Case Report

Squamous cell carcinoma with osteoclast-like giant cells masquerading as pleomorphic sarcoma: A rare case report

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ABSTRACT

Squamous cell carcinoma (SCC) with osteoclast-like giant cells (OLGCs) is a rare entity known to occur in skin, breast, lung, and pharynx. Only a single case of SCC containing OLGC in larynx has been reported so far. We report a case of a 65-year-old male patient presenting with sudden onset respiratory distress, who was subjected to biopsy, which was reported as undifferentiated sarcoma which was endorsed on laryngectomy specimen, however, sections from cervical lymph nodes revealed deposits of SCC. Extensive resectioning revealed a single focus showing origin of poorly differentiated carcinoma from the overlying squamous epithelium. Hence in undifferentiated pleomorphic sarcoma, a thorough sectioning and careful search for SCC including immunohistochemical markers should be done to exclude the possibility of a poorly differentiated epithelial malignancy.

Key words: Osteoclast-like giant cells, squamous cell carcinoma of the larynx, undifferentiated pleomorphic sarcoma

INTRODUCTION

Squamous cell carcinoma (SCC) with osteoclast-like giant cells (OLGCs) is a rare entity.[1-5] The tumors accompanying OLGC are usually high grade in nature, hence have a poor prognosis.[4] SCC with OLGC is often difficult to diagnose on histopathology due to its high grade and poor differentiation. Hence, histopathology needs to be supplemented with immunohistochemistry for proper diagnosis. We hereby report an extremely rare case of SCC with OLGC in larynx which raised a diagnostic dilemma as it was indistinguishable from giant cell type of undifferentiated pleomorphic sarcoma (UPS) since both the entities may show plump-spindle to round tumor cells with varying grades of pleomorphism along with OLGC in a hemorrhagic background.

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CASE REPORT

A 65-year-old male reported to the casualty with severe respiratory distress which required an emergency tracheostomy. He complained of progressive dysphagia, more so for solids for 3 months and hoarseness for the past 2 months. Indirect laryngoscopy revealed an ulceroproliferative mass with prominent vascular markings involving the right pyriform fossa and right hemilarynx, completely obscuring the glottis. Computed tomography scan of neck showed a mass measuring 33 mm × 36 mm × 45 mm involving the right pyriform sinus, ipsilateral vocal cord and aryepiglottic fold, anterior and posterior commissures with the narrowing of the glottis along with numerous ipsilateral subcentimetric level III cervical lymph nodes [Figure 1]. Direct laryngoscopic biopsy was performed which on histopathology revealed a vague storiform pattern. The tumor was composed of plump spindle to round cells, possessing indistinct cell membranes and large irregular nuclei with prominent nucleoli. Numerous giant cells with well-defined cell membranes, and a moderate amount of eosinophilic cytoplasm, along with 2–70 bland appearing nuclei showing vesicular chromatin were seen. Small foci of pleomorphic cells with multiple, large, irregular, hyperchromatic nuclei, and prominent nucleoli were also

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seen with mitotic figures 15/10 high-power fields. Stroma was densely collagenized and hemorrhagic with presence of thin-walled capillaries and hemosiderin-laden macrophages at places. No epithelial origin of the tumor was made out. A provisional diagnosis of giant cell type of UPS was made. A poorly differentiated SCC was kept in the differential diagnosis, being the most common tumor in larynx.

A total laryngectomy with right-sided selective neck dissection was performed. Grossly, a brownish, soft mass with a multilobulated external surface, measuring 6 cm × 5 cm × 4 cm was seen occupying right pyriform fossa and right hemilarynx including subglottis. The cut surface was pink and fleshy with hemorrhagic areas.

Histopathological examination also revealed large, plump mononuclear cells admixed with numerous OLGCs in an extensively hemorrhagic and dense fibrocollagenous background [Figure 2]. Few areas were extremely pleomorphic having large, bizarre cells showing irregular nuclear membranes, hyperchromatic nuclei, large and prominent nucleoli with atypical, bi- and multipolar mitosis [Figure 3]. No mitosis was observed in the bland-appearing OLGC. No neoplastic bone or osteoid was seen. These morphological findings were suggestive of giant cell type of UPS. However, microscopic examination of the cervical lymph nodes revealed metastatic SCC deposits in 3 out of 34 dissected lymph nodes. No giant cells were seen in the metastatic lymph nodes. An extensive resectioning from the main tumor revealed a single focus of origin of the poorly differentiated tumor from the overlying squamous epithelium [Figure 4]. All margins and thyroid gland were tumor-free.

Immunohistochemical staining was performed to confirm the diagnosis of SCC and to establish the nature of the OLGCs. Cytokeratin (CK) and epithelial membrane antigen were positive and desmin, vimentin, CD31, and smooth muscle actin were negative in mononuclear

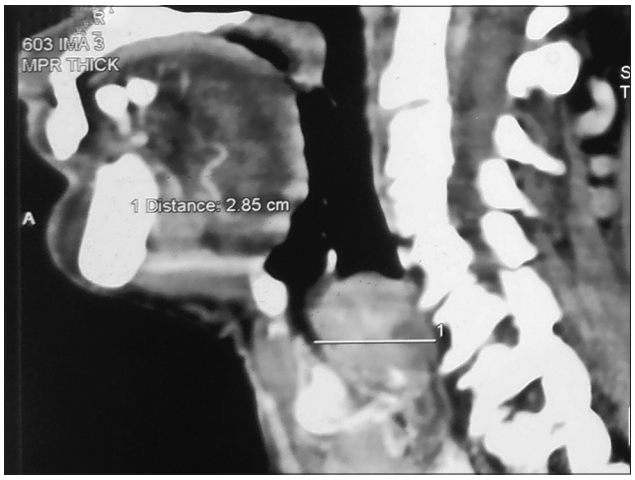

Figure 1: Contrast-enhanced computed tomography-neck: Enhancing-lesion measuring 33 mm × 36 mm ×45 mm involving right laryngeal surface of the epiglottis, right aryepiglottic fold, arytenoid cartilage, pyriform fossa, and right false cord

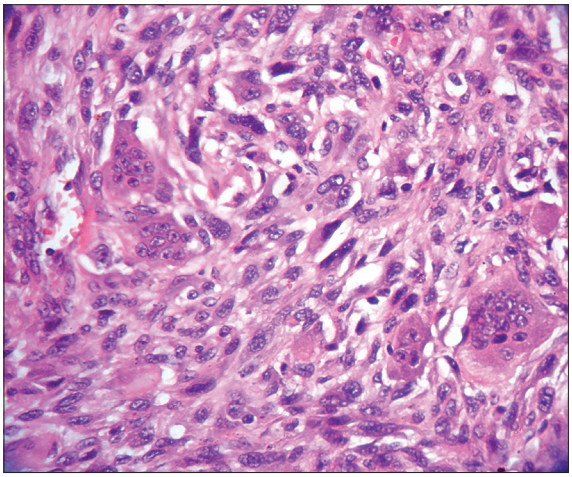

Figure 2: H and E (×40) numerous giant cells and mononuclear tumor cells

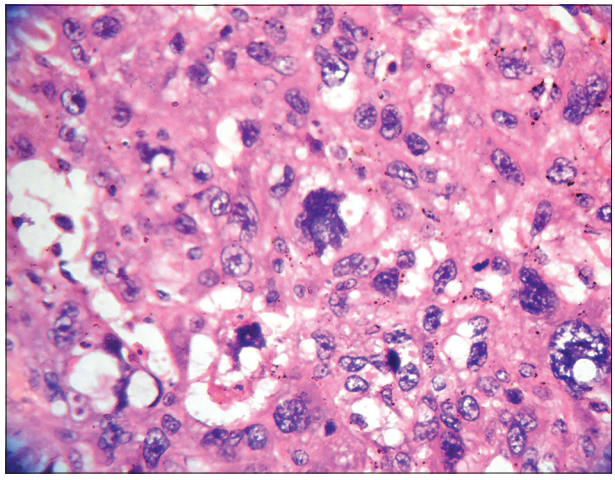

Figure 3: H and E (×100) numerous bizarre cells showing extreme pleomorphism and abnormal mitotic figures

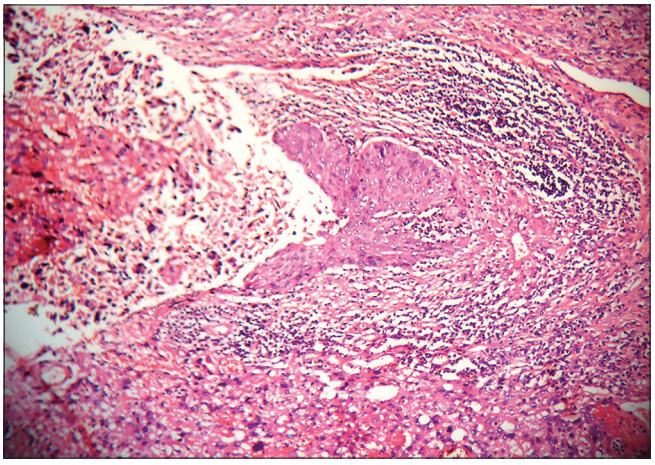

Figure 4: H and E (×40) single focus of squamous differentiation of tumor surrounded by lymphocytic infiltrate

tumor cells and overlying squamous epithelium, implying an epithelial rather than a sarcomatous origin of the tumor [Figure 5]. The OLGCs were negative for epithelial markers and intensely positive for CD68, indicating a histiocytic origin of OLGC [Figure 6]. Hence, a final diagnosis of nonkeratinizing poorly differentiated SCC with OLGCs of the larynx was made.

DISCUSSION

First case of SCC with OLGC in larynx was reported by Ferlito *et al*. in 1987, and they documented the histology in detail.[4] The present case was histologically similar to Ferlito's case. However, it was extremely poorly differentiated and highly pleomorphic. Initial diagnosis of this case was giant cell type of UPS which has been reported in larynx.[6] The clinical presentation, gross, and microscopic features of both poorly differentiated SCC with OLGC and the giant cell type of UPS are nearly indistinguishable. The presence of osteoid or neoplastic bone favors, but its absence does not exclude a diagnosis of giant cell type of UPS.

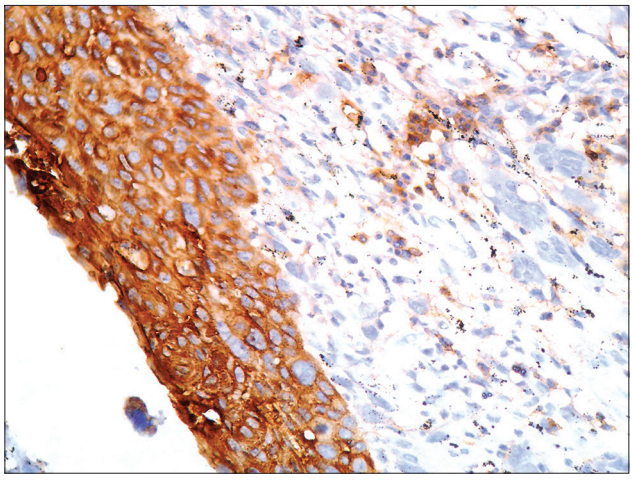

Figure 5: Cytokeratin-positivity in the overlying epithelium and few tumor cells (×100)

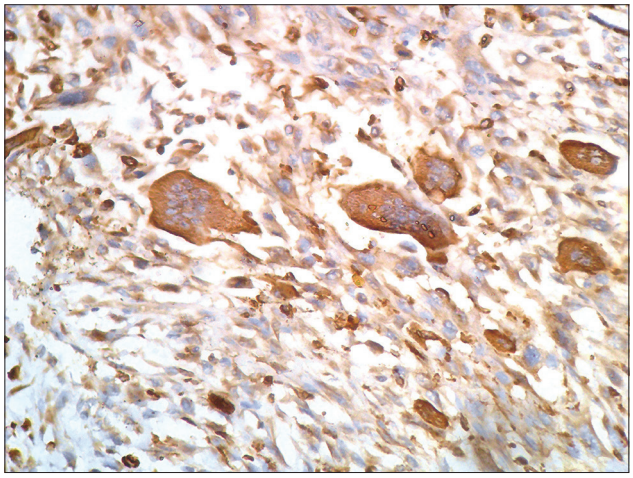

Figure 6: CD68-positivity in osteoclast-like giant cells (×100)

The origin of OLGC has been an enigma, and most of the studies have suggested them to be reactive.[7-9] In the present case, OLGC were positive for CD68 and negative for CK. Holland and van Haelst suggested that the OLGC constituted an integral part of the tumor, and that the neoplastic tissue is capable of inducing them in any of the invasive foci, however, we did not find any OLGC in the metastatic cervical lymph node.[10] In breast carcinoma, it has been proved that vascular endothelial growth factor and matrix metalloproteinase-12 are secreted from tumor cells, which then promote macrophage migration and angiogenesis. The OLGC are likely to be generated by syncytial fusion of these macrophages.[11]

The case under discussion posed a diagnostic dilemma as the epithelial origin of the tumor was not evident on biopsy as well as initial sections from the laryngectomy specimen. The only clue was the metastasis of SCC in the neck nodes, which led to resectioning and re-scrutinization of the case. This highlights the need for thorough and extensive sectioning in undifferentiated tumors, especially in sites like this case, where epithelial malignancies are the most common. Immunohistochemistry is often helpful in such circumstances. However, it should always be considered that focally, few cells of UPS may show CK-positivity. On the other hand, diffuse CK-positivity reflects an epithelial line of differentiation.[12]

CONCLUSION

A poorly differentiated epithelial malignancy should always be considered in the differential diagnosis of UPS. A thorough sectioning and careful search for the origin of the tumor from the overlying epithelium is imperative. Additional application of immunohistochemistry and its careful interpretation is mandatory.

REFERENCES

1. Yozu M, Glengarry J, Ahmed SS. Cutaneous squamous cell carcinoma associated with proliferation of osteoclast-like giant cells. J Pak Med Assoc 2011;61:922-5.
2. Fisher ER, Palekar AS, Gregorio RM, Paulson JD. Mucoepidermoid and squamous cell carcinomas of breast with reference to squamous metaplasia and giant cell tumors. Am J Surg Pathol 1983;7:15-27.
3. Love GL, Daroca PJ Jr. Bronchogenic sarcomatoid squamous cell carcinoma with osteoclast-like giant cells. Hum Pathol 1983;14:1004-6.
4. Ferlito A, Fmedmanna I, Rechera G. SCC of the larynx with osteoclast-like giant cells. J Laryngol Otol 1987;101:393-8.
5. Kandemir NO, Bektaş S, Yurdakan G, Tas E. Pharyngeal SCC with

osteoclast-like giant cells: A case report and review of the literature. Turk J Oncol 2009;24:80-4.
6. Kuwabara H, Saito K, Shibanushi T, Kawahara T. Malignant fibrous histiocytoma of the larynx. Eur Arch Otorhinolaryngol 1994;251:178-82.
7. Molberg KH, Heffess C, Delgado R, Albores-Saavedra J. Undifferentiated carcinoma with osteoclast-like giant cells of the pancreas and periampullary region. Cancer 1998;82:1279-87.
8. Kanthan R, Torkian B. Primary *de novo* malignant giant cell tumor of kidney: A case report. BMC Urol 2004;4:7.
9. Li XM, Lin XY, Xu HT, Yu JH, Wang L, Fan CF, *et al*. Mediastinal epithelioid hemangioendothelioma with abundant spindle cells and osteoclast-like giant cells mimicking malignant fibrous histiocytoma. Diagn Pathol 2013;8:103.
10. Holland R, van Haelst UJ. Mammary carcinoma with osteoclast-like giant cells. Additional observations on six cases. Cancer 1984;53:1963-73.
11. Shishido-Hara Y, Kurata A, Fujiwara M, Itoh H, Imoto S, Kamma H. Two cases of breast carcinoma with osteoclastic giant cells: Are the osteoclastic giant cells pro-tumoural differentiation of macrophages? Diagn Pathol 2010;5:55.
12. Goldblum JR, Folpe AL, Weiss SW. Enzinger and Weiss's Soft Tissue Tumours. 6th ed. Philadelphia: Saunders; 2013. p. 425-39.

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