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Basaloid squamous cell carcinoma - review of literature and report of a case

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Abstract

Basaloid squamous cell carcinoma (BSCC) is a distinct, rare and aggressive variant of conventional squamous cell carcinoma (SCC), with a predilection for head and neck region with common locations being tongue, floor of the mouth, palate, retromolar trigone, and gingival mucosa. Here, we present a case of BSCC of floor of the mouth in a 54 year-old male patient.

Keywords: Basaloid squamous cell carcinoma, aggressive basaloid cells,comedo necrosis

Introduction

Basaloid squamous cell carcinoma (BSCC) is an uncommon, aggressive variant of squamous cell carcinoma. In 2005, World Health Organisation (WHO) has considered BSCC as a separate clinico-pathological entity and described it as "an aggressive, high-grade variant of squamous cell carcinoma (SCC) composed of both basaloid and squamous components, with histopathologic appearance being divergent from well or moderately differentiated SCC"[1]. BSCC was first described as a separate entity in the head and neck region by Wain S L et al. in 1986 , with highest predilection rate in the tongue, larynx and hypopharynx[2]. This paper reports a case of basaloid squamous cell carcinoma of floor of mouth.

Case Report

A 54-year-old male patient reported with a complaint of a growth on the floor of the mouth of 4 months duration. Patient gave a history of pain and bleeding from the growth. The patient was a chronic smoker for the past 10 years. Intra oral examination revealed an ulcero-proliferative growth of size 2.5 x 2.5 cm on the floor of the mouth in relation to lingual aspect of 41,42,31,32 (Figure 1). The growth was tender on palpation. Enlarged bilateral level IIa nodes were noted. A provisional

diagnosis of carcinoma floor of mouth was made and incision biopsy was performed**.**

Histopathological examination of hematoxylin and eosin stained serial sections revealed an ulcerated dysplastic, parakeratotic stratified squamous epithelium which was seen infiltrating into the underlying delicate to moderately collagenous connective tissue stroma in the form of lobules, cords, islands, and clusters. The entire stroma was infiltrated with proliferating epithelial cells. Majority of the infiltrated tumor cells were basaloid in appearance with pleomorphic and hyperchromatic nuclei. The nuclei of the cells at the periphery of many of the lobules exhibited a palisading pattern (Figure 2 & Figure 3). Many of the islands showed comedo necrosis (Figure 4). Numerous atypical mitotic figures were also noted (Figure 5). Small amount of keratinization and perineural invasion also noted. A diagnosis of basaloid squamous cell carcinoma of floor of the mouth was given and patient was referred to Regional Cancer Centre, Trivandrum. The patient underwent wide surgical excision, marginal mandibulectomy and bilateral selective neck dissection (I, II, III). The histopathology of one of the right level I-b node showed metastatic squamous cell carcinoma without extra nodal invasion. The patient is disease free for the past one year.

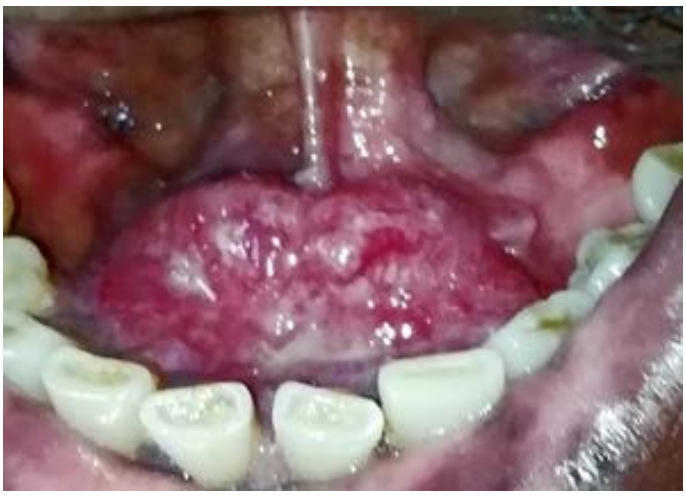

Figure 1: Intraoral image of the lesion

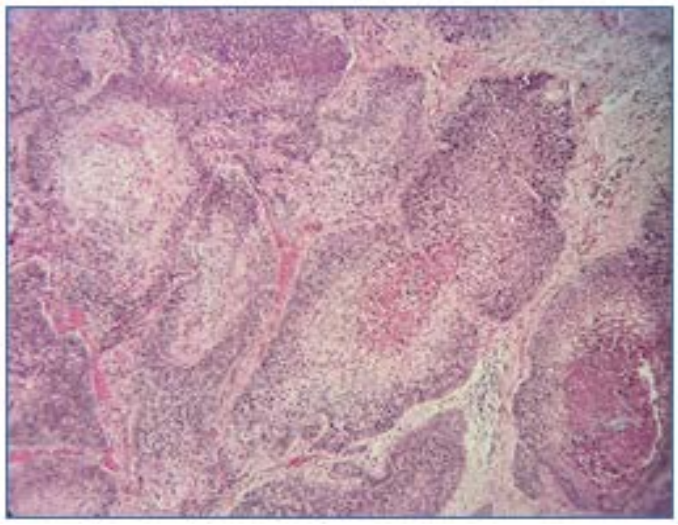

Figure 2: Tumor cells arranged in lobules with peripheral palisading and central areas of come do necrosis (H&E 10X magnification)

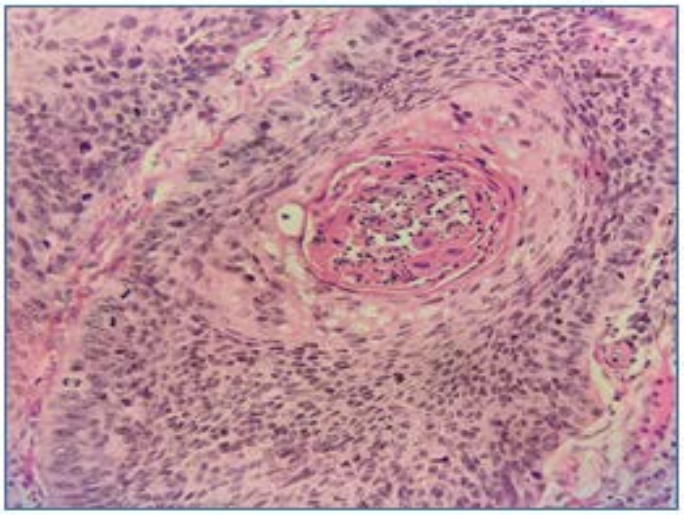

Figure 3: The lobules showing characteristic peripheral columnar cells with hyper chromatic palisaded nuclei, central basaloid and squamous cells (H&E 40X magnification)

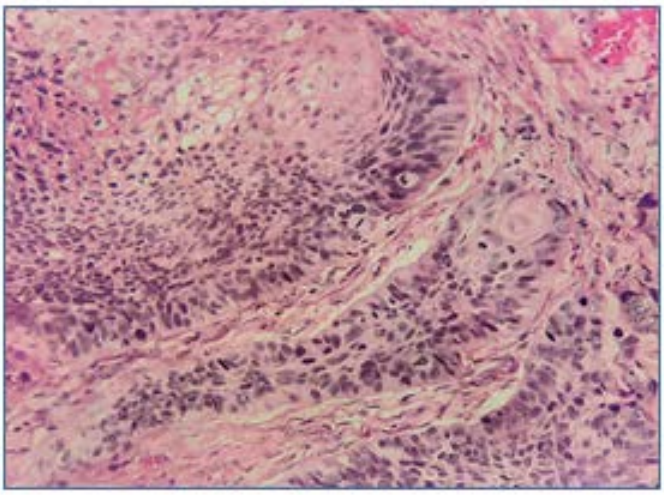

Figure 4: The lobules with characteristic comedo necrosis (H&E 40X magnification)

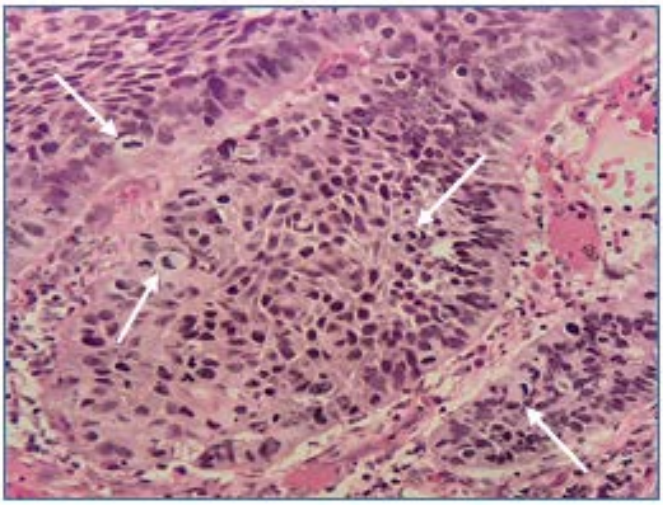

Figure 5: Numerous mitotic figures within the lobules (H&E 40X magnification)

Discussion

Basaloid squamous cell carcinoma (BSCC) is a rare and aggressive variant of squamous cell carcinoma (SCC) that occurs preferentially in the upper aerodigestive tract. The peak incidence is in the elderly population in their 6^{th}–7^{th} decades[3]. BSCC constitutes about 1% of all squamous cell carcinomas[4]. The term basaloid describes conglomerated cells with hyperchromatic nuclei and sparse cytoplasm[4] . The origin for BSCC has been suggested to be from a totipotent cell capable of divergent differentiation located in the basal zone of the surface epithelium or in the minor salivary glands of the sub-mucosa[2]. They occur predominantly in males with a long history of alcohol and tobacco abuse. Epidemiological studies also support the aetiological role of human papilloma virus (HPV) infection as a further risk factor. Friedrich et al[4] in his study found out that the rate of HPV-infected BSCC was extraordinarily high. About two thirds of the cases (61%) in his study were infected with HPV high-risk types, predominantly with HPV genotype 16. Clinically, it is an aggressive tumor with high rates of nodal (64%) and distant metastasis (44%)[5]. A case-control study by Soriano et al found a 6 times higher risk of distant metastasis in this variant compared to usual type of SCC[5]. BSCC metastasizes via lymphatics and blood vessels to regional and distant lymph nodes, lungs, bone, skin and brain[6]. Some authors have reported that metachronic second primary tumors had a high incidence of about 15% in the head and neck BSCC[7]. Banks et al[8]reported that the frequency of a second primary tumor in patients with oral BSCC was 5%.

Microscopically BSCC is composed of two main components, basaloid and squamous which exhibits variety of growth patterns including solid, lobular, cribriform, cords, trabeculae, nests and glands or cysts[9]. Lymphovascular infiltraton and surface ulceration is commonly encountered, whereas neurotropism is less commonly seen. The diagnostic feature is basaloid component that showing small, moderately pleomorphic cells with hyperchromatic nuclei and scant cytoplasm organized in a lobular configuration with peripheral palisading. These basaloid regions are in direct continuity with areas of squamous differentiation, including abrupt keratinization in the form of squamous pearls, individual cell keratinization, dysplasia, or squamous cell carcinoma (in-situ or invasive). The basaloid component frequently demonstrates marked mitotic activity (suggestive of

aggressive behaviour) as well as comedo necrosis in the centre of the neoplastic islands. The tumour cells are separated by a prominent dense pink hyaline material and small cystic spaces containing mucoid material. In metastatic disease, both basaloid and squamous cell components can be seen, although the basaloid features tend to predominate[9].

Wain et al. and recently Barnes et al. put down the following criteria to diagnose cases of BSCC. The features included[10]:

- Predilection for head and neck region in men in their 60s and 70s.
- An ulcerated or exophytic mass with submucosal soft tissue infiltration.
- Solid basaloid appearing dysplastic islands with biphasic pattern showing comedo type necrosis and pseudoglandular pattern.
- Abrupt foci of squamous differentiation with or without keratin pearls and surface mucosal epithelium showing dysplastic feature.

The main differential diagnosis for basaloid squamous cell carcinoma are adenoid cystic carcinoma (ACC,solid type), basal cell carcinoma(BCC), polymorphous adenocarcinoma, adenosquamous carcinoma(ASC) and salivary duct carcinoma. Adenoid cystic carcinoma does not show any squamous differentiation and usually metastasizes to distant sites rather than cervical lymph nodes and ACC usually does not show prominent pleomorphism, mitoses or necrosis[11]. Cutaneous basal cell carcinoma may invade into the upper aero digestive tract, but it has different histomorphologic features[11]. Even though irregular nests and lobules of basaloid cells with peripheral palisading in a mucinous or myofibroblastic stroma are seen in BCC, no evidence of differentiation or keratinisation is seen in the malignant cells. Another characteristic feature of BCC is cleft or separation artefacts surrounding the epithelial tumor cells. Comedo necrosis is absent in BCC and mitotic figures are usually few in numbers. Tubular structures, bland uniform nuclear features and diverse morphological patterns in polymorphous adenocarcinoma may be used to distinguish them from basaloid squamous cell carcinoma[11].

Focal necrosis and squamous differentiation usually seen in BSCC are not seen in basal cell adenocarcinoma. Eosinophilic cytoplasm and irregular shaped cystic spaces lined by papillary projections revealed by salivary duct carcinomas are not encountered in BSCC. In contrast to BSCC, adenosquamous carcinoma has a prominent squamous cell component, an absence of basaloid cells with peripheral nuclear palisading and the presence of glandular differentiation including intracellular and intraluminal mucin i.e., mucicarmine and PAS positive diastase-resistant material[12].

The prognosis of patients with BSCC compared with patients with conventional SCC remains uncertain. Studies done by Coletta et al. have shown that AgNOR and PCNA indices were significantly higher BSCC than in the cases of SCC[13]. Immunostaining for p53 protein showed a higher percentage of positive cells and more intense staining in the BSC tissues than in the SCC tissue[13]. Winzenburg et al [14] identified that distant metastases occurred in 52% of patients with BSCC and in 13% of patients with poorly differentiated SCC. Soriano et al [15] showed that patients with SCC were associated with notably higher survival rates when compared with patients with BSCC; furthermore, the rate of distant metastasis was six times higher in the cases of BSCC. However, de Sampaio Goes et al [16] declared that the prognosis did not differ between patients with BSCC of the oral cavity and those with conventional SCC.

Conclusion

BSCC is a distinct variant of SCC with aggressive clinical behaviour which affects various head and neck sites and with increased tendency for metastasis to distant sites. A well stained hematoxylin and eosin stained histopathological slide is the gold standard for the diagnosis of BSCC when no other compounding features like acinar, squamous differentiation etc. are present. Special stains and molecular markers may be used when the typical morphological appearance of cells are lacking or if any other features compounds the diagnosis. In our case hematoxylin and eosin stained sections showing the typical features where handful for arriving at a diagnosis. Our case of BSCC was also in consonance with the clinical findings, histopathological features and metastatic potential of the lesion as reported in literature.

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