

Case Report

Basaloid Squamous Cell Carcinoma in Retromolar Ridge Area: A Rare Case Report

Kanu Jain, Harshaminder Kaur, Madhushankari GS

Abstract

Basaloid squamous cell carcinoma is a rare variant of squamous cell carcinoma in head and neck region with a relative frequency of 2% and only few cases being reported. The objective is to report here a rare case of Basaloid squamous cell carcinoma in left retromolar ridge area in a 62 year old Indian male. The tissue mass obtained by excisional biopsy was submitted for histopathological and immunohistochemical confirmation of the tumor. After correlating the clinical, histopathological and immunohistochemical findings, a final diagnosis of Basaloid squamous cell carcinoma was given. The tumor showed unusual site of occurrence that suggested it was a rare case in this location of oral cavity. As Basaloid squamous cell carcinoma tends to have an aggressive course as compared to conventional Squamous cell carcinoma, with frequent local recurrence, regional and distant metastases, its diagnosis is imperative and should be considered in differential diagnosis of tumors arising in oral cavity.

Keywords: Neoplasms; Head and Neck; Squamous Cell; Carcinoma; Oral Cancer; Immunohistochemistry; Aggressive; Basaloid.

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Introduction

Basaloid squamous cell carcinoma (BSCC) was first described by Wain and colleagues in 1986¹ as an atypical histological subtype of squamous cell carcinoma (SCC). This entity was included in World Health Organization classification of head and neck tumors in 1991. However, in 2005 classification, WHO defined it as a variant of SCC with basaloid and squamous components associated in varying proportions.² BSCC, a rare distinct variant of SCC, with more aggressive course and poorer prognosis as compared to SCC, has a relative frequency of only 2% and is difficult to diagnose at times. It has frequently been confused with adenoid cystic carcinoma (ACC), basal cell adenocarcinoma (BCA) and small cell neuroendocrine carcinoma (SCN). However, distinction is important as the differences in clinical behavior, management and prognosis of these are profound. So it should be included in differential diagnosis of tumors arising in oral cavity.

The histopathological features and immunohistochemical expression of differentiation-related substances can be helpful in the characterization of biological features of this tumor.³ BSCC has been found in multiple sites in body but has a predilection for upper aerodigestive tract. Here, we describe a rare case of BSCC

arising in left retromolar ridge area in a 62 year old Indian male, which is an unusual site of occurrence for this tumor in head and neck region.

Case Report

A 62 year-old man presented with the chief complaint of pain in left mandibular posterior region since 10-12 days when he first noticed a swelling in relation to the same. Pain was intermittent with moderate intensity and relieved on medication. Patient gave history of tobacco smoking for last 20-25 years. On inspection, an irregular and ulcerated growth was noticed in the left mandibular retromolar region of oral cavity. The growth was slightly reddish in color with diffuse margins. It extended anteriorly on edentulous ridge and postero-superiorly towards hard and soft palate. It also extended laterally to obliterate the left mandibular vestibule in molar region (Fig 1). On palpation, the growth was soft and friable in nature with diffuse and ill defined borders. Bimanual palpation revealed enlarged and non tender submandibular lymph nodes on left side. An orthopantomogram did not reveal any significant findings. Only a superficial erosion of bone in left mandibular posterior ridge area was seen. Generalized bone loss was present with respect to edentulous areas (Fig 2).

The Histopathologic features of Hematoxylin & Eosin stained serial sections showed, presence of large basaloid cells arranged in masses. These tumor cells frequently showed glandular arrangements with central comedo type necrosis (Fig 3). The cells showed increased nucleocytoplasmic ratio, abnormal mitoses with large vesicular nuclei (Fig 4). Few areas of squamous differentiation with little keratin formation were also evident. Overlying epithelium showed dysplastic changes. Surrounding dense stroma of tumor cells showed mixed type of inflammatory cell infiltrate and few blood vessels.

Further Immunohistochemical staining was done using pancytokeratin and laminin markers. Tumor cells were found to be strongly positive for both cytoplasmic and membranous expression of pancytokeratin (Fig 5) and negative for laminin (Fig 6). After correlating the clinical, histopathological and immunohistochemical findings, a final diagnosis of BSCC was given.

Discussion

BSCC is a rare but distinct variant of SCC with same demographics. It is commonly seen in elderly males in association with the habit of smoking and alcohol intake.⁴ In a series of cases reported by Ide F, et al, the mean age of the patients was 61 years.⁵ In the present case, patient's age was 62 years and he presented with a history of bidi smoking for the last 25 years. Patient used to smoke around 15 bidis per day.

The great majority of cases of BSCC so far have been reported in the upper aerodigestive tract, including the esophagus, hypopharynx and larynx.⁶ Only few cases of oral BSCC have been reported till date, which makes it a rare malignant tumor of the oral cavity. The base of the tongue has been found to be the most common site followed by buccal mucosa, gingiva, floor of the mouth, maxillary sinus and maxillary tuberosity.⁵ The present case is a rare case of BSCC arising in the retromolar ridge area with one another case report published in this location so far.⁷ Lung is the most common site for distant metastasis but regional lymph nodes may be affected as well.⁸ In the present case, left submandibular lymph nodes were palpable.

Histologically, the main pathologic feature of BSCC is the presence of small tumor cells with a basaloid component. These tumor

cells may be arranged in masses or lobules, having variation of nuclei from being hyperchromatic without prominent nucleoli to vesicular nuclei, depending on the activity. The cytoplasm of tumor cells is usually scant. Tumor cells may show peripheral nuclear palisading and are seen frequently arranged in glandular pattern with central, comedo-type necrosis.⁴ In the present case, histopathological features were in accordance with features of BSCC, that is, large basaloid cells were seen arranged in masses. The tumor cells showed arrangement in glandular pattern with central necrosis. The basaloid cells showed large vesicular nuclei, increased nucleocytoplasmic ratio and abnormal mitoses. Few areas of squamous differentiation with little keratin formation were also seen. Overlying squamous epithelium showed dysplastic features. Surrounding dense stroma of tumor cells showed mixed type of inflammatory cell infiltrate and few blood vessels.

Several markers related to cellular differentiation have been used to provide important information about the histogenesis and biologic behavior of BSCC. Although the percentage of positive cells varies greatly among different reports, both basaloid and squamous components have been found to be immunohistochemically positive for several cytokeratins.^{3,9} Basement membrane around nests, shows immunoreactivity for laminin which may or may not be positive always, depending upon hyaline degeneration of basement membrane.⁹ In present case, the cytokeratin detected by the monoclonal antibody anti-pancytokeratin were strongly immunoreactive in all cells from basaloid and squamous components whereas no immunoreactivity was found for laminin marker. Studies done by Ricardo et al have shown significantly higher positivity for Silver nucleolar organizer regions and Proliferative Cell Nuclear Antigen in BSCC as compared to SCC. Immunostaining for p53 also showed a higher percentage of positive cells. Expression of Matrix Metalloproteinase (MMP-1, 2 & 9) was also reported higher in BSCC than in SCC. These findings suggested an aggressive behavior of this tumor.¹⁰

The differential diagnosis of BSCC would include ACC, BCA and SCN. The histopathological features of all these tumors are overlapping and differentiation is sometimes difficult. ACC is one of the most

frequent and common tumor of minor salivary glands. Palate and retromolar area are the favorite sites. It is usually confused with BSCC, especially the solid variant, which is composed of small basaloid cells in nests and lobules.



Figure 1: Photograph showing irregular ulcerated growth in the left retromolar ridge area of mandible.



Figure 2: Orthopantomogram showing superficial bony erosion of bone in the left mandibular posterior ridge area.

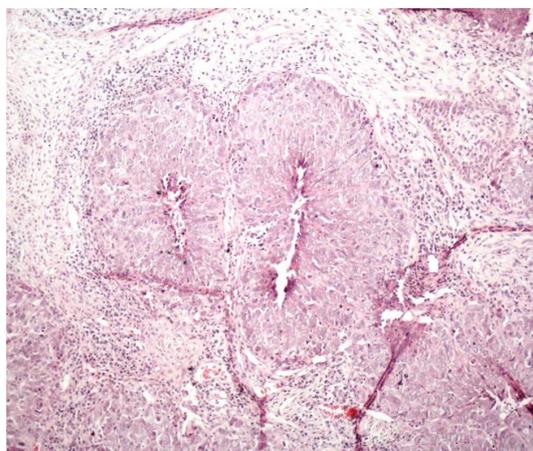


Figure 3: Photomicrograph showing large basaloid cells in glandular arrangements with central comedo type necrosis (H & E, 10X)

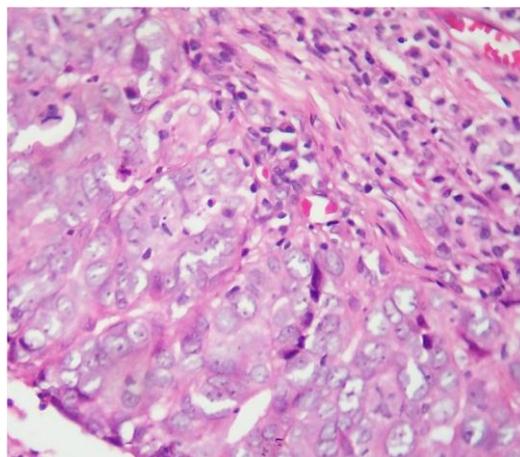


Figure 4: Photomicrograph showing large basaloid cells with large vesicular nuclei, increased nucleocytoplasmic ratio and abnormal mitoses (H & E, 40X).

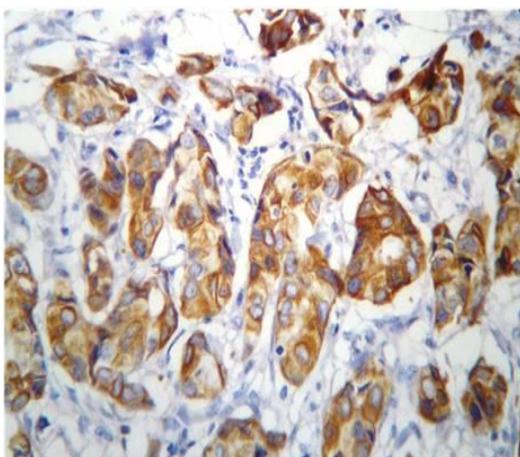


Figure 5: Photomicrograph showing immunohistochemical staining positive with anti-pancytokeratin (40X).

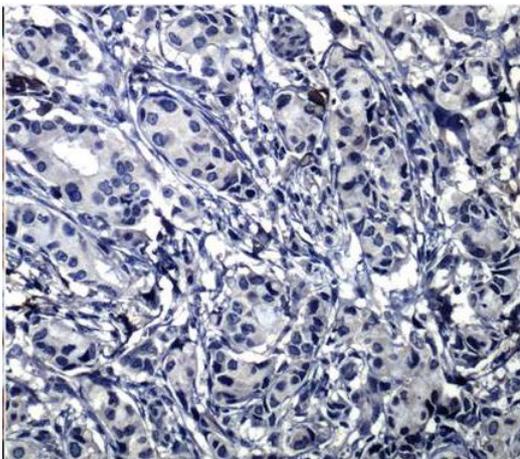


Figure 6: Photomicrograph showing immunohistochemical staining negative with anti-laminin (40X).

The absence of minor salivary gland involvement, the presence of large basaloid appearance of tumor cells with areas of squamous differentiation, dysplasia seen in surface epithelium and positive immunoreactivity for anti-pancytokeratin in present case of BSCC were important points in excluding salivary gland origin.

Furthermore, the presence of squamous component and surface epithelium with dysplastic changes in close contact with tumour nests ruled out the basaloid pattern of ACC. Others important features like mitosis, nuclear pleomorphism, and comedo necrosis are more prominent in BSCC as compared to adenoid cystic carcinoma as were found in our case. The presence of nodal metastases virtually excludes the diagnosis of ACC because this tumor rarely, if ever, metastasizes to lymph nodes.¹¹

BCA is a high-grade salivary gland malignancy and is composed of basaloid cells distributed in a cribriform and / or solid pattern.¹² It can present as one form with small, round cell with scant cytoplasm and a dark basophilic nucleus and another form with larger polygonal-to-fusiform cell with amphophilic cytoplasm. A lack of squamous component and presence of a well defined basement membrane around the tumor cell lobules but not inside pseudo cystic spaces in BCA are helpful in differentiating it from BSCC and thus absence of these features in our case helped to rule out BCA.

SCN of the upper aerodigestive tract is extremely rare but few cases have been reported in the literature. It most frequently involves the larynx. Large areas of geographic necrosis and identifiable "Azzopardi effect" are suggestive of SCN. The absence of these features and the presence of areas of squamous differentiation and surface dysplasia in our case ruled out SCN.

Treatment for BSCC includes radical surgery, radiotherapy, or both, with or without chemotherapy. Adjuvant chemotherapy might have a role in patients with metastasis. The prognosis of patients with BSCC is poorer than that of conventional SCC.^{5,13} Thus, the timely diagnosis and adapted management of this rare but aggressive tumor not only saves but also improves the quality of life of the patient.

Conclusion

Interestingly, our present case is a rare case of BSCC of oral cavity, arising in retromolar ridge area which further is an unusual location for this tumor. Careful evaluation and distinction from other tumors of oral cavity are imperative for diagnosis. A thorough medical history coupled with careful clinical examination, histopathological analysis and immunohistochemical evaluation can help in relieving the diagnostic dilemma associated with this tumor.

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