CASE REPORT

Basaloid squamous cell carcimoma: A rare case report with review of literature

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ABSTRACT

Basaloid squamous cell carcinoma (BSCC) is a distinct variant of conventional squamous cell carcinoma (SCC), predominantly localized in the upper aerodigestive tract. In the head and neck region, the tumor has a strong predilection for extra-laryngeal sites, such as the base of the tongue, tonsil, hypopharynx and supraglottic larynx. BSCC has well-defined histological features, characterized by nesting, lobular and trabecular arrangement of basaloid cells. Central comedonecrosis within the cell nests, cells with nuclear palisading and high-grade dysplasia in overlying mucosa are the main characteristics. The tumor is considered to be highly aggressive and often presents itself as an advanced stage lesion, thus demanding early diagnosis and prompt treatment. We here report a case of 72-year-old male diagnosed with BSCC involving the right tonsillar region.

Key words: Basaloid cells, basaloid squamous cell carcinoma, comedonecrosis, squamous cell carcinoma

INTRODUCTION

Basaloid squamous cell carcinoma (BSCC), first described in the head and neck by Wain *et al*., in 1986, is a rare distinct variant of squamous cell carcinoma (SCC).[1] It was included in World Health Organization (WHO) 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 in varying proportions.[2] It occurs in various sites of the head and neck region and is believed to have a poor prognosis.[3] Histopathologically, the most striking feature of BSCC is the presence of solid epithelial nests showing basaloid appearance and malignant features.[4] The infiltrating tumor shows variety of growth patterns, such as solid lobular, cribriform, cords, trabeculae, nests and glands or cysts.[3] The histopathologic and immunohistochemical findings of BSCC are different from conventional SCC and opinions vary as to its clinical behavior and prognosis compared with conventional SCC.[1] Having a relative frequency of only 2%, it is difficult to diagnose and frequently has 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. Therefore, it should be included in the differential diagnosis of tumors arising in the oral cavity.[2] Here we describe a rare case of BSCC arising in the right tonsillar region in a 72-year-old male, which is an unusual site of occurrence for this tumor in the head and neck region. BSCC, when compared to conventional SCC, is a more aggressive lesion and associated with a poor clinical outcome, thus reiterating the importance of early diagnosis of such lesions and prompt treatment.

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A 72-year-old male patient reported to the Department of Oral and Maxillofacial Pathology with the chief complaint of pain and burning sensation in lower right back region of jaw since 5 months. The patient was apparently alright 5 months back [Figure 1]. He then noticed a small ulcer in his right posterior tonsillar region, which gradually increased in size. He experienced sharp, continuous and non-radiating pain. Burning sensation on eating hot food was present. The patient had the habit of bidi smoking, 1 packet daily since 40 years. On extra-oral examination, right submandibular lymph nodes were palpable. Intra-oral examination revealed an irregular ulcer approximately 1.5 × 2.5 centimetres in size in the right tonsillar region extending anteroposteriorly from the right retromolar area to posterior faucial pillar and

superoinferiorly from the side of uvula to pterygomandibular raphe [Figure 2]. The surface of the ulcer was covered with a yellowish-white slough. On palpation, it was soft and tender. Based on clinical findings, differential diagnosis of squamous cell carcinoma and tubercular ulcer was made. Routine hematological investigations were advised. All values were within normal limits except hemoglobin value and Erythrocyte sedimentation rate (ESR). OPG showed no positive findings. Posterio-anterior (PA) chest view was advised to rule out whether lesion is primary or secondary and also to rule out tuberculosis. [Figure 3] Incisional biopsy was performed and the tissue specimen was routinely fixed and processed. Hematoxylin and Eosin (H and E) stained section showed superficial dysplastic stratified squamous epithelium invading the underlying connective tissue stroma [Figure 4]. The connective tissue stroma showed islands, strands and cords of neoplastic epithelial cells. These islands, strands and cords showed peripheral palisading basaloid cells [Figure 5] with hyperchromatic nuclei and scanty cytoplasm. Squamous component was evident in the center of the basaloid islands, strands and cords [Figure 6]. Immunohistochemistry was conducted on the tissue section for cytokeratin 7, Epithelial Membrane Antigen (EMA) and CD117, which showed weak positivity for cytokeratin 7 [Figure 7], strong positivity for epithelial membrane antigen in tumor islands [Figure 8] and negative CD 117 staining [Figure 9]. Thus, based on clinical, histopathological and immunohistochemical findings, a final diagnosis of BSCC was made.

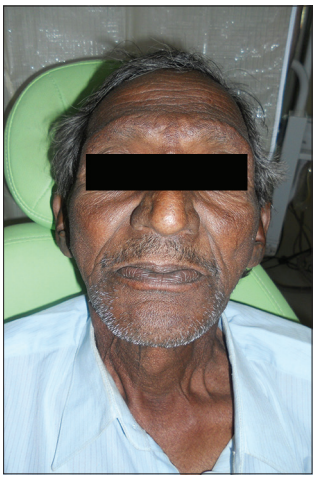

Figure 1: Extra-oral photograph of the patient

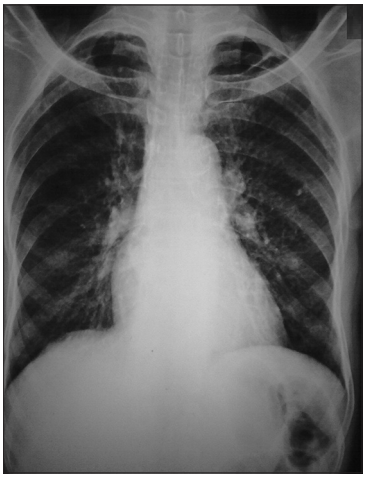

Figure 3: Postero-Anterior (PA) view of chest X-ray.

DISCUSSION

BSCC first described by Wain *et al*., in 1986[5] is a rare, histologically distinct and highly aggressive variant of SCC. They diagnosed BSCC on the basis of four principal histologic features: (a) Solid groups of cells in a lobular configuration, closely apposed to the surface mucosa; (b) small, closely packed cells with scant cytoplasm; (c) dark, hyperchromatic nuclei without nucleoli; and (d) small, cystic spaces containing mucin-like material.[6] Since then, around 200 cases have been published and most of them are located in the larynx.[7] Cadier and others first reported it in the oral cavity. A total of

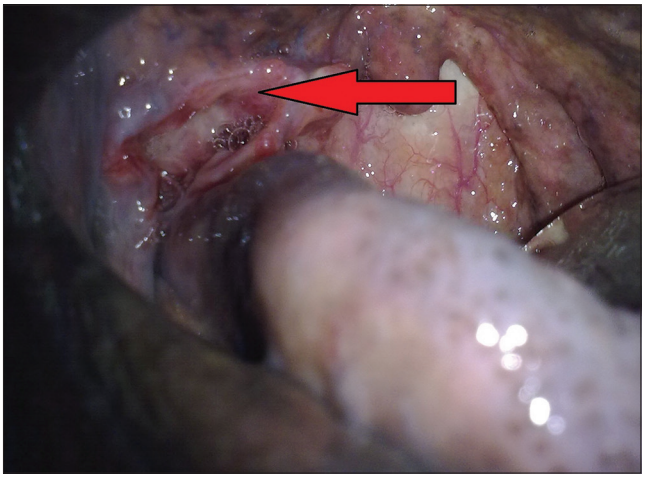

Figure 2: Intra-oral photgraph showing ulcer in posterior right tonsillar region (indicated by red arrow)

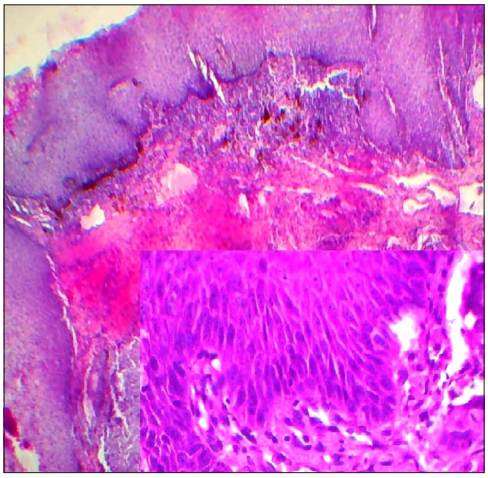

Figure 4: The superficial dysplastic stratified squamous epithelium with underlying connective tissue stroma (H&E stain, x40); Inset: Showing dysplastic epithelium (H&E stain, x400)

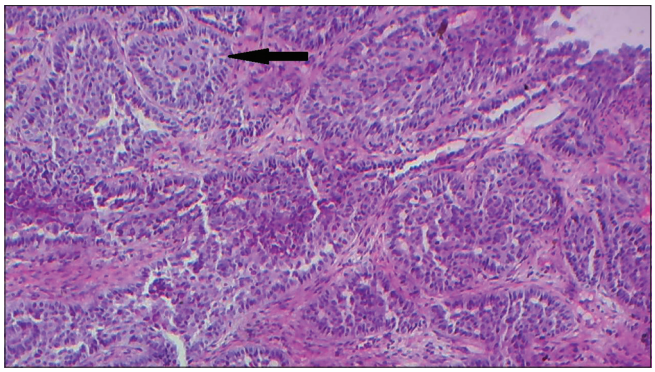

Figure 5: Solid dysplastic islands of basaloid cells in the connective tissue stroma [indicated by black arrow] (H&E stain, x100)

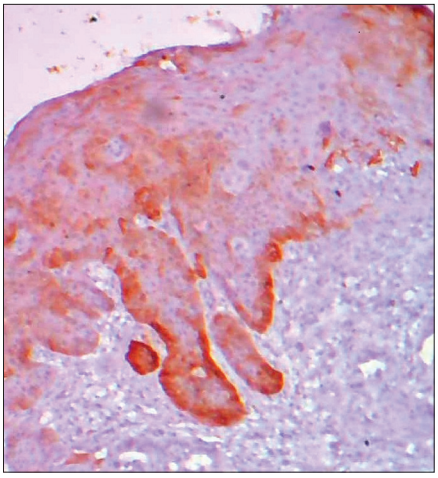

Figure 7: Photomicrograph showing weak positivity for cytokeratin 7 (IHC stain, x100)

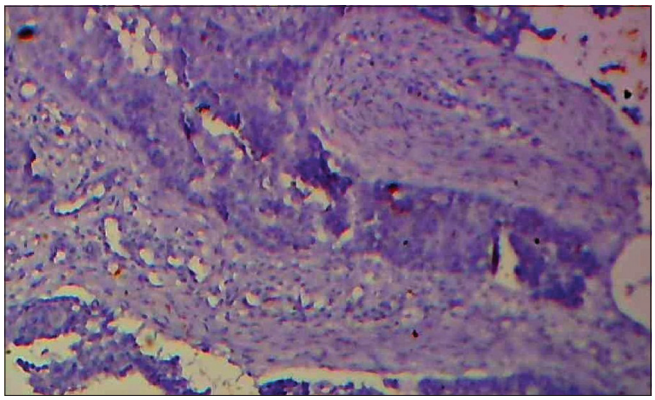

Figure 9: Photomicrograph showing negative staining for CD 117 (IHC stain, x100)

45 cases of BSCC involving the oral cavity have been reported in literature, with a strong predilection for the base of the tongue [61%] and floor of the mouth [30%].[4] Other areas in the head and neck region that are most frequently affected are the hypopharynx and tonsils. BSCC of upper aerodigestive tract typically occurs in old age and commonly affects males.[8] Similar to conventional SCC, BSCC also shows strong association with tobacco and alcohol.[7] Clinically, it is

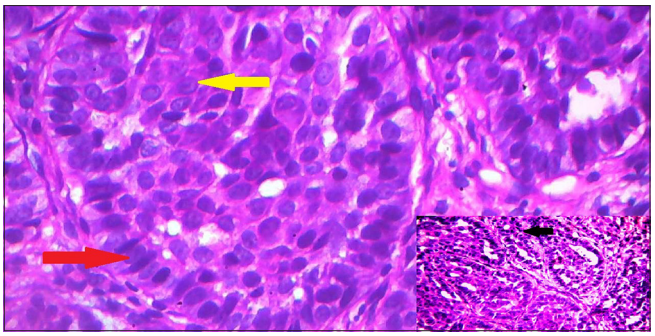

Figure 6: High-power view showing tall, columnar basaloid cells (hyperchromatic and palisaded nuclei) at the periphery of the dysplastic islands [indicated by red arrow] with squamous component in the centre [indicated by yellow arrow] (H&E stain, x400); Inset: Low power view of the same (H&E stain, x100)

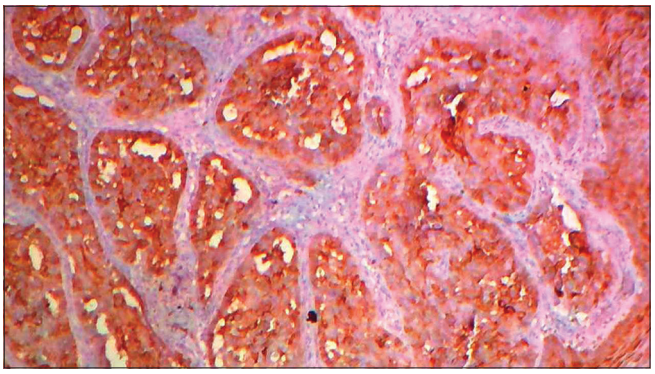

Figure 8: Photomicrograph showing strong positivity for Epithelial Membrane Antigen (IHC stain, x100)

an aggressive tumor with high rates of nodal (64%) and distant metastasis (44%).[9]

The clinical features of BSCC are similar to conventional SCC; therefore, it becomes very difficult to distinguish it from SCC. Therefore, its diagnosis depends mainly on the histopathologic and immunohistochemical features.[1]

Differential diagnosis for BSCC includes basal cell carcinoma, adenoid cystic carcinoma (solid variant), adenosquamous carcinoma, basal cell adenocarcinoma, salivary duct carcinoma and neuroendocrine carcinoma.[10]

Basal cell carcinoma is distinguished by uniform-appearing tumor cells with scanty cytoplasm and large hyperchromatic oval nuclei showing peripheral palisading. Mucin is present in the surrounding stroma, with cleft artifact occurring between tumor nests and surrounding stroma.[10]

Adenoid cystic carcinoma (ACC, solid variant) shows groups of cuboidal cells, with dark nuclei.[10] ACC lacks areas of squamous differentiation, cytologic and nuclear atypia; antibodies to CD117 react with most ACCs.[11] To differentiate BSCC from ACC (solid variant) we have applied CD117 because ACCs are positive for CD117 whereas BSCCs are not.

Adenosquamous carcinoma shows glandular structures lined by basaloid, columnar or mucin-secreting cells. Intracytoplasmic mucin is demonstrated by mucicarmine staining.[10]

Basal cell adenocarcinoma shows two forms of cells, usually intermingled with each other-small round cells and large polygonal cells. For the diagnosis of carcinoma, there should be more than 4-5 mitotic figures per 10 high-power fields.[10]

Basal cell ameloblastoma shows islands of odontogenic epithelium lined peripherally by cuboidal cells, surrounding central uniform basaloid-appearing cells. There is absence of central comedo necrosis and any squamous component.[10]

Salivary duct carcinoma shows tumor islands with large central cystic spaces with comedo necrosis and a several cell layers-thick peripheral tumor cells that are cuboidal/polygonal and have a moderate amount of eosinophilic cytoplasm.[10]

SCC is differentiated by Cytokeratin (CK) 13 positive staining in the area of well-differentiated squamous cells but most basaloid cells in BSCC showed no immunoreactivity.[1] Studies done by Ricardo *et al.,* have shown higher Proliferating Cell Nuclear Antigen (PCNA) and Argyrophilic Nucleolar Organizing Region (AgNOR) and p53 positivity in BSCC when compared with SCC. Similarly, increased expressions of Matrix Metalloproteinase (MMP), MMP-1, MMP-2 and MMP-9 were reported in BSCC than in SCC, suggesting a more aggressive behavior of BSCC than SCC.[4]

Morice *et al*., used CK Ab34 beta E12 to differentiate BSCC from small cell undifferentiated carcinoma.[5] BSCC are positive for 34βE12 and EMA and focally positive for Carcino Embryonic Antigen (CEA).[9] Immunohistochemically, BSCC expresses cytokeratins and EMA. Some authors recommend cocktails of keratins composed of Cam 5.2, pankeratin AE/AE3 and CK7, while others propose the high molecular weight keratin 34βE12 as the most useful marker for this tumor.[12] To confirm that the present tumor was of epithelial origin, we used EMA and CK7, as these are the already proven markers of epithelial tissue origin.[8] Recent studies have shown that Human Papilloma Virus (HPV) might play a role in the pathogenesis of some of the cases of BSCC. HPV positive BSCCs may be less aggressive than HPV negative BSCCs. In 3 cases of nasopharyngeal BSCC, Paulino *et al*., have detected Epstein-Barr virus (EBV), but whether EBV and HPV are causal or contributory factor in BSCC is unclear.[5]

There is no established consensus for treatment. Surgery of the tumor and the lymph nodes associated with radiotherapy is usually seen in most of the literature.[7] Although considerable controversy still exists regarding the comparative analysis of the clinical course and prognosis of BSCC and conventional SCC. Studies have proven that BSCC is a high-grade variant of conventional SCC, associated with poorer prognosis and increased rate of recurrence. Therefore, rare lesion such as BSCC must be reported for the better understanding of the nature of such tumors.

CONCLUSION

BSCC is a distinct clinicopathological entity whose diagnosis still remains on hematoxylin and eosin sections by recognizing the defined histological criteria described two decades ago. However, its aggressive clinical behavior reiterates prompt diagnosis and treatment. Immunohistochemistry may be a useful diagnostic tool in recognizing such lesions at an early stage.

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