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CLINICAL REPORT

Primary Neuroendocrine Carcinoma of the Larynx: A Case Report

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Abstract Neuroendocrine tumours can originate from any part of the body. The most common site in the head and neck is the larynx, accounts for less than 0.6%. The neuroendocrine carcinomas (NECs) of the larynx are rare tumours with high incidence of widespread metastases and poor prognosis. Here we report a 50-year-old male with localised primary moderately differentiated NEC of the larynx. He was treated with surgery followed by adjuvant chemotherapy and concurrent chemoradiation. He is free of his disease and is doing well.

Keywords Neuroendocrine tumours · Neuroendocrine carcinomas · Larynx · Chemoradiation

Introduction

Laryngeal cancers are a type of cancer that originates from the larynx, and the majority of these cancers are of squamous cell origin [1]. Primary laryngeal neuroendocrine carcinomas are very rare. Van Nostrand and Olofsson in 1972 were the first to report a small cell poorly differentiated carcinoma of the larynx [2]. Of the laryngeal neuroendocrine carcinomas, poorly differentiated NEC is the second most frequent type. There are two types—small cell neuroendocrine carcinoma and large cell neuroendocrine carcinoma. Neuroendocrine Carcinoma is seen among middle-aged men with a history of long-standing tobacco smoking. They are highly lethal malignancies associated with frequent and early widespread metastases and poor prognosis. Like small cell carcinoma lung, paraneoplastic syndromes can occur. The supraglottic area is the most commonly affected and hoarseness and dysphagia are usual symptoms [3, 4].

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Case Presentation

A 50-year-old male, smoker presented to our outpatient department with hoarseness of voice and cough of 2 months duration. Physical examination showed palpable right level II and level III cervical lymph nodes. Fibre optic endoscopy examination showed a growth involving right aryepiglottic fold, false vocal cord and true vocal cord, with fixed right hemilarynx. CT imaging showed an enhancing soft tissue lesion of 3 × 2.3 × 3.4 cm in the right paraglottic region and multiple enlarged lymph nodes in right level II and III. He underwent tracheostomy with open biopsy from the right paraglottic mass. Biopsy from the right paraglottic mass was suggestive of high-grade neuroendocrine carcinoma (Fig. 1). Immunohistochemistry (IHC) showed positivity for CK and CD56 in tumour cells with a Ki67 index over 90% (Figs. 2 and 3). LCA, p16, and chromogranin were negative. Synaptophysin was focally positive. Whole-body PET MR was indicative of primary glottic malignancy involving right paraglottic region with a break in the lamina of the thyroid cartilage and extra laryngeal extension with bilateral level II and level III nodal metastases (Fig. 4). The patient underwent total laryngectomy, Transesophageal puncture with Pectoralis major myocutaneous flap and bilateral selective nodal dissection. Gross examination showed a lesion primarily involving the right supraglottic regions and paraglottic space and extending into the glottis inferiorly and into the anterior soft tissue infiltrating through the thyroid cartilage. Left paraglottic space and cricoid cartilage were free of tumour. The tumour involved thyroid cartilage and anterior right lateral soft tissue. The tumour also involved right paraglottic space. Histopathology was suggestive of moderately differentiated neuroendocrine carcinoma with the involvement of thyroid cartilage. All margins were free of tumour. Two out of 45 lymph nodes showed metastasis with one showing extranodal extension. He was staged as pT4N3bM0. His case was discussed in the multidisciplinary tumour board. It was decided to offer him adjuvant chemotherapy with cisplatin and etoposide for four cycles followed by concurrent chemoradiation with a total dose of 66 Gy in 30 fractions. He completed his treatment without any significant side effects and is free of his disease and is doing well.

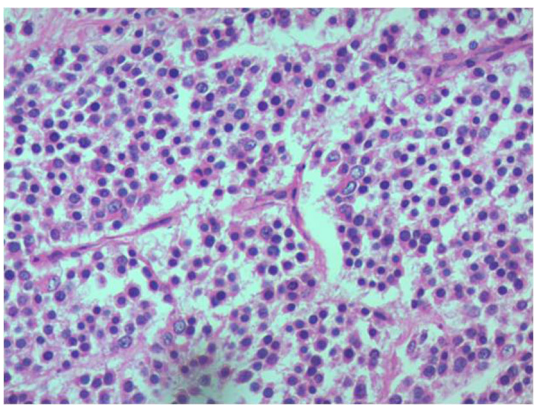

Fig. 1 H&E OF LARYNGEAL TUMOR (Magnification-10X) showing crushed tissue with round cell infiltrate

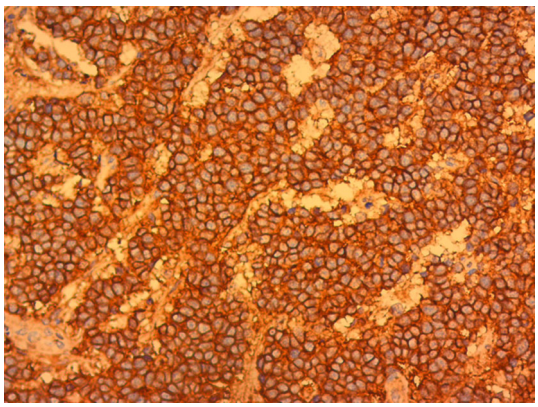

Fig. 2 IHC OF TUMOR SHOWING POSITIVITY FOR CD56 (Magnification-20X)

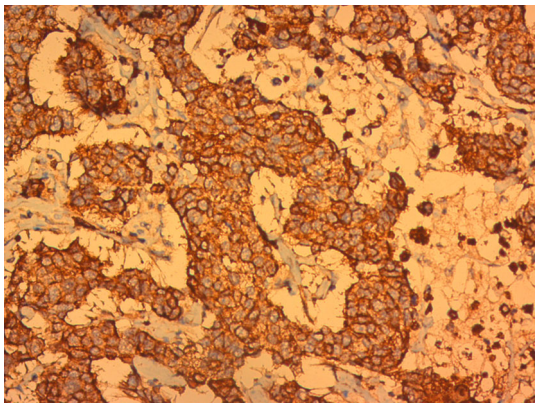

Fig. 3 IHC SHOWING POSITIVITY FOR CK (Magnification-20X)

Discussion

Laryngeal cancers are the second most common type of respiratory cancer. They are usually squamous cell carcinomas, and very rarely of neuroendocrine origin (0.6%) [3]. Neuroendocrine carcinoma (NEC) are of three histological types—well-differentiated neuroendocrine carcinoma, moderately differentiated neuroendocrine carcinoma, and poorly differentiated neuroendocrine carcinoma (small cell and large cell type) [4]. Poorly differentiated neuroendocrine carcinomas account for the second most common type of laryngeal neuroendocrine carcinoma [2].

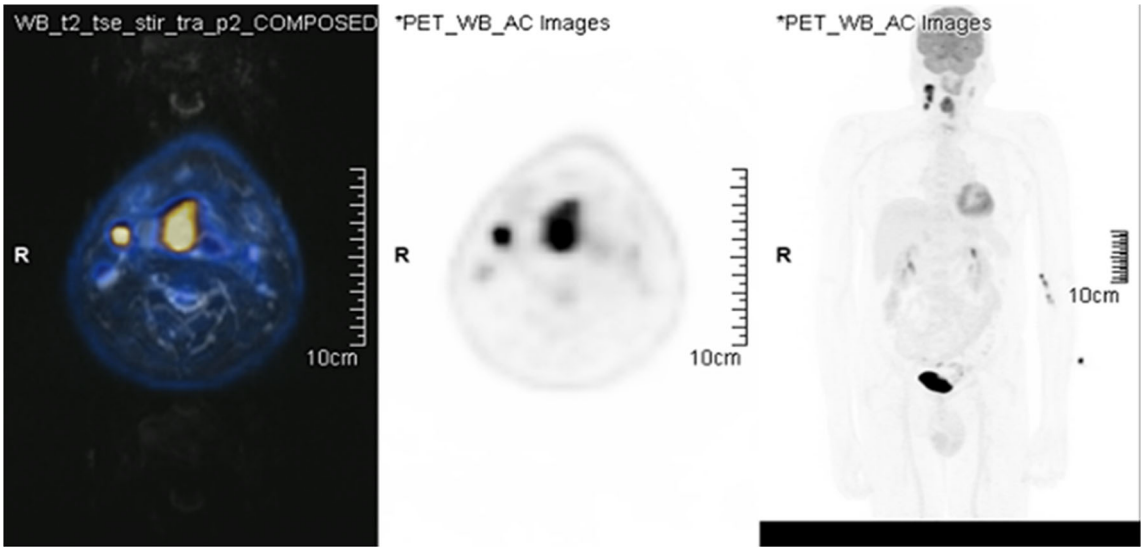

Fig. 4 Whole-body PET MR showing primary glottic malignancy with regional nodes

These type of tumours are predominantly observed in males with a mean age of 61 years and a history of smoking [5]. Our patient also had a history of tobacco smoking, and he stopped a few weeks after developing the symptoms. The role of high-risk human papillomavirus infection in neuroendocrine carcinomas of the larynx is not very clear [6]. Despite the fact these tumours are reported in various parts of the larynx, the supraglottic region is the most frequent site. However, in our patient, the site of origin was the right paraglottic area. The common symptoms associated with these tumours include dysphonia, dysphagia, sore throat, haemoptysis and neck mass. Our patient came with hoarseness of voice and persistent cough. Primary NEC usually presents with loco-regional disease or metastasis [7]. Two-thirds of the patients usually present with advanced disease, especially metastases to liver, lung, bone, and brain [8]. Our patient presented with the localised disease to larynx with regional nodes. The exact categorisation of the subtype of NEC is very crucial because they are considered as highly lethal tumours. Small cell NEC need to be differentiated from other basaloid tumours, including oropharyngeal human papillomavirus (HPV)-related nonkeratinising squamous cell carcinoma and solid type of adenoid cystic carcinoma. Light microscopic examination along with immunohistochemistry techniques, will help in differentiating these types [9].

The current treatment modality available for neuroendocrine tumours of the larynx is based on its histopathology and stage of the disease. Because of the advanced nature of the disease, surgical resection can be offered to only a small group, and others are treated with chemotherapy or chemoradiation. Surgical resection is considered to be the mainstay of treatment in localised small cell neuroendocrine carcinomas, followed by chemoradiation which has shown to improve 5-year disease-specific survival in comparison with other treatment modalities [1, 7]. Commonly used chemotherapeutic agents are cisplatin and etoposide [1].

Conclusion

We report a case of localised neuroendocrine carcinoma larynx due to its rarity. Histopathological evaluation plays a crucial role in its differential diagnosis and management plan. Surgical resection followed by chemotherapy and radiation therapy has been considered as the mainstay of treatment in this condition.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethics Approval The case report was conducted as per The Declaration of Helsinki.

Consent to Participate Written informed consent was obtained from the participant.

Consent to Publish The participant has consented to the submission of case report to the journal.

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