Basaloid Squamous Cell Carcinoma – An Unusual Variant of Squamous Cell Carcinoma: A Case Report and Review of Literature

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ABSTRACT

Introduction: In the head and neck region, basaloid squamous cell carcinomas are rare histologic variants of squamous cell carcinomas. Their aggressive clinical course and their histological characteristics let them to be distinguished from squamous cell carcinoma.

Case report: In this report, one case of a rare but aggressive basaloid squamous cell carcinoma affecting the maxilla is presented.

Conclusion: Usually, basaloid squamous cell carcinoma occurs in the upper aerodigestive tract, the floor of the mouth, and the base of the tongue.

Keywords: Basaloid Squamous Cell Carcinoma, Squamous Cell Carcinoma

INTRODUCTION

In histopathological studies, Basaloid Squamous Cell Carcinoma (BSCC) is an aggressive and rare variant of oral squamous cell carcinoma (OSCC), first described by Wain et al. (1986).[1,2] It is considered as a high-grade tumor with a propensity for metastasizing. The BSCC presents as a dimorphic pattern with a characteristic basal cell component and a squamous component. It was added to the revised edition of the WHO classification in 1991.[3,4] The disease is more prevalent in the head and neck region, particularly in the region of the upper aerodigestive tract, including the larynx and hypopharynx. In oral cavity BSCC commonly occurs in the tongue, apart from that it has also been reported to occur in the floor of the mouth, palate, retromolar trigone, and gingival mucosa.[5,6]

CASE REPORT

A 58-years old male reported with a chief complaint of dull and intermittent pain in the left maxilla for one month. There were no significant past medical, family and dental history. He has a smoking habit since 10 years, with the frequency of 15-20 cigarettes/day.

On intraoral examination an ulceroproliferative growth involving the left side of the maxilla in relation to 26, 27 were seen. The ulcer was reddish-white with a pebbled surface and it was tender on palpation. The lesion was surgically excised and sent for histopathological examination.

The routine hematoxylin and eosin-stained sections were prepare, which revealed parakeratinized stratified squamous dysplastic epithelium. Epithelial cells are infiltrating into the underlying connective tissue stroma in the form of islands, nests, and chords (Figure-1). Tumor nests showed features of cellular and nuclear pleomorphism, nuclear hyperchromatism, altered nuclear-cytoplasmic ratio, atypical mitotic figures. The basaloid appearance of tumor cells can be seen with areas of comedo necrosis (area of dead or necrotic cancer cells). Few keratin pearls are also seen. Tumor islands show peripheral palisading of tumor cells with a high nuclear-cytoplasmic ratio. Underlying deeper connective tissue stroma is delicate to moderately dense with infiltration of chronic inflammatory cells chiefly composed of lymphocytes (Figure-2).The histological features in our case is clear, says that BSCC.

Periodic Acid Schiff (PAS) sating was used to demonstrate hyalinosis and eosinophilic material. The PAS staining of the stromal hyaline material and the basement membrane around the tumour nests and micro cystic spaces confirmed the diagnosis of BSCC (Figure-3).

The case we described involved the maxilla of BSCC is located in an unusual area. According to Campos et al.[7] as well, Rachel et al.[8] described an atypical presentation of BSCC in the retromolar trigone of a 30-year-old and a 65-year-old.Only five cases have been reported and published to date in this region (Table-1).

S. No	Study	Site
1	Pratyusha et.al.,2021	Maxillary Gingiva
2	Pathak et.al.,2015	Maxilla
3	Rachel et.al.,2011	Retromolar Trigone
4	Campos et.al.,2009	Retromolar Trigone
5	Ide F et.al.,2002	Oral Mucosa

Table-1

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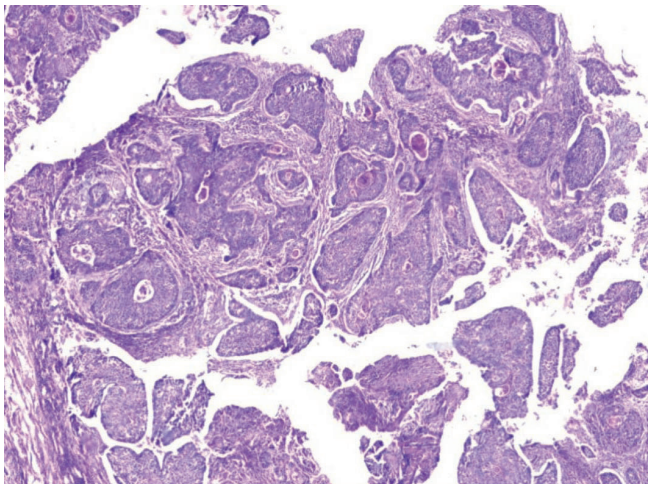

Figure-1: 4x – scanner view

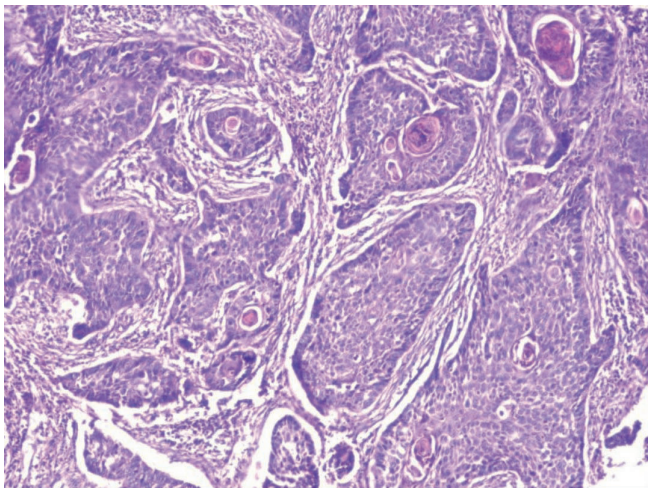

Figure-2: 10x low power view

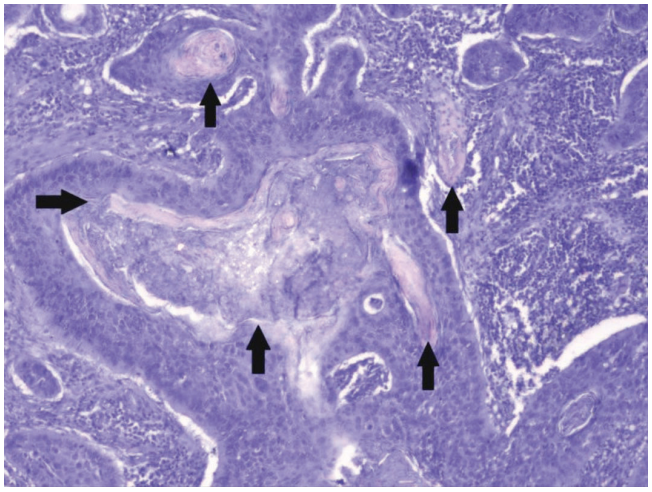

Figure-3: PAS Stained section for comedo necrosis

DISCUSSION

OSCC is the most common malignant epithelial tumour of the oral cavity within the head and neck region.[9] OSCC has typical morphological types with different grades of keratin pearl formation and cellular atypia i.e. well-differentiated, moderate-differentiated, and poorly-differentiated, while variant histologic subtype is found to be a lesser degree. These include verrucous, adenosquamous, and spindle cell carcinoma.[10] In addition to these variants, Wain et al. (1986) described BSCC first and identified it as a separate histological variant with clearly distinct morphological features and an increased propensity for metastasis to distant sites.[6]

BSCC is a rare variant of OSCC with a frequency of >1% of all squamous cell carcinoma which occurs predominantly in men in their 60 and 70s, but some studies have reported equally in both genders which are in contrast to the conventional OSCC.[11] It has been reported in individuals with a history of tobacco usage and alcohol consumption.[6,12] It arises in a variety of anatomic sites, the most frequent site to be affected by BSCC is the upper aerodigestive tract with a strong predilection for the base of the tongue, supraglottic larynx, and hypolarynx but also found in the anus, thymus, and uterine cervix. Clinically, it is an aggressive tumour with high rates of nodal metastasis (64%) and distant metastasis (44%). It is generally accepted that most of the BSCC cases are usually diagnosed at advanced clinical stages and because of that overall poor patient survival rates and unfavourable prognosis.[13]Therefore, some authors recommend a chest CT and FDG-PET in all cases to rule out early distant metastasis.[14]

Clinically, it resembels conventional OSCC such as painless irregular firm mass (verrucous or smooth) which may or may not be ulcerative.[15] The etiopathogenesis of BSCC is quite similar to the conventional, mostly seen in patients with a long history of smoking and alcohol drinking.[16, 17] The possible incidence with human papillomavirus and herpes simplex virus was demonstrated by Kleist et al. 2004. They reported a higher frequency of viral presence in BSCC than OSCC.[16]

BSCC is a high-grade bimorphic variant of OSCC; histopathologically tumour islands are made up of nests of basaloid cells with peripherally palisading cells. These cells have hyperchromatic nuclei and scanty cytoplasm. The nests of tumour cells are surrounded by stroma. Retraction spaces are also usually observed between the islands and stroma. Ulcerations may be seen in large tumours.[18]

Wain et al.[6] and recently Barnes et al.[19] diagnosed cases of BSCC based on the following criteria. The criteria include the following.

Predilection for head and neck region in men in their 60s and 70s

The presence of submucosal soft-tissue infiltration in an ulcerated or exophytic mass

Solid basaloid appearing dysplastic islands with biphasic pattern (with presence adjacent foci of conventional squamous component, dysplasia or carcinoma in situ of the surface epithelium) showing typical necrosis in the form of single-cell necrosis and comedo-type necrosis, and pseudo glandular pattern

Abrupt foci of squamous differentiation with or without keratin pearls and surface mucosal epithelium showing dysplastic features.

The case of BSCC we have presented met the criteria

above. Of these solid growth pattern of the basaloid cells with periodic acid -Schiff positive microcystic spaces is the most common and important in differentiating BSCC from SCC, This has also been observed in our case (Figure-4).[7]

Due to their overlapping features, despite having distinct histological features, Bscc is often difficult to distinguish from other epithelial malignancies like adenoid cystic carcinoma (solid-type), adenosquamous carcinoma, polymorphous low-grade adenocarcinoma, small-cell undifferentiated carcinoma, basal cell adenosquamous carcinoma, salivary duct carcinoma, and neuroendocrine carcinoma. It is possible to differentiate these tumours using immunohistochemical markers, however. BCCs are positive for BCL2 and 2 Ber-EP4 and are negative for EMA. BSCC cells show positive for 34 beta E12 and EMA and focally positive for CEA. In addition, BSCCs express more MMP1, MMP2, and MMP9 than SCCs.[18]

A BSCC may not be recognized in case of minor squamoid components, if it is overlooked or not sampled, especially in small biopsies. BSCC must be distinguished from tumours such as adenoid cystic carcinoma (ACC), which has a poorer prognosis and has different management regimes. BSCC may contain PAS-positive microcystic spaces which are similar to the characteristic punched-out spaces of ACC.[20] However; ACC usually has less pleomorphism, mitosis, and necrosis than BSCC. It is imperative to distinguish BSCC from small cell neuroendocrine carcinoma (SCNC) because of the difference in treatment for these two tumours. Both the types of tumours may be show sheets of small blue cells and rosette-like structures. However, SCNC usually shows characteristic nuclear molding and crushing artifacts, and is rarely connected to surface mucosa.[21]

It has been reported that BSCC has a worse biological behavior than conventional SCC, thus an unfavorable prognosis. Coletta et al. have demonstrated that AgNOR and PCNA indices are significantly higher in BSCC than in SCC. The BSCC tissues showed a greater percentage of positive cells and more intense staining for the p53 protein compared to the SCC tissues.[3]

The treatment of BSCC is controversial. There is no universal standard protocol for treatment. Surgical excision with postoperative radiotherapy is the most accepted treatment option for lesions that are resectable without evidence of metastasis.[22] Due to the BSCC's tendency to metastasize early after definitive therapy, systemic chemotherapy combined with locoregional radiation is a logical treatment plan.[23]

CONCLUSION

Our study reports that BSCC, a distinct clinicopathological entity with aggressive clinical behavior, has occurred in the maxilla, which is unusual for an uncommon lesion, such as BSCC, Their clinical and etiological similarities with conventional OSCC often lead to misdiagnosis. Histopathological characteristics enable accurate diagnosis and proper treatment.

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