Isolated Parotid Metastasis from Small Cell Lung Cancer

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Abstract

Introduction: Worldwide, lung cancer accounts for the most cancer mortality in both men and women with 1.6 million deaths in 2012. Small cell lung cancer usually present as a disseminated disease in over 70% of the patients. Common site of metastasis include liver, adrenal, bone and brain. However, metastasis to parotid gland is uncommon described only in case reports.

Presentation of Case: A 75-year old male presented with a mass on right parotid gland, biopsy confirmed metastatic small cell carcinoma. CT chest showed 5.5cm right hilar mass and mediastinal adenopathy T2bN2M1b, stage IV disease. He underwent chemotherapy Carboplatin and Etoposide.

Conclusion: Small cell lung cancer diagnosed from isolated metastasis to parotid gland is rare. Physicians should be aware of pulmonary source when presented with a parotid tumor. Overall, the finding has a poor prognosis but main modality of treatment is palliative with systemic chemotherapy and possible irradiation for symptomatic control.

Keywords: Parotid Metastasis; Small Cell Lung Cancer

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Consent: Consent was taken from the patient for publication of this case report.

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Introduction

Worldwide, lung cancer accounts for the most cancer mortality in both men and women with 1.6 million deaths in 2012. It is estimated that in 2016, approximately 158,000 Americans are expected to die from lung cancer and over 224,000 new cases (1). Risk factors include smoking, history of radiation therapy, HIV, pulmonary fibrosis, and environmental exposures. Small cell lung cancer (SCLC) usually presents as a disseminated disease in over 70% of the patients. Common site of metastasis include liver, adrenal, bone and brain. However, metastasis to parotid gland is rare. We present a case of a patient found to have SCLC diagnosed from an isolated metastatic site to the parotid gland.

Case Presentation

A 75 year-old white male with extensive history of smoking, presented with 2-month history of progressive painful mass on the right upper face (Figure 1). He also had 30 lbs weight loss over last 6 months and poor appetite. He denied any coughing, hemoptysis, chest pain, or shortness of breath. On examination, a 4 x 5cm hard, fixed mass is found in the preauricular area. He was referred to otolaryngology and a fine needle aspiration of the mass showed small cell carcinoma of lung origin (Figure 2). Pathological staining showed reactivity to CK8/18, synaptophysin, CD 56, and TTF-1. He subsequently underwent CT of chest, which showed right hilar and infra-hilar mass 5.5cm x 4 cm, right main stem narrowing with sub-pleural (0.7 x 0.5 cm and 1.1 x 0.2 cm), para-tracheal (1.4 x 0.2 cm), and sub-carinal (2.3 x 1.4 cm) lymph nodes (Figure 3). His clinical stage was T2bN2M1b, stage IV disease. CT head showed no evidence of intracranial involvement. PET scan showed no other sites of metastasis. He was started on systemic chemotherapy Carboplatin and Etoposide. No irradiation was given after evaluation by radiation oncology. Due to extensiveness of his disease, treatment is set for palliative purpose only.

Figure 1 Right preauricular region with a hard mass approximately 4 x 5 cm as indicated by arrow.
Figure 2 (A) Cell block demonstrates clusters of neoplastic cells, which are medium-sized with high nuclear/cytoplasmic ratio, salt and pepper chromatin, indicating small cell carcinoma. (B) Neoplastic cells show positive cytoplasmic stain for synaptophysin on immunohistochemical stain, supporting neuroendocrine differentiation. (C) Neoplastic cells show positive nuclear stain for TTF-1 on immunohistochemical stain, supporting carcinoma of lung origin.

Figure 3 CT scan of the chest showing right hilar and infra-hilar mass 5.5cm x 4 cm indicated by white arrow. There is also right main stem narrowing with sub-pleural (0.7 x 0.5 cm and 1.1 x 0.2 cm), para-tracheal (1.4 x 0.2 cm), and sub-carinal (2.3 x 1.4 cm) lymph nodes.
Discussion

Typical sites of metastasis for small cell lung cancer are liver, adrenal, bone and brain, and rarely to parotid gland. Metastasis to parotid gland is uncommon in itself. Most common sources are head and neck region skin and upper trachea-esophageal structures. 80% of the metastasis to the parotid gland originates from head and neck malignant melanomas (2). Distant metastasis to parotid gland can be from sources including renal, colon, prostate, breast and bronchial. In a series conducted on 520 patients with parotid gland tumor, 33 were found to be metastatic in origin: 23 squamous cell carcinoma, 7 melanoma, 2 breast cancer, and 1 rhabdomyosarcoma (3). Due to the rarity, metastasis of SCLC to the parotid gland has only been described as case reports. SCLC can spread through lymphatic, hematological or direct invasion. Spread of primary right hilar SCLC to unilateral parotid gland is most likely through either direct or hematogenous pathways. Isolated metastasis maybe due to individual variation in the anatomy and lympho-vascular drainage. The close proximity of primary tumor to blood vessels as well as tumor-induced angiogenesis and lymphangiogensis are essential components of tumor growth and metastasis (4).

In the current available reports of similar cases, prognosis has been poor mostly a few months despite systemic treatment with chemotherapy (5). In the case by Polat group, systemic chemotherapy cisplatin and etoposide were used and patient deceased after 10 months (6). In a retrospective analysis performed on 13 patients with parotid metastasis, 10 from cutaneous source and 3 from other sources (2 breast and 1 prostate), the efficacy of aggressive treatment was evaluated. All patients received total parotidectomy with additional therapies including chemotherapy, irradiation, and hormonal therapies. In the absence of systemic disease, parotid metastasis from cutaneous source treated with multiple modalities improved survival. However, in those with metastasis from non-cutaneous source, treatment is only for palliation (7). Among available reports, survival has been poor with only a few months post diagnosis. In another case where parotid metastasis was found to be small-cell lung cancer in origin, a partial parotidectomy with preservation of facial nerve was performed followed by chemotherapy. However, patient only survived for 4 months (8). Parotid metastasis, though isolated, maybe a sign of terminally advanced SCLC. With limited SCLC, early disease may be curable with combination of chemotherapy and irradiation, while extensive disease rarely has positive outcome. Based on available literature, metastasectomy has not improved overall survival. However, systemic chemotherapy can improve quality of life and potentially improve survival in some (9). It is critical to differentiate primary and metastatic parotid tumor based on pathology and imaging studies due to different treatment modalities and prognosis. It is critical to consider possibility of SCLC metastasis when presented with a parotid mass.

Conclusion

The standard of care for extensive stage SCLC remains cisplatin or carboplatin with etoposide. However, there is no known optimal treatment strategy in those with parotid metastasis from small cell lung cancer that can prolong survival. Irradiation for pain control and early intervention of palliative care for quality of life remains an important aspect in the overall management of this deadly malignancy.
References