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Primary Squamous Cell Carcinoma Thyroid with Regional Recurrence

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ABSTRACT

Background. Primary squamous cell carcinoma (PSCC) of the thyroid is a very aggressive malignancy with a poor prognosis. There is no consensus for the management of primary squamous cell carcinoma (PSCC) of the thyroid, and this is based on rare cases in which the frequency of occurrence is less than 1% of thyroid malignancies. How squamous cell carcinoma originates in the thyroid gland is an interesting topic to discuss, because the thyroid gland does not have a squamous cell epithelium. **Case Presentation.** A 43-year-old man was admitted to the DR Kariadi Hospital with complaints of a lump on the right neck. In June 2020, the patient complained of a lump in the right neck area with a diameter of about 1x1x1 cm, no pain. Ultrasound of the colli at the regional hospital showed the impression of multiple lymphadenopathy of the right colli level 2-5, and there were cystic nodules with solid parts in the right and left lobes of the thyroid suspected of being benign. An adenectomy operation was performed at a regional hospital and the impression of metastatic squamous undifferentiated carcinoma was obtained. **Conclusion.** The management of thyroid PSCC is a multimodality therapy, namely surgery, chemotherapy and radiation.

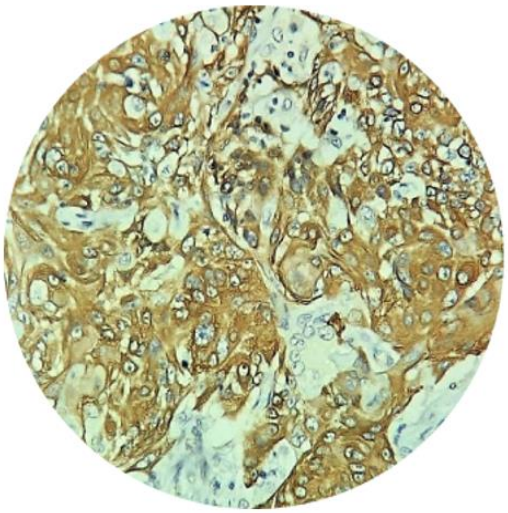
1. Introduction

Primary squamous cell carcinoma (PSCC) of the thyroid represents less than 1% of all primary thyroid malignancies and only a few number of cases have been reported in the worldwide literature. Before diagnosing the case as primary squamous cell carcinoma of the thyroid, the possibility of other major foci of squamous cell carcinoma that may metastasize to the thyroid must be ruled out. Local recurrence often occurs after surgery (resection). The average survival rate is less than one year, and death is mainly due to very rapid growth and local invasion of the surrounding organs, airway obstruction, metastasis and treatment complications.

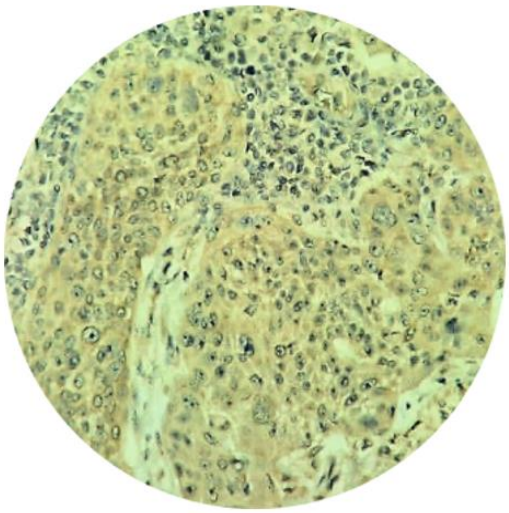
2. Case presentation

A 43-year-old man was admitted to the DR Kariadi Hospital with complaints of a lump on the right neck. In June 2020, the patient complained of a lump in the right neck area with a diameter of about 1x1x1 cm, no pain. Ultrasound of the colli at the regional hospital showed the impression of multiple lymphadenopathy of the right colli level 2-5, and there were cystic nodules with solid parts in the right and left lobes of the thyroid suspected of being benign. An adenectomy operation was performed at a regional hospital and the impression of metastatic squamous undifferentiated carcinoma was obtained. In August 2020, the lump was felt to be getting bigger, then the patient was referred to Dr. Kariadi General Hospital Semarang. The patient underwent sub total thyroidectomy and right colli

adenectomy with intraoperative frozen section (FS). On impression of an adenomatous goiter with follicular variant papillary carcinoma foci was obtained. While the KGB colli sinistra from the FS showed a malignant impression. Then, the patient was continued with Total Thyroidectomy and Radical Neck Disection (RND). The histopathological examination based on the morphology and immunohistochemical profile of CK19 and thyroglobulin supported the diagnosis of the right and left thyroid preparations from FS, the Squamous Cell Carcinoma on the right and left thyroid, with locally advanced neck lymph gland node on the right. The possibility of secondary thyroid involvement originating from other primary cancers was ruled out by Computed Tomography (CT) of the head, neck and thorax. From the imaging studies, there was no possible origin of thyroid SCC being identified.



(1)



(2)

Figure 1: CK19 : (+) Positive in the tumor cells (IHC staining, ×40)
Figure 2: Thyroglobulin : (+) Positive in the tumor cells (IHC staining, ×40)

In October 2020, a lump reappeared in the right neck area measuring 6.5x7x4cm, painless, fixed, well defined, solid palpation. Then, wide excision and PA surgery were performed in early November 2020. The histopathological results showed the impression of metastatic keratinizing squamous cell carcinoma, moderately differentiated in the right neck and might be derived from the thyroid.

In December 2020, a lump re-appeared on the right lateral side of the neck area, the size of a *bekel* ball. The patient underwent chemotherapy with a regimen of cisplatin and doxorubicin. After the second chemoterapy, the lump was felt to be getting bigger, and a new lump appeared in the area of the surgical scar. During the third chemoterapy plan in February 2021, the patient was infected with COVID-19 and isolated for 1 month.

During that 1 month, the lump was felt to be getting bigger. There was a lump on the lateral right side of the neck that extended to the anterior side following the surgical incision. Lump on the lateral right side of the neck fused with a size of 12 x 7 x 4 cm, ulcerated, erythematous with minimal bleeding, well defined, solid and fixed palpation. There is a lump in the KGB colli dextra area level IV measuring 6x5x4 cm, reddish color, solid, fixed, painless. A lump was identified in the lymph node of the right neck level VI, size 4x3x4 cm, solid, reddish in color, fixed and painless. There was a slight shortness of breath, CT neck examination revealed conglomerated multiple metastatic malignant lymphadenopathy with necrotic areas in the neck region level 1b, 2, 3, 4, 5, right retroauricula to level 6

(size ± AP 7.58 x LL 8.40 x CC 14.94 cm), which appeared to be attached and difficult to separate from the structure of the right parotid gland and presses the right common carotid artery, multiple left supraclavicular lymphadenopathy at levels 1b, 2, 4 (largest size ± 1.95 x 1.37 cm in supraclavicular), trachea seemed pressed.

This patient was diagnosed with Primary squamous cell carcinoma (PSCC) of the thyroid with regional recurrence. Due to the unresectable mass of the tumor, impending airway obstruction and bleeding, this patient was planned for radiation with the aim of local control to stop the bleeding and reduce the size of the tumor to reduce the pressure on the trachea.

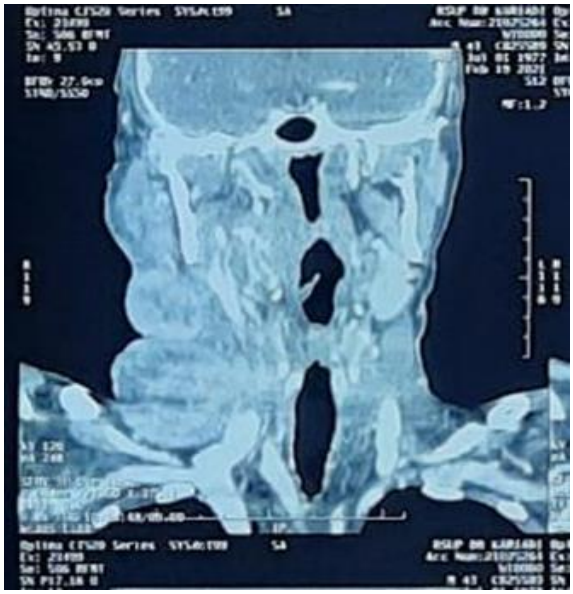


Figure 3. MSCT soft tissue neck with Contrast showing multiple lobulated lymphadenopathy with irregular conglomerated edges with necrotic areas inside in the neck region level 1b, 2, 3, 4, 5, right retroauricular to level 6 (size ± AP 7.58 x LL 8.40 x CC 14.94 cm)

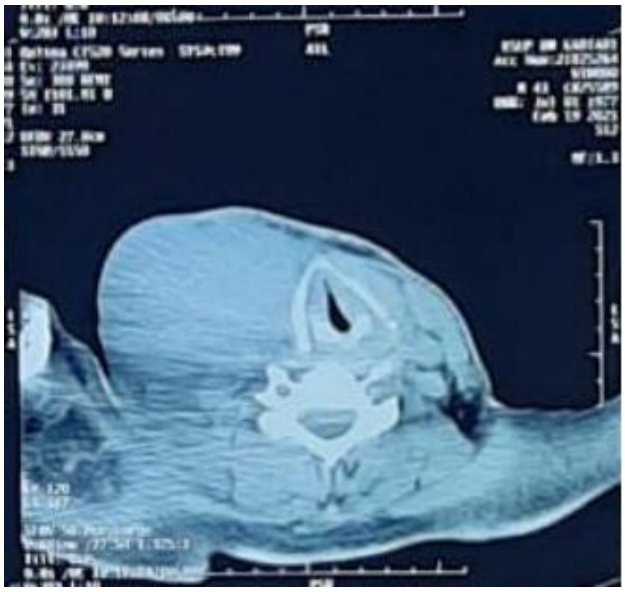


Figure 4. MSCT soft tissue neck with Contrast showing thickening of the larynx in the false focal cord and the right

and left true focal cord, trachea: seemed pressed.

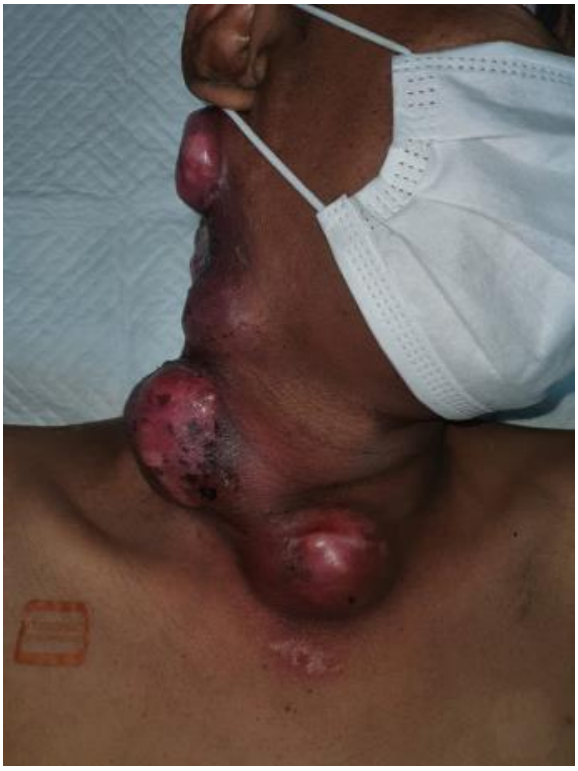


Figure 5. Lymph node enlargement in level 2, 4, 6

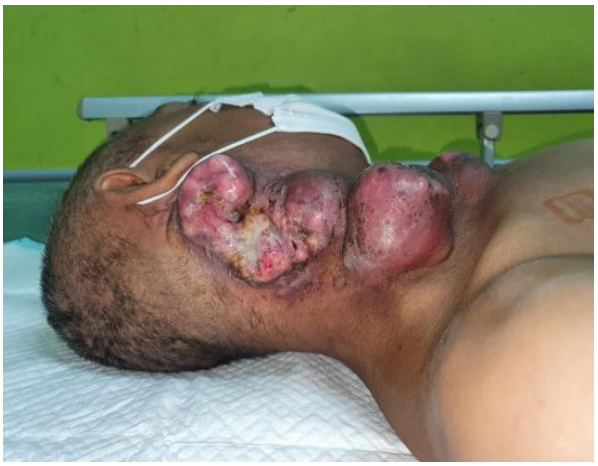


Figure 6. Lymph node enlargement in the right neck region level 1b, 2, 3, 4, 5

3. Discussion

Primary squamous cell carcinoma (PSCC) of the thyroid is a very aggressive malignancy with a poor prognosis, comparable to anaplastic thyroid carcinoma, with an average life survival period of 9-12 months[1,2]. Thyroid PSCC is a very rare thyroid and women were nearly twice more affected malignancy, where the incidence of thyroid malignancy is less than 1% and only a few cases have been reported in the literature. A recent meta-analysis performed on 89 patients (52.8% from

East Asia, 22.5% from North America and 10.1% from Europe) showed that the mean age at diagnosis was 63 years, than men. Most of the patients presented with an enlarged neck mass (70% with extrathyroidal extension, 48.3% with regional lymph node involvement) with signs of compression such as dysphonia, dysphasia, dyspnea[1].

Since the thyroid gland does not have a squamous cell epithelium, how squamous cell carcinoma originates in the thyroid gland is an interesting topic to discuss, and a number of theories have been suggested to explain this fact[3,4]. Embryonic nest cell theory explains the origin of squamous cells in the thyroid gland which is from the remnants of the thyroglossal duct[5]. The metaplastic theory states that it is caused by chronic environmental stimuli that ultimately induce metaplasia of the follicular epithelium[6]. Finally, the dedifferentiation theory suggests that the existing thyroid carcinomas (follicular, papillary, medullary, and anaplastic) differentiate into squamous cell carcinomas[7].

Primary squamous cell thyroid cancer is a rare disease and mostly diagnosed at an advanced stage with a poor prognosis[8]. Anaplastic carcinoma, metastatic SCC, and Carcinoma Showing Thymus-Like Differentiation (CASTLE) are possible differential diagnoses for thyroid PSCC. A precise diagnosis of thyroid PSCC is achieved through a combination of clinical, radiological, endoscopic and immunohistochemical findings. Computed tomography of the neck and chest is necessary to exclude other sources of squamous cell carcinoma metastasizing in the thyroid, eg from the larynx or lung[9,10].

Immunohistochemical examination was used to differentiate thyroid SCC from anaplastic carcinoma, metastatic SCC and Carcinoma Showing Thymus-Like Differentiation (CASTLE). In addition, immunohistochemistry can indicate the site of origin in metastatic SCCT, positive for TTF-1 and napsin A indicates primary lung tumor, and positive for p16 indicates extrapulmonary site[11,12]. Cytokeratin 19 (CK19) is a keratin that is responsible for the structural integrity of epithelial cells (components of the intracytoplasmic cytoskeleton). Malignant thyroid tumors show strong and diffuse CK19 positivity[13].

Total thyroidectomy and lymph node dissection are the mainstay of treatment for thyroid SCC. However, there is no consensus on the management of thyroid PSCC due to rare cases where the incidence is less than 1% of thyroid malignancies[1]. Due to its rarity, the role and outcome of chemoradiation in the management of thyroid PSCC needs to be studied further, although many studies have shown that it is less responsive to chemotherapy or radiotherapy[14,15].

4. Conclusion

The management of thyroid PSCC is a multimodality therapy, involving surgery, chemotherapy and radiation which aims to improve local control and improve the patient's quality of life. Early diagnosis and aggressive surgery with the aim of achieving R0 resection is the best therapy considering that thyroid PSCC is generally radioresistant and has a poor response to chemotherapy. Radiation with the aim of local control to stop the bleeding and reduce the pressure on the larynx was planned for this patient since the tumor mass was unresectable and there was bleeding.

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