

The Intercalated Fortified Perimeter-Basal Cell Adenoma

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Abstract

Basal cell adenoma may be considered as an autonomous, infrequent salivary gland tumour. The parotid is a major site of involvement besides the upper lip, buccal mucosa, lower lip, palate or the nasal septum. Basal cell adenoma is a low grade malignancy with a frequent reoccurrence. The tumour may appear at 5th to 7th decades of life. The tumour may primarily sub-divided into solid, trabecular, tubular and membranous types. Aggregates of basaloid cells with a prominent peripheral palisade and spherical globules of eosinophilic, hyaline material with an absence of myo-epithelial cells may be delineated. Canalicular adenoma as an independent entity may be defined by the occurrence of bi-layered strands or ribbons of columnar cells segregated by a loose, vascular stroma. An invasive pattern of tumour progression, enhanced mitosis (> 4 mitosis/10HPF) and 5% of Ki-67 reactive cells may define a basal cell adenocarcinoma. Keratin, carcino- embryonic antigen (CEA), alpha 1 anti-chymotrypsin and the alpha subunit of S-100 protein along with vimentin, actin, and the beta subunit of S100 may be exemplified by the neoplasm.

Keywords: Basal Cell Adenoma; Vimentin; Actin

Introduction

An autonomous, infrequent salivary gland tumour is the basal cell adenoma, indexed in the classification of the salivary gland tumours, issued by the World Health Organization [1,2]. Basal cell adenoma may frequently arise in the adults, with a minimal female preponderance. A congenital sub-type may be delineated, requiring a segregation from an embryoma [2]. The parotid is a major site of involvement, though some lesions may appear in the peri-parotid lymph nodes. It is a low grade malignancy with a frequent reappearance and generally a favourable prognosis [3]. The tumour may also be situated at the upper lip, buccal mucosa, lower lip, palate or the nasal septum [4,5]. Monomorphous adenomas are preponderantly analogous to the basal cell adenoma (54%) and may account for 1 - 3% of the major salivary gland tumours [6]. Individuals betwixt 5th and 7th decades usually exhibit the neoplasm. The neoplasm may also demonstrate an equivalent male to female proportion (M: F :: 1:1) [1,2].

Clinical characteristics

The parotid tumours are predominantly benign (70 - 80%), comprising of the pleomorphic adenoma as a frequent constituent. Monomorphous adenomas may be infrequent. Adenomas may be designated as the benign epithelial tumours of the salivary glands, which may not confirm to the traits of the pleomorphic adenoma. Basal cell adenomas may be sub-classified as the solid, trabecular, tubular and the membranous categories [1,2]. The encapsulated, gradually evolving tumour usually does not extend beyond a 3 cm dimension. The histology is usually confirmatory. Interpretation of a surgical specimen may be a precise technique for evaluating the tumefaction, although a Fine Needle Aspiration (FNA) may be executed for the accessible tumours. One third of the instances of basal cell adenoma may be concordant with a cylindroma or a tricho-epithelioma or an eccrine spiroadenoma of the scalp. The concordance belongs to the glandular or cutaneous category of tumours, identical to the basal cell adenoma and may be elucidated as an autosomal dominant disorder, as the tumour participation may be of the related individuals or family members [1,3].

Morphological elucidation

On gross examination, the tumours may frequently be cystic, encapsulated and usually of miniature dimensions than the benign mixed tumours [2]. A superficial, firm, mobile, painless swelling which may demonstrate a gray/brown exterior or a cut surface may be enunciated [5].

The primary sub-divisions of the tumour may be: solid, trabecular, tubular and membranous [1,2]. The occurrence of basaloid cells with a prominent peripheral palisade accompanied by spherical globules of eosinophilic, hyaline material may be indicative of the lesion. The absence of myo-epithelial cells is typical of the tumour, which may be a component of the benign mixed tumour and adjunctive salivary gland neoplasm [1,2]. The histology of basal cell adenoma may be distinguished by the emergence of typical and uniform basaloid cells. A specific component is a miniature cell with a scant cytoplasm and intensely stained, round to ovoid nuclei, generally situated at the perimeter of the tumour nests or islands [6,7]. The adjunctive cellular composition may be of an enormous cells with abundant cytoplasm and pale staining nuclei, centered within the tumour aggregates. The dual cellular components may be commingled [1,2]. An abundant, eosinophilic, basal membrane like configuration may encompass the tumour assembly, demarcating the cell nests from the enveloping connective tissue [6,7]. The tumour may display an architecture simulating an ameloblastoma [1]. Basaloid cells usually exhibit a palisade at the tumour perimeter with intermediate, blanched nuclei. Configurations akin to the basement membrane may depict profound eosinophilia, may circumscribe and segregate the basaloid cellular aggregates [1,2]. The Solid type of basal cell adenoma may be composed of the compactly arranged miniature cells [8].

The trabecular or tubular kind may essentially be constituted by cohesive clusters of cells. Attenuated cords or an architecture akin to the ducts or an amalgamation of the formulations described may be exhibited.

The membranous sub- category may comprise of extraneous cells simulating a palisade at the tumour margin accompanied by an excessive, hyaline basement membrane like substance [1,2]. Spindle shaped stromal cells with immune reactivity to S-100 protein may indicate the concordance of myoepithelial cells in the lesion. Tumours such as the pleomorphic adenoma or the adenoid cystic carcinoma with a mutable prognosis may mandate a demarcation from the basal cell adenoma, which necessitates a cogitation in the glandular tumours of the head and neck [8,9].

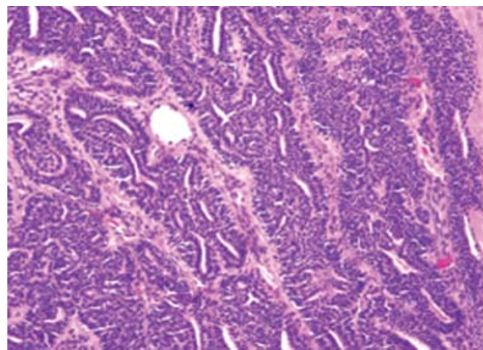


Figure 1: Basal cell adenoma -mixed tubular/trabecular pattern [16].

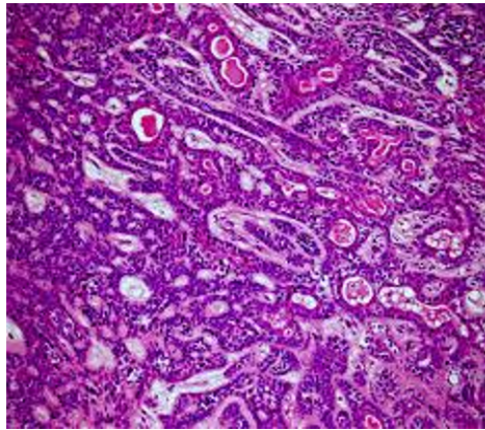


Figure 2: Basal cell adenoma with peripheral palisading [17].

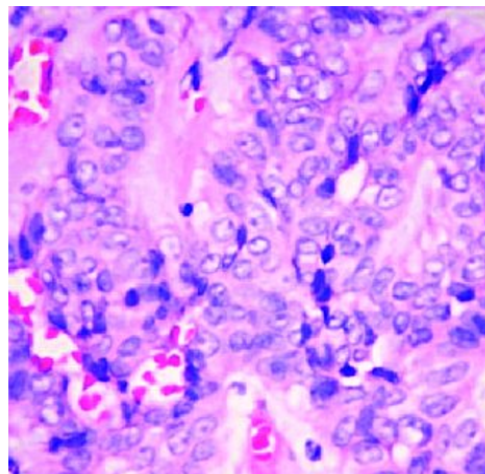


Figure 3: Basal cell adenoma with a prominent glandular pattern [18].

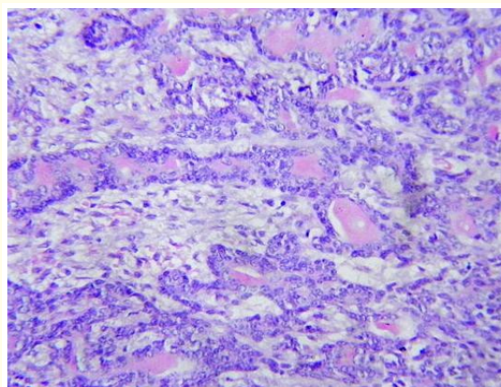


Figure 4: Basal cell with a trabecular pattern [19].

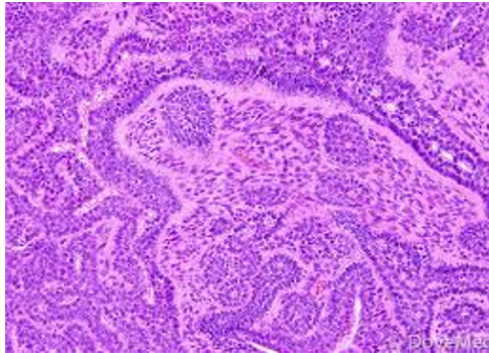


Figure 5: Basal cell adenoma with a mixed tubular /trabecular pattern [20].

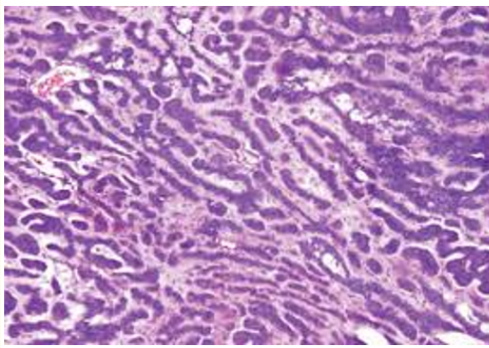


Figure 6: Basal cell adenoma with basaloid cells exhibiting a perimeter palisade [21].

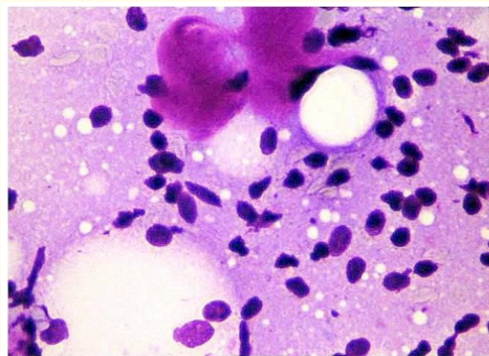


Figure 7: Basal cell adenoma with eosinophilic globules and basaloid cells-aspiration cytology [22].

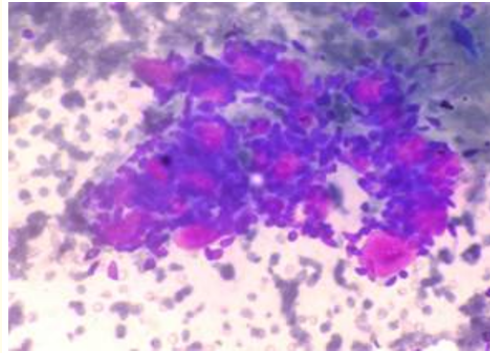


Figure 8: Basal cell adenoma mimicking an adenoid cystic carcinoma-aspiration cytology [23].

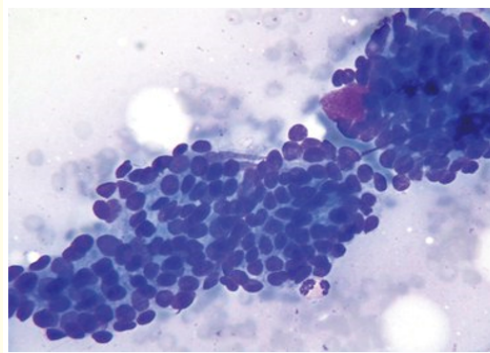


Figure 9: Basal cell adenoma with preponderantly basaloid cells- aspiration cytology [24].

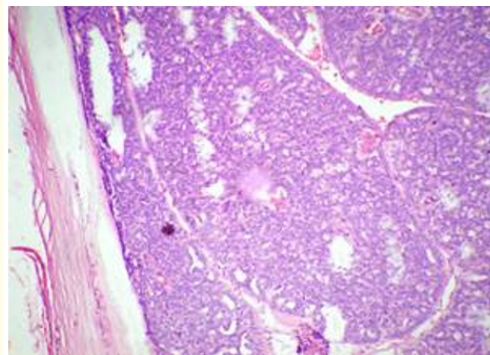


Figure 10: Basal cell adenoma with encapsulation and a palisade margin [25].

A substantial discriminating aspect is a cellular palisade at the perimeter of the tumour epithelium, with an ensuing “basaloid “ presentation. The tumour may preponderantly represent as tubular, trabecular or solid [2]. The variously designated Membranous or Dermal Analogue tumour may depict an accumulation of an abundant basal lamina like substance encompassing and enclosed within the epithelial cell nests, in a manner akin to a cutaneous sweat gland tumour termed as the dermal eccrine cylindroma [10]. Multiple dermal eccrine cylindromas may synchronize with multiple parotid basal cell adenomas with identical microscopic features and similar cytogenetic aberrations in the 16q region [2]. The canalicular adenoma, an adjunctive variant or an independent entity from the basal cell adenoma, may be defined by the occurrence of bi-layered strands or ribbons of columnar cells segregated by a loose, vascular stroma. This particular variant may have a propensity to commence from the minor salivary glands [10,11]. However, a typical appearance of the basaloid cells and the admixture of the canalicular and trabecular structures may propound that a definitive distinction amidst the two entities may not be possible. Loci of acinar differentiation may be enunciated in the basal cell adenoma, thus proposing that the occurrence of acinar cells in a salivary gland tumour may not be demonstrative of acinic cell carcinoma [1,2]. Adjunctive varieties of the basal cell adenoma may be the Striated duct adenoma, (depicting a clustering of glands lined by the eosinophilic duct cells with prominent striations with a minimal to absent stromal inter-positioning), the Lymph-adenoma and Adenofibroma. The basal cell adenoma requires a distinction from the basal cell adenocarcinoma, benign mixed tumour, basaloid type of squamous cell carcinoma. and adenoid cystic carcinoma [1,2]. Basal cell adenoma usually lacks the mesenchyme like component of the benign mixed tumour [11,12]. In contrast to the adenoid cystic carcinoma, the adenoma is encapsulated and is deficient in stromal and perineural infiltration. In contrast to the basal cell adenoma, an invasive pattern of tumour progression, enhanced mitosis (> 4 mitosis/10HPF) and Ki-67 reactivity in roughly 5% of the cells may be demonstrated in the basal cell adenocarcinoma [9]. The adenoid cystic carcinoma may exhibit concentric epithelial cells, intensely stained extraneous epithelium with a peripheral palisade and a thick, enveloping basement membrane like substance [1,2]. A parenchymatous or perineural infiltration may be depicted. The micro-cystic areas may exhibit absent vascular conduits, in contrast to the basal cell adenoma, which may demonstrate numerous endothelium lined vascular channels. Morphometry may be beneficial in segregating the two conditions [12,13]. Basaloid squamous cell carcinoma may manifest as solid cellular clusters, delineating a lobular architecture, abutting the superficial mucosa, miniature cells depicting a scarce cytoplasm, hyper-chromatic nuclei and absent nucleoli [1]. Minuscule cystic spaces permeated with a mucinous substance may be configured. However, a dual population of basal cells may not be elucidated. Contrary to the basal cell adenoma, the tumour cells may extend to surface epithelium or a dysplastic squamous epithelium may be enunciated [13,14]. Basal cell adenoma usually demonstrates specific macroscopic aspects which may facilitate the interpretation of the lesion. Tumour aggregates may be segregated from the inter-epithelial stroma, limited by an imperforate basement membrane. Such specific attributes may be absent in the pleomorphic adenoma or the adenoid cystic carcinoma. Adjunctive benign lesions which necessitate a discernment from the basal cell adenoma may be the mucocele, sebaceous cyst, lipoma or the nasolabial cyst [1,2]. The basal cell adenoma may clinically resemble a mucocele of the oral mucosa. However, the mucocele may arise in the lower lip of young individuals, while the basal cell adenoma usually impinges upon the upper lip of adults patients [1].

Electron microscopy

Elucidates that the bulk of the salivary gland tumours arise from the intercalated segment of the duct with a minuscule concurrence of the myoepithelial cells [2].

Immune-histochemical elucidation

The duct lining of the tubulo-glandular and trabecular zones may enunciate Keratin, Carcino- embryonic antigen (CEA), Alpha 1 anti-chymotrypsin and the alpha subunit of S-100 protein, the basaloid cells in the trabecular and solid regions may exemplify Vimentin, Actin, and the beta subunit of S100, suggestive of a myoepithelial presence [2]. Nevertheless, immune-histochemical evaluation may be advantageous in delineating the particular kind of epithelial cells exclusive to the basal cell adenoma, even as a certain diversity in the cell populations may exist, such as the duct epithelium or the myoepithelial cells. It has been proposed that an absence of myoepithelial cells may be

a typical aspect of the neoplasm, in contrast to a pleomorphic adenoma [1]. Basal cell adenoma may also elucidate an intense reaction to Vimentin and the monoclonal Anti muscle actin (HHF 35), the particular immune markers specific for the myoepithelial tumours [1]. The Solid basal cell adenoma may describe a prominent reactivity to the pan Cytokeratin antibody (KL1) and is usually non-reactive to Vimentin and the monoclonal Anti muscle actin (HHF 35) with a minimal concurrence of myoepithelial cells [14,15]. The Trabecular/Duct specific sub-categories describe cells which may be profoundly S-100 protein positive which propounds the appearance of a myoepithelial element and are non-reactive to Vimentin and the monoclonal Anti muscle actin. The particular immune marker may appear in the cells of basal cell adenoma neoplasm [1,2].

Conclusion

Basal cell adenoma may conduct in a benign manner, identical to the benign mixed tumour and a comprehensive surgical excision is generally curative. Malignant transformation of the basal cell adenoma is exceptional, though it has been scripted. The dermal analogue tumour category is especially likely to turn malignant. The malignant transformation may be an adenoid cystic carcinoma or a basal cell adenocarcinoma. Basal cell adenoma may essentially be treated with a simple surgical excision or by a superficial or a total parotid resection, where the parotid gland is incriminated. Minor salivary glands of the oral mucosa, when implicated, mandate an extra-capsular excision. Total parotid resection may be beneficially employed for managing the Membranous sub-type of basal cell adenoma, instead of the superficial parotid resection. The tumour may be multi-centric, with numerous reoccurrences and an infrequent malignant transformation. The capsule must remain intact during the surgical procedure, in order to reduce the probability of a re-emergence. Malignant conversion of the neoplasm may emerge. A extended follow up is a pre-requisite so that the tumour re-emergence may be exposed expeditiously.

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