

Case Report

Basaloid squamous cell carcinoma: A rare and aggressive cancer of the oral cavity

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ABSTRACT

Basaloid squamous cell carcinoma (BSCC) is an uncommon and severe variant of squamous cell carcinoma (SCC). The tumor arises most commonly in the region of the head-and-neck. It is normally seen in the epiglottis, pyriform fossa, and the base of the tongue. It also occurs less frequently in areas like the palate, buccal mucosa, gingiva and the floor of mouth. Once compared to SCC, BSCC is documented for its aggressiveness in the head-and-neck area, along with its recurrence in local and cervical lymph nodes for its distant metastasis to the lungs. In addition, local lymph nodes are more common in regular recurrence rates. BSCC in the head and neck is more likely to spread to other parts of the body. It has an increased tendency to metastasize when compared with other tumors. We report a rare case of a BSCC arising in the buccal mucosa in a 65-year-old male patient and explain its clinicopathologic characteristics.

Keywords: Basaloid squamous cell carcinoma, Distant metastasis, Carcinoma, Malignant neoplasms, Oral cancer

INTRODUCTION

An aggressive, high-grade subtype of squamous cell carcinoma (SCC) is known as basaloid squamous cell carcinoma (BSCC). BSCC carcinomas are the most severe varieties. The chance of BSCC metastasizing to distant locations is higher than other malignancies. The tongue is where the tumor first appears, followed by the palate, gingiva, buccal mucosa, and finally the floor of the mouth.^[1] The two etiological variables that could contribute to the development of BSCC are “tobacco use” and “alcohol consumption.”^[2]

At present, the rates for males are twice as those for females and 90% of cases of carcinoma afflict those older than 45 years, with an average age at diagnosis of 60 years. However, younger men and women are now being affected as well. The clinical presentation of basaloid cell carcinoma in patients is comparable to the symptoms of conventional SCC. Clinical examination reveals a non-painful tumor mass that is verrucous or smooth, firm to rigid exophytic nodular masses with core necrosis.^[3]

SCCs account for more than 90% of oral malignancies, with BSCC being one of the rarest (0.6–0.8% of all SCCs) and most aggressive subtypes. It is commonly diagnosed when the cancer has spread to the liver and/or lung. The cells that make up their complicated structure are the same as those seen in the basal layer of a typical stratified squamous epithelium and they may or may not be ulcerative. The BSCC cells have a solid nest-like histological pattern with squamous cells in the middle and basaloid cells around the border. The histological signature of BSCC and the sign of

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tumor is a dimorphic pattern, which is characterized by a basal cell percentage mixed with a squamous cell component.^[4,5]

CASE REPORT

In this case report, a 65-year-old man has experienced severe discomfort and edema in the lower right back tooth region for the past 1 month. The growth of the ulcer was sluggish and intermittent, along with swelling and discomfort that gradually increased in size. Tooth movement and exfoliation in the lower back teeth region were also noted. He has been a known diabetic for the past 5 months. He has a habitual history of alcohol consumption and smoking beedi (half a packet daily) for the past 40 years.

A facial asymmetry on the right side was observed during extraoral clinical examination, with a palpable, tender, and hard swelling measuring 4 × 4.5 cm that extended superiorly from the ala-tragal line to the lower border of the jaw [Figure 1]. Right lower lip paresthesia, a single right submandibular lymph node measuring 1 × 0.5 cm in size, and a step deformity on the lower right border of the mandible were seen.

An abscess lesion that involved 46, the alveolus, the retromolar trigone, and the buccal vestibule was visible during the intraoral examination. At the site of ulcer, tenderness on palpation with a consistency that ranged from soft to hard and bleeding on probing was elicited. On the right side, the tongue movement was restricted. The missing teeth are 16, 47, 48, 37, 38, and 24 [Figure 2].

Based on the patient's clinical condition, a preliminary clinical diagnosis of carcinoma was made. The patient was informed about the procedure and informed consent was obtained. After that, an incisional biopsy was performed



Figure 1: Extraoral clinical examination showing mild facial asymmetry noted on the right side of the face.

and sent for histopathological examination. The patient was also instructed to obtain an orthopantomogram(OPG) and computed tomography(CT) scan for further confirmation. OPG revealed radiolucency involving the lower right border of the mandible [Figure 3]. CT scan showed a heterogeneous lesion that had infiltrated the lower right border of the mandible.

According to the histopathological report, the dysplastic parakeratinized stratified squamous epithelium has invaded the underlying connective tissue to form a tumor island. The tumor's proliferative behavior establishes as interconnected tables, islands, or nests [Figure 4]. The tumor cells exhibit nuclear hyperchromatism, altered nuclear–cytoplasmic ratio, and an incursion of inflammatory cells. Tumor islands with comedonecrosis and focal keratinization were seen with areas of mitosis [Figure 5]. The buccal mucosa BSCC was confirmed by the histopathological investigation.

DISCUSSION

The overall incidence of BSCC is superior to 1 out of 100 SCC patients. As a result, it is the least prevalent type of SCC. However, several investigations have shown that there is no



Figure 2: Intraoral examination showing, ulceroproliferative lesion extending from 46 including alveolus, retromolar trigone, and in the buccal vestibule superiorly.



Figure 3: Orthopantomogram showing radiolucency involving the right side at the lower border of the mandible.

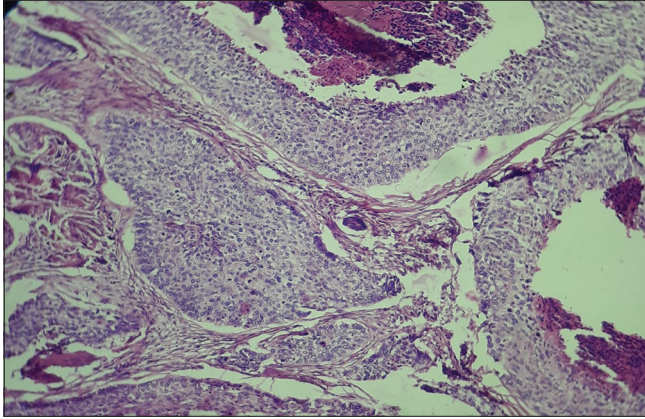


Figure 4: Photomicrograph showing the palisaded arrangement of basaloid cells in the form of cords and islands.

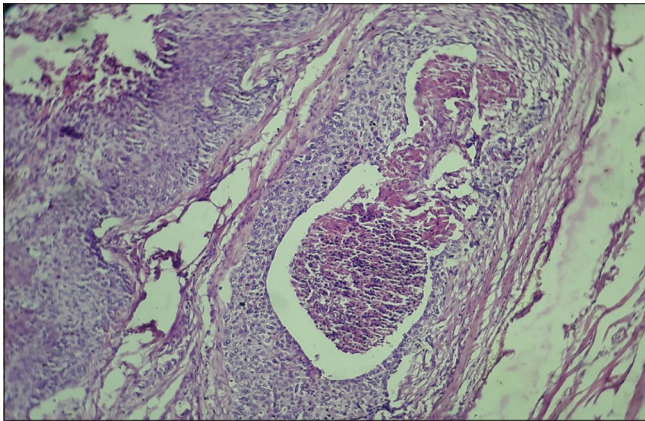


Figure 5: Photomicrograph showing tumor islands of comedonecrosis and focal keratinization.

gender error, which contradicts SCC.^[2] It has been reported to be more prevalent among older populations. Clinically, the patient has a painless irregular lump that is firm and may not be ulcerative.^[6] Basaloid carcinoma has a similar normal mediator and pathophysiology to conventional SCC. The majority of patients have an extended history of smoking and drinking.^[7,8]

Histologically, BSCC comprises a biphasic arrangement of basaloid and squamous integrants, with the basaloid integrant dominating (80–90%).^[9] Basaloid cells feature a higher nuclear–cytoplasmic ratio, oval and hyperchromatic nuclei^[1] lacking noticeable nucleoli, and advanced nuclear cytoplasmic relation than extra cell types. Furthermore, the nuclear–cytoplasmic volume ratio is higher in basaloid cells. Mitotic structures and nuclear pleomorphism were seen frequently in each case. The basaloid feature consists of cords, nests, islands, and lobules.^[7]

The basaloid cells that form tumor islands exhibit comedonecrosis and focal keratinization in certain areas. Islands of epithelium made up of basaloid appearing cells

with peripheral palisaded arrangement, showing large vesiculated nuclei with increased nuclear cytoplasmic ratio can be seen. These cells have elongated nuclei and less eosinophilic cytoplasm. Cellular palisading arrangement can be seen around the tumor's edge and cystic regions can be inside the tumor itself in the neoplasm.^[10]

The potential link between BSCC, herpes simplex virus, and human papillomavirus was explained by Gupta *et al.* in 2004.^[11] Their research indicates that BSCC has a higher probability of virus occurrence than SCC. It is possible to differentiate histopathological features between other variations in comparison to other malignant forms, including adenoid cystic carcinoma (ACC), adenosquamous carcinoma, basal cell carcinoma, and salivary duct carcinoma.^[7] A system of cancer called ACC resembles BSCC. When only a few diagnostic biopsy sample was present, Gupta *et al.* discovered that it is difficult to distinguish between BSCC and ACC. However, the solid basaloid cells with confident microcystic gaps for Periodic acid and Schiff^[10,12] are the most important characteristics for distinguishing BSCC from SCC, although only a few diagnostic sample was present, Gupta *et al.* discovered that it is difficult to distinguish between BSCC and ACC.^[11]

Compared to SCC, BSCC has a poor prognosis because it is more severe than regular SCC,^[8] and endurance rates were significantly lower than the conventional SCC. Coletta *et al.*'s research showed that when comparing cases of BSCC to cases of SCC, the argyrophilic nucleolar organizer regions (AgNOR) and proliferating cell nuclear antigen (PCNA) indices were noticeably higher in the BSCC cases.^[2]

When the tissues were immunostained for p53 protein, the BSCC tissues had a higher proportion of positively stained cells and more vital staining than the SCC tissues. Furthermore, matrix metalloproteinase-1 (MMP-1), MMP-2, and MMP-9 levels were higher in cells resulting from BSCCs than in cells derived from SCCs.^[2]

Head-and-neck cancer is the most predominant BSCC that spreads to lymph nodes.^[6] In 2012, Chaidas *et al.*^[9] revealed basaloid squamous cell malignancy with increased nodal involvement (64%). Nodal metastasis is more common in laryngeal, hypopharyngeal, and tracheal head-and-neck SCC cases. According to a study, people with BSCC are more likely to acquire primary and secondary upper aerodigestive tract neoplasms. Winzenburg *et al.* concluded that BSCC had a distant metastasis rate of 52%, whereas conventional SCC had a rate of only 13%.^[13-14]

Our case had the classic histopathologic appearance of BSCC. Fragments of dysplastic squamous epithelium were visible, penetrating connective tissue. The tumor cells had a basaloid appearance with peripheral palisading, comedonecrosis, and

occasional squamous differentiation that encouraged us to make the final diagnosis of BSCC.

Because of their proclivity to recur after ultimate treatment, metastatic cancer is treated with comprehensive surgical excision, followed by postoperative radiation and universal chemotherapy. This has been established as the most successful therapeutic approach, particularly for BSCC.

CONCLUSION

Basal cell SCC is the rarest and most aggressive variety of squamous cell cancer. Based on its histopathology, it must be distinguished from other carcinomas with a basaloid shape. After receiving a diagnosis of BSCC, the clinical aggressiveness of the tumor and degree of metastasis should be considered while selecting an appropriate therapy. It is crucial to remember that a second primary tumor could develop anywhere.

Ethical approval

The research/study complied with the Helsinki Declaration of 1964.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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