucidation

Demonstration of basaloid cells with minimal cellular atypia is an essential element of confirmatory tumour elucidation. Morphology of trichoblastoma characteristically depicts an abundant fibrotic or follicular stroma with condensation. Tumour aggregates are devoid of invasive properties. Clefts are cogitated enveloping the tumour cell nests which are essentially lack a circumscribing myxoid stroma as compatible with the benign tumefaction. The overlying epidermis is atrophic. Tumour cells configure nests and islands with a peripheral palisade are principally confined to the dermis [4,5].

Additionally, a lace like or an adenoid pattern of tumour cell cords is articulated. Islands cogitating the neoplasm demonstrate uniform, round to oval cells with measured quantities of eosinophilic to clear cell cytoplasm. Foci of keratinisation, cellular atypia or mitotic figures are absent. Clefts and retraction surrounding tumour aggregates are discerned at specific sites [5,6].

The predominantly solid tumour assembly is composed of basaloid epithelium with peripheral nuclear palisading. Tumour composites configure a concavity with surrounding bundles of fibrillary collagen, intermittently interspersed with abundant fibroblasts displaying plump nuclei. The aforementioned configurations recapitulate papillae of hair follicles [4,6] (Figures 1-12).

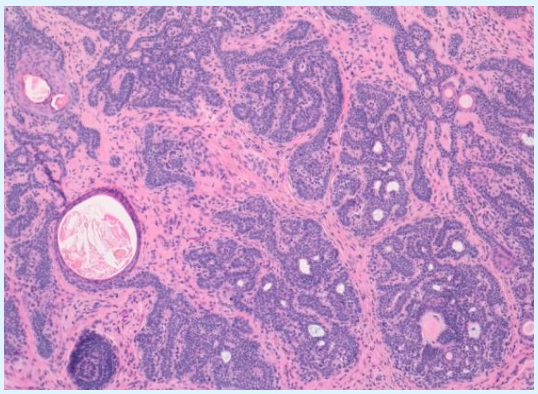

Figure 1: Trichoblastoma Composites of Basaloid Epithelium with Predominantly Fibrotic Stroma [18].

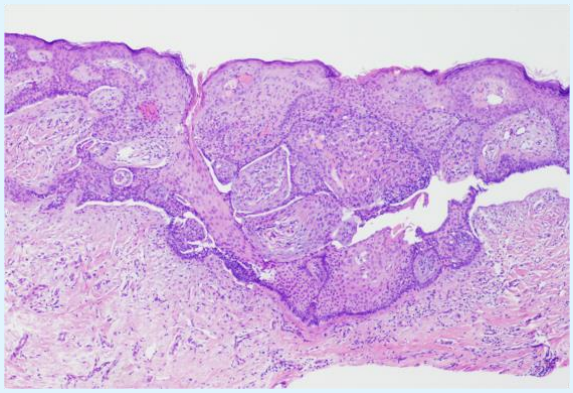

Figure 2: Trichoblastoma with Atrophic Epithelium and Basaloid Cell Clusters [19].

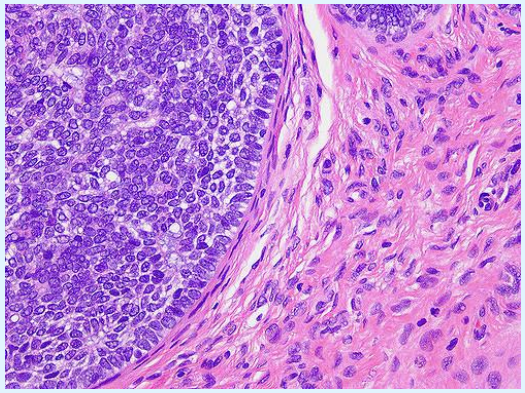

Figure 3: Trichoblastoma with Peripheral Palisade of Basaloid Cells Devoid of Atypia [20].

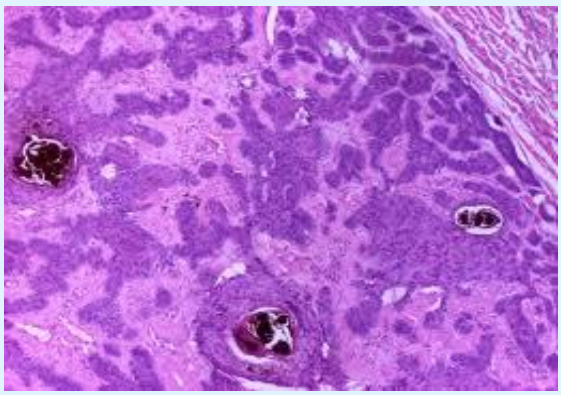

Figure 4: Trichoblastoma with a Predominant Cribriform Pattern and Fibrillary, Collagenous Stroma [20].

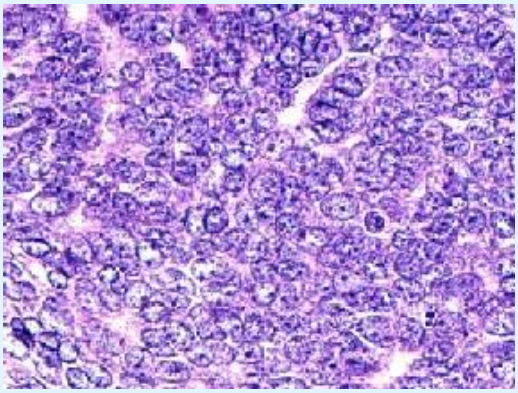

Figure 5: Trichoblastoma with Basaloid Cell Composites and Minimal Cellular Atypia [21].

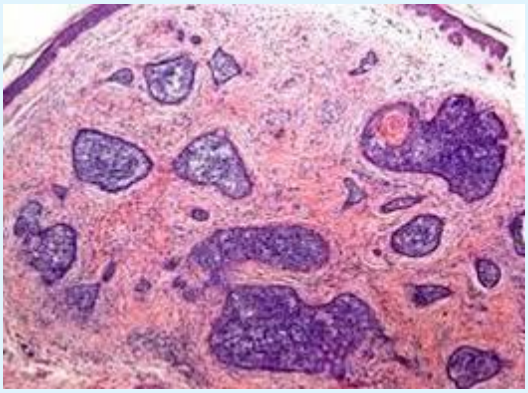

Figure 6: Pigmented Trichoblastoma with Basaloid Cells, Thin Epithelium and Fibroblastic Stroma [22].

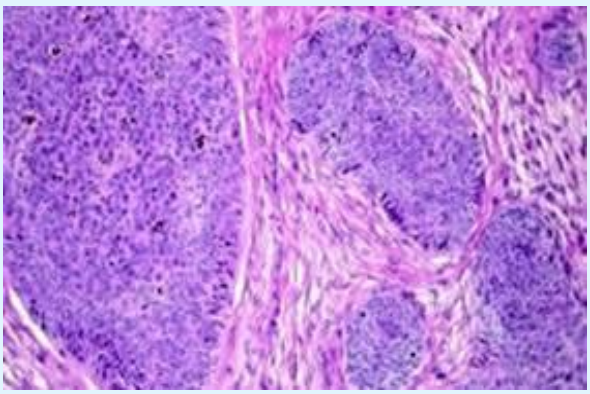

Figure 7: Pigmented Trichoblastoma with Deposits of Melanin within Basaloid Composites [22].

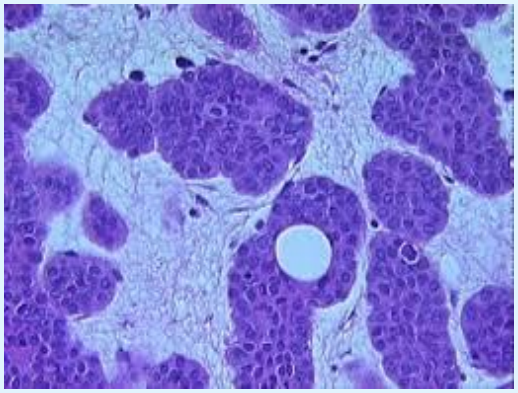

Figure 8: Trichoblastoma with Peripheral Palisade of Basaloid Nests and Fibrocellular Stroma [23].

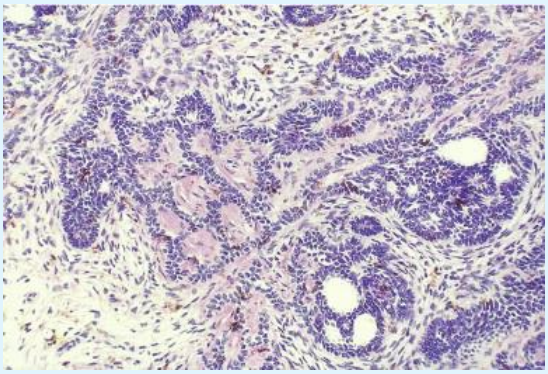

Figure 9: Trichoblastoma with a Lace like Configuration of Epithelial Cells and Ample Fibroblastic Stroma [24].

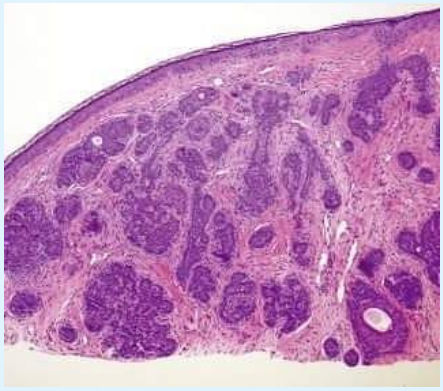

Figure 10: Trichoblastoma with Adenoid Clusters of Basaloid Cells and Thin, Superimposed Epithelium [24].

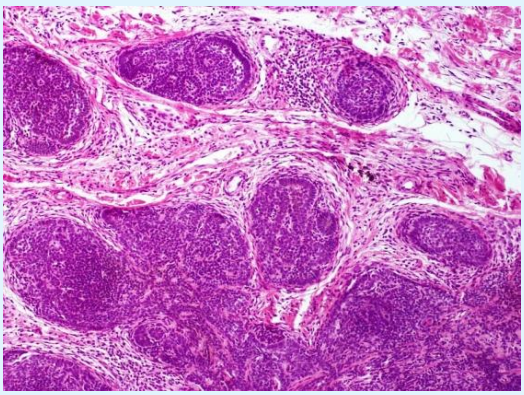

Figure 11: Trichoblastoma with Uniform Cellular Congruence and Fibrocellular Stroma [25].

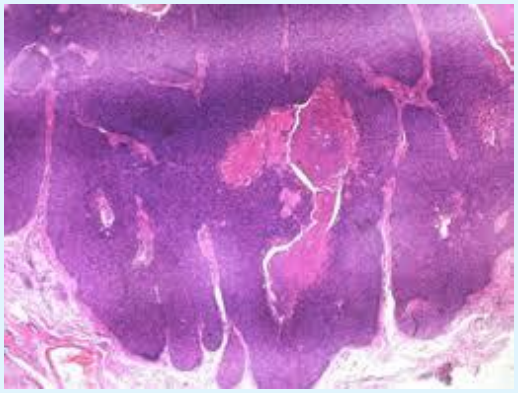

Figure 12: Trichoblastic Carcinoma with Atypical Epithelial Clusters, Mitosis, Focal Necrosis and Keratinization [26].

Immune Histochemistry

An adequate immune histochemical examination correlates trichoblastoma with basal cell carcinoma and metamorphosis of one category of neoplasm into the adjunct is cogitated. Trichoblastoma can be judiciously demarcated from adjunctive lesions of proliferative basaloid epithelium with appropriate immune markers. Immune reactivity to CD10 in a trichoblastoma is cogitated where CD10 is expressed within the peritumoural stromal accumulations surrounding the tumour cell aggregates while basaloid epithelium constituting tumour nests remain non-reactive. In contrast, a basal cell carcinoma displays a constituent epithelial staining with CD10. BCL2 is immune expressed in tumour cell composites of trichoblastoma as well as basal cell carcinoma [7,8]. BCL2 manifests singularly within the tumour perimeter in trichoblastoma, in contrast to a diffuse tumour staining cogitated with basal cell carcinoma. Trichoblastoma depicts an immune staining with cytokeratin 20(CK20), particularly confined to the basal layer of the epidermis and amidst the hair follicles. Immune reactive CD34 is enunciated in the stroma of the tumour. Immune reactivity to various cytokeratins such as CK5, CK14 and CK19 along with 34BE12 is analogous in basal cell carcinoma and trichoblastoma. Immune reactivity to CK6 is cogitated in an estimated 10% instances of trichoblastoma as compared to a 90% reactivity enunciated with basal cell carcinoma. Basaloid cells of trichoblastoma also elucidate immune reactive p53. Enunciation of Ki67 is enhanced in basal cell carcinoma, in contrast to a trichoblastoma [7,8].

Differential Diagnosis

Trichoblastoma necessitates a differentiation from malignant conditions, most critical of which is a basal cell carcinoma. Distinction of tumefaction constituted by basaloid cell aggregates with proliferation is a pre-requisite from concordant conditions with similar morphology. Locally aggressive malignant dermal tumours such as basal cell carcinoma necessitate a demarcation from tumours of hair follicle genesis as cogitated with trichoblastoma [8,9].

Basal cell carcinoma is identical to trichoblastoma on histology and the entities elucidate extremes of the biologic spectrum. The neoplasm enunciates a shared histogenesis from primitive germinative pleuripotent stem cells of hair follicles. In contrast, basal cell carcinoma depicts a diffuse, myxomatous stroma, prominent cellular and nuclear atypia, singular cell necrosis and clefts or retraction spaces surrounding tumour cell collectives and an infiltrative pattern of growth [9,10]. Basal cell carcinoma demonstrates a lack of immune reactivity to cytokeratin 20 (CK20) and CD34 antigens.

Common tumours of the skin such as trichoepithelioma necessitate a demarcation from trichoblastoma. The aforementioned condition elucidates a basaloid epithelial differentiation. Lesions of trichoepithelioma tend to enlarge and configure horn cysts [10,11]. Lobules of basaloid cells with peripheral palisades, stromal condensation and vigorous mitotic activity are elucidated in trichoblastoma and basal cell carcinoma.

Cells with a clear cytoplasm and papillary mesenchymal bodies representing a derivation of hair

follicular pleuripotent cells are cogitated in trichoblastoma. Stroma circumscribing the tumour nodules in trichoblastoma is predominantly fibroblastic [11,12].

Basal cell carcinoma displays clefts and retraction of tumour cell accumulations from the enveloping stroma. Necrosis and irregular jagged outlines of tumour cell aggregates are commonly demonstrated in basal cell carcinoma, the stroma of which hypo-cellular and mucinous. Inverted follicular keratosis can originate from a virally induced epithelial hyperplasia and demonstrates a prominent follicular pattern on morphology [12,13]. Tumour cells are devoid of koilocytic atypia and immune reactivity to human papilloma (HPV) virus antigens is absent. Thus, histogenesis of inverted follicular hyperkeratosis, a variant of seborrheic keratosis, remains debatable [3]. Bcl2 immune reactive epidermal dendritic cells are elucidated in inverted follicular keratosis, though lesions of squamous cell carcinoma or seborrheic keratosis are devoid of the particular elements. Superficial epithelium of inverted follicular keratosis is immune reactive for calretinin, generally cogitated in the inmost layer of extraneous root sheath of hair follicles [13,14].

Adjunctive conditions necessitating a demarcation from trichoblastoma include dermal nevus, adnexal tumours such as cylindroma and pilomatrixoma, fibrous dermal tumour and epidermoid cyst. Aforesaid disorders can be distinguished with appropriate histological assessment [14,15].

Investigative Assay

Dermoscopy is a cogent modality for discerning diverse skin conditions, particularly cutaneous neoplasm. The non-invasive technique exhibits an acceptable precision in diagnosing the lesions. Dermoscopy can be adopted in the discernment of several neoplasm such as melanocytic, mesenchymal and epithelial tumours of the skin. The aforesaid conditions enunciate attributes which are characteristic of the lesions [15,16]. Dermoscopy of trichoblastoma demonstrates a purple or a purple reddish, homogenous, opaque zone and yellowish white homogenous articulations with traversing, arborizing blood vessels which are considered characteristic. Additionally, blue gray globules and blue gray ovoid cellular nests are cogitated, which are concordant and abundantly elucidated in basal cell carcinoma [16,17].

Therapeutic Options

Therapeutic intervention is necessary in disfiguring lesions for appropriate cosmetic results. Surgical excision is the optimal therapeutic strategy.

Histological Attributes	Trichoblastoma	Basal Cell Carcinoma
Low Magnification		
Silhouette	Regular	Jagged
Islands and Nests	Present	Present
Palisading	Present	Present
Retraction and Clefts	Occasional	Present
Medium Magnification		
Mucinous stroma	Absent	Present
Fibrotic stroma	Present	Absent
Stromal Cellularity	Predominant	Minimal
Papillary mesenchymal body	Present	Absent
Necrosis	Absent	Present
High Magnification		
Cytoplasm	Clear	Scanty to absent
Nucleus	Fine chromatin	Hyperchromatic
Mitosis	Occasionally brisk	Prominent

Table 1: Distinction between Trichoblastoma and Basal Cell Carcinoma [2].

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