

Synchronous sporadic medullary carcinoma of the thyroid and small-cell carcinoma of lung: A rare entity

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ABSTRACT

Synchronous medullary carcinoma of the thyroid and small-cell carcinoma of the lung is a rare phenomenon and both these tumors are characterized by poor treatment outcome and prognosis. A 45-year-old woman presented with a progressive swelling in front and side of the neck of 3-month duration without any pulmonary symptoms. The tumor of the lung was an incidental finding on routine chest radiological examination. The diagnosis of synchronous primary cancers of the thyroid and the lung were made after cytopathological examination of both the lesions. We report here a case of loco-regional sporadic medullary carcinoma of the thyroid associated with limited stage small-cell carcinoma of the lung and its therapeutic challenges.

Key words: Medullary carcinoma thyroid, small-cell carcinoma of the lung, synchronous primary

INTRODUCTION

Incidence of synchronous primary cancers in the head and neck region is reported to be between 1 and 1.8%.^[1] The occurrence of synchronous neuroendocrine tumors in a patient is rare. Medullary carcinoma of the thyroid (MTC) arises from the C cells of the thyroid that produces calcitonin and small-cell carcinoma of the lungs (SCLC) arises from the neuroendocrine cells in the bronchus. MTC and SCLC are described as neuroendocrine tumors. There are two forms of MTC, namely sporadic MTC and familial MTC. In sporadic MTC, there is no family history of thyroid cancer and majority of the MTCs are sporadic. Sporadic MTC mainly affects older adults. Familial MTC results due to mutation in the RET proto-oncogene. Small-cell carcinoma commonly occurs in the lungs (oat cell carcinoma), but may arise in other anatomical locations like the uterine cervix and the prostate.^[2,3] We report here a case of loco-regional

sporadic medullary carcinoma of the thyroid associated with limited stage SCLC.

CASE REPORT

A 45-year-old female presented in the out-patient department of our hospital with the chief complain of progressive swelling in front and side of the neck of 3-month duration. On examination, there was a hard swelling of 5 cm × 3 cm in front of the neck, fixed to the underlying structure and the swelling moved on deglutition. There were multiple swellings all less than 3 cm on the left side of neck in the region of level-III, IV, and level V. Direct laryngoscopic examination showed normal bilateral vocal cord mobility. There was no family history of thyroid cancer.

Computed tomogram scan (CT scan) of the neck showed the left lobe and adjacent isthmus significantly enlarged with nodular calcification and subtle heterogeneity. There were nodal lesions along the left jugular chain at level-II, III, IV, VI, and VII stations and in the supraclavicular region. The CT scan of the thorax showed a well-defined soft tissue density mass lesion of 79 mm × 64 mm in the left lung and adjacent mediastinum [Figure 1]. Thyroid function tests were within the normal range.

Needle biopsy of the thyroid showed features of medullary

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carcinoma and CT scan-guided aspiration cytology of the lung mass showed features of small-cell carcinoma. Immunohistochemical (IHC) staining and serum calcitonin estimation were done to confirm the diagnosis of SCLC and MTC, respectively. IHC was positive for the expression of synaptophysin and chromogranin A. Serum calcitonin level of 22.0 pg/ml (normal range: 5.0-11.5 pg/ml) was detected in the blood. The diagnosis of synchronous SCLC and sporadic MTC was confirmed.

The patient was treated by palliative external beam radiotherapy (EBRT) to the neck and thorax along with systemic chemotherapy. The patient received 10 fractions of EBRT to a total dose of 30 Gray and systemic chemotherapy with cisplatin (90 mg/cycle). The patient received six cycles of systemic chemotherapy at 3 weekly intervals. The response was evaluated at 3 months from completion of the palliative treatment. On clinical examination there was complete resolution of the thyroid gland and cervical lymphadenopathy. On radiological examination with CT scan of the neck and thorax, it showed normal left lobe of the thyroid and adjacent isthmus and 85 × 73-mm sized mass in the left upper lobe abutting the chest wall [Figure 2], respectively. In view of the progressive nature of SCLC, the patient was further advised for palliative care only.

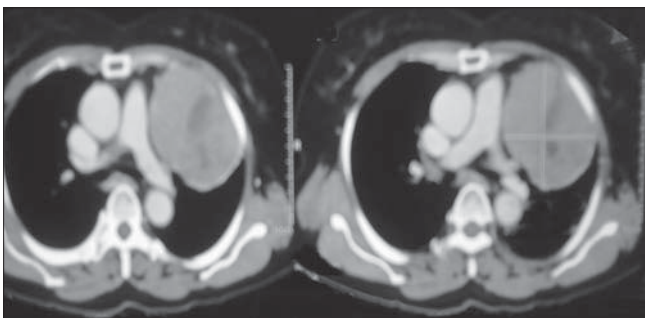


Figure 1: Pre-treatment axial computed tomogram scan showing the lung mass

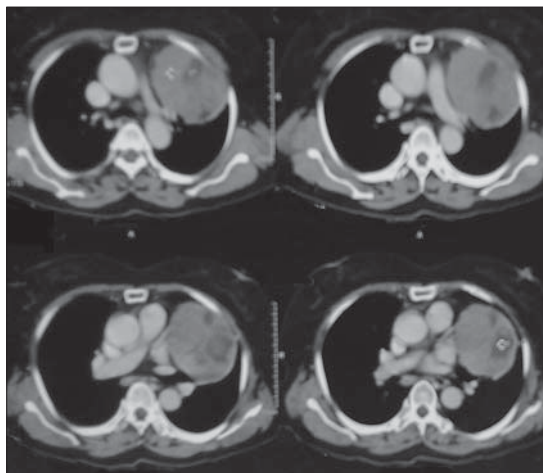


Figure 2: Post-treatment axial computed tomogram scan of the thorax showing the residual lung mass

DISCUSSION

The incidences of neuroendocrine tumors are two to five per 100000 populations,^[4] MTC and SCLC are both neuroendocrine tumors. MTC and SCLC occasionally manifest with para-neoplastic syndromes like the Cushing's syndrome and in the present case there were no symptoms of para-neoplastic syndrome. SCLC is divided into two clinicopathological stages, the limited stage and the extensive stage disease. If the tumor is confined to one lung, there is involvement of the lymph nodes adjacent to the lungs and involvement of adjacent mediastinum it is said to be in the limited stage. If the tumor has spread beyond that, it is an extensive stage disease. In the present case the disease was a limited stage of SCLC associated with loco-regional MTC. In cases of MTC with early disease, confined to the thyroid gland and without nodal disease thyroidectomy remains a good therapeutic option.^[5] In the present case of MTC, surgery was not considered up front as a treatment option and the patient was treated with palliative EBRT as a therapeutic alternative. Schlumberger *et al.*, have found there is a high risk of recurrence following surgery for MTC.^[6] In selected patients of MTC with postoperative microscopic residual, extra-glandular invasion and nodal involvement there is a role of postoperative EBRT to optimize loco-regional control.^[7] Familial MTC has a better prognosis than sporadic MTC.^[8] In our case of sporadic MTC, there was complete radiological response upon treatment with palliative EBRT. Quayle *et al.*, have found no role of radio-iodine ablation in the treatment of MTC.^[9]

In the 1970s chemotherapy and/or radiotherapy was considered for all the cases of SCLC with little role for surgery in this disease;^[10] however, recent work suggests that in cases of small, asymptomatic, node-negative SCLC's neoadjuvant chemotherapy followed by surgery may improve the survival.^[11] The present case received EBRT and chemotherapy. Surgery was not considered in view of synchronous loco-regional MTC. For extensive stage disease of SCLC treatment with platinum based chemotherapy and radiotherapy, response rate is around 20%^[12] and in patients with limited disease complete response is seen in 80% of the patients,^[13] However, in our case treatment with combined chemotherapy with cisplatin and radiotherapy to the limited stage SCLC did not evoked any response. It was difficult to achieve any response with the first line of treatment modalities available for SCLC. Role of second-line therapy like topotecan for SCLC^[14] in a synchronous setting of SCLC is not known, so it cannot be considered in our case. Many therapeutic compounds have now shown promise in the treatment and palliation of neuroendocrine tumors, but further research into definitive medical therapies is needed.^[15]

In conclusion, synchronous sporadic MTC and SCLC present a therapeutic challenge to the physician. At present optimizing the first-line therapy with curative intent in synchronous MTC and SCLC with current modalities remains unclear.

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