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Case Report

PRIMARY SQUAMOUS CELL CARCINOMA OF THE THYROID GLAND TREATED WITH SURGERY AND CONCURRENT CHEMORADIOTHERAPY, A CASE REPORT

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Abstract:

Introduction: *Primary squamous cell carcinoma (PSCC) of the thyroid gland is one of the rarest types of all reported thyroid malignancies worldwide. It is very aggressive in nature and carries a poor prognosis. The surgical resection with adjuvant radiotherapy and chemotherapy is the most recommended treatment despite its poor reported outcome.*

Case presentation: *A 56-year-old Asian man presented with non-tender swelling of the neck, Patient underwent total thyroidectomy and histopathology revealed carcinoma thyroid, squamous cell carcinoma, and all other primary squamous cell carcinoma were excluded by imaging and immunohistochemistry. The patient completed radiotherapy concurrent with chemotherapy but after one year of completion of treatment died due to local recurrence.*

Conclusion: *PSCC of the thyroid gland is difficult to diagnose and is a great challenge for the managing team to plan for the best treatment option, due to its unfavorable rate of survival and lack of consensus management guidelines.*

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Introduction

Primary squamous cell carcinoma (PSCC) of the thyroid gland is one of the rarest types of all reported thyroid malignancies worldwide with the incidence less than 1% of all neoplasms of the thyroid.[1] It can occur at any age but the median age of presentation is the fifth and sixth decade. [2] The typical clinical symptoms are rapidly growing neck mass, common extension to the adjacent tissues, and distant metastasis, usually diagnosed as an advanced disease with infiltration in adjacent organs or as an incidentaloma. Therefore, thyroid PSCC has a very poor prognosis with a high death rate of up to 80% in three-year follow-up .[3] It is crucial to exclude any metastatic disease, direct extension from an extra-thyroidal primary tumor, and the association with a tall cell variant of papillary carcinoma of the thyroid before making the diagnosis as this has an impact on potential treatment. [4]

Here, we report a rare case of PSCC of the thyroid and describe a complete diagnostic process, which included a CT scan of the neck, and chest and immunohistochemistry of pathologic specimen with standardized treatment, which consisted of a complete total thyroidectomy and postoperative radiation with concurrent chemotherapy, we also summarize the diagnosis, treatment, and prognosis of thyroid PSCC by reviewing present literatures.

Case presentation

A 56-year-old Asian man, non-diabetic, normotensive admitted with complaints of swelling of the neck for three months, on examination the swelling was about 5x4 cm on the right side of the neck which moved

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with deglutition, swelling was firm in consistency, non-tender. Ultrasonogram (USG) of the neck revealed a hypoechoic solid mass on the right lobe of the thyroid with microcalcifications, A Computed Tomography (CT) scan of the neck (Fig 1) revealed a mixed density mass in the right lobe of the thyroid gland measuring about 4.6x4x4.1 cm, serum TSH was 1. 81 micro U/ml, Fine Needle Aspiration Cytology (FNAC) revealed squamous cell carcinoma, other biochemical investigation was normal. The patient underwent surgery for total thyroidectomy and histopathology (Fig 2) revealed squamous cell carcinoma, grade III, tumor was located on the right lobe of the thyroid measuring about 45x30x15 mm with extension to the isthmus and left lobe with extrathyroid extension and the microscopic margin was positive, neoplastic cells having a moderate amount of cytoplasm with hyperchromatic nuclei arranged in nests and sheets. Foci of keratin pearl formation were also seen. The histopathologic stage was pT3b, immunohistochemistry (IHC) was done to exclude origin from other sites and IHC confirmed squamous cell carcinoma by positive P 63. Other additional staging work up including CT scan of the chest and abdomen done and no evidence of disease was found. A multidisciplinary tumor board held for further treatment decisions and considering risk factors patient was planned for radiotherapy with concurrent chemotherapy. For radiotherapy, CT simulation was done, and after contouring of target volume and organ at risk planning was done on Eclipse version 15 with rapid Arc. Treatment delivery was done on a True beam Linear accelerator with a dose of 6600CGy in 33 fractions, 5 fractions a week by volumetric arc therapy (VMAT). The patient completed radiotherapy concurrent with chemotherapy Cisplatin 50 mg/m^2in 6 weeks without any major complication and was on follow-up in the radiation oncology department. Unfortunately, after 1 year of completion of treatment patient developed neck swelling and after evaluation diagnosed as having local recurrence but the general condition of the patient deteriorated rapidly and the patient expired while on the best supportive care.

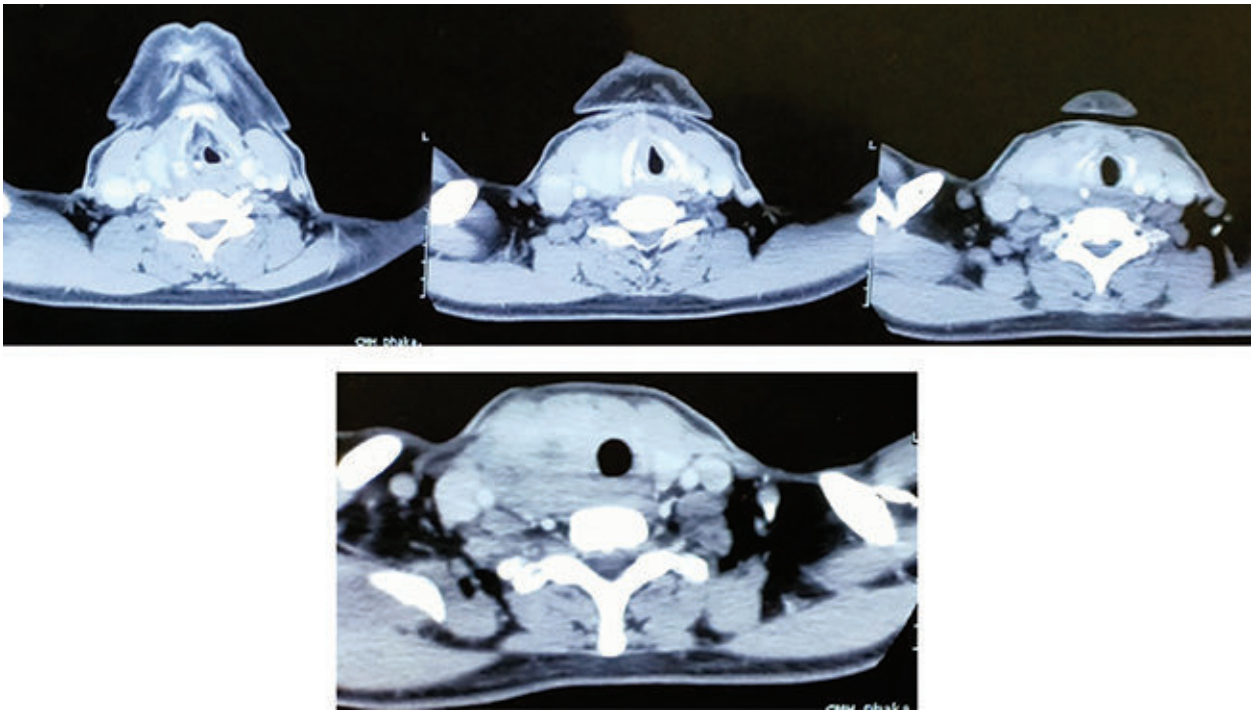

Figure 1: *CT scan of neck showing mixed density mass in right lobe of thyroid with heterogenous enhancement displacing the right carotid vessels*

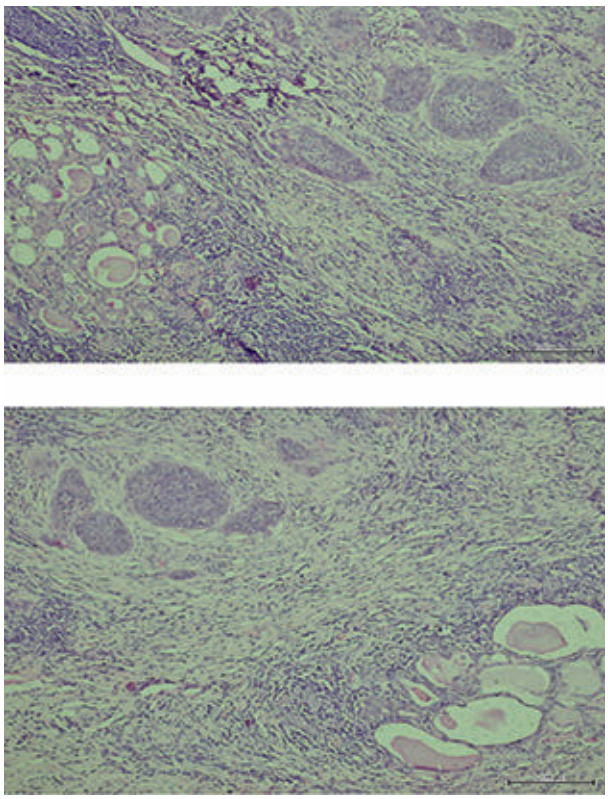

Figure 2 : *Histopathology showing, neoplastic cells are having moderate amount of cytoplasm with hyperchromatic nuclei arranged in nests and sheets. Foci of keratin pearl formation are also seen*

Discussion

Primary squamous cell carcinoma is a rare cancer of the thyroid. The incidence of pure PSCC ranges from 0.2% to 1.1% of all neoplasms of the thyroid. [4] Patients with PSCC routinely presented with a rapidly growing neck mass, frequent extensions to the adjacent tissues and distant metastasis. Based on the clinical characteristics, most PSCC shared similar progression and prognosis with anaplastic carcinoma of the thyroid. [5] The differential diagnoses of PSCC should include the following possibilities: a primary papillary thyroid carcinoma with squamous differentiation (PTC-SD), a primary PTC coexisted with a PSCC (collision tumor), a SCC of unknown origin metastasized to the thyroid, and a branchiogenic carcinoma in ectopic thyroid tissue. Moreover, a de-differentiation from a pre-existing papillary carcinoma should also be considered. [6,7]

A review of the literature in 2014 reported 89 cases of primary squamous cell carcinoma of the thyroid in 39 publications. Apart from the anterior neck mass, 72% of the patients were presented as adjacent structure infiltration. The median survival was 9.0 months (95% CI, 6.0– 23.0 months) and the 3-year survival rate was down to 20.1%. Complete resection of tumors was the only significant prognostic factor, and the benefit of adjuvant treatment has not been proved. [3] Another review in 2013 indicated that the presence of lymph node metastasis is also an important negative prognostic factor, the patients with positive lymph node metastasis have a shorter mean overall survival compared with those without metastasis (10.8 vs. 16.4 months). [9] Unlike papillary thyroid carcinoma, which has a tendency of regional lymph node metastasis but a good prognosis, [8] the majority of thyroid PSCC has a poor prognosis apart from occasionally reported patients with thyroid PSCC with a good prognosis. [9] Hence, the staging and treatment might be analog to that of anaplastic thyroid carcinoma. [10] Cure is very unlikely in PSCC of the thyroid, as disease-free long-term survival has not been reported in the literature yet. [11]

The main treatment is complete surgical resection of the tumor with thyroidectomy, along with infiltrated tissues and regional lymph nodes, while ensuring negative surgical margins, as negative surgical margins have been shown to be the only factor for a good prognosis. [2] However, the use of adjuvant therapy is still controversial· The argument is between the viewpoint that thyroid PSCC is poorly responsive to either radiotherapy or chemotherapy and the concern that operation alone is not a sufficient treatment for PSCC because of the high risk of tumor relapse. [10]

Conclusion

PSCC is a rare neoplasm with aggressive behavior and poor prognosis. The diagnosis is difficult due to rarity of disease and should be confirmed by Immunohistochemistry. With no standard consensus to guide the management plan, it is a great challenge for the managing team to come up with the best treatment option, due to its unfavorable rate of survival. Although standard treatment recommendation is lacking, aggressive surgery followed by adjuvant therapy should be considered as treatment approach for long term control and survival.

Statements

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Consent

Ethics approval and consent to participate: Not applicable.

Written informed consent was obtained from the patient's attendant for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Conflict of interest

The authors declare that they have no conflict of interests

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Authors' contribution

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Prof Md. Yousuf Ali : guidance, treatment decision and revision of manuscript

Md. Niaz Mostafa : Major contributor in writing the manuscript

Tabia Tarannum : Patient evaluation, data collection

All authors has read and approved the final manuscript.

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