A Case of Thyroid Cancer with Three Different Pathologies

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Abstract

We report a case in which complication of papillary, poorly differentiated, and anaplastic carcinoma was confirmed after resection of thyroid cancer with tracheal invasion.

Introduction

～Anaplastic thyroid cancer～

Anaplastic thyroid cancer accounts for 1-2% of all thyroid cancers and has an extremely poor prognosis with a median survival of 3.8 months and a 1-year survival rate of less than 20%.

Although effective chemotherapeutic agents and administration methods have not been established, there are reports that multidisciplinary treatment can prolong the prognosis of the disease. It is recommended that a treatment plan be selected based on the risks and benefits for each patient [1)2)] .

De novo carcinogenesis and occurrence from papillary and follicular carcinomas have been reported.

～Poorly differentiated thyroid carcinoma～

Poorly differentiated thyroid carcinoma is a malignant tumor intermediate between well differentiated and anaplastic carcinoma, a concept first proposed in 1983 [3)] . The diagnostic criteria include the presence of an STI pattern, which stands for Solid, Trabecular, and Insular, and the absence of nuclear findings typical of papillary carcinoma. Although there is a difference in diagnostic criteria between Japan and the WHO classification, as the Japanese code requires that at least 50% of tumors be undifferentiated, the percentage of undifferentiated differentiated carcinoma in Japan is 0.3%, less common than in Europe (6.7%) and North America (1.8%).

Case : 68y/o Male

【Chief complaint】 Dyspnea

【History of present illness】 Coughing, wheezing and dyspnea had started 3weeks before admission. He called ambulance because dyspnea got worse. Emergency CT revealed thyroid tumor extending into trachea.

【Past medical history 】 Hypertension, Diabetes, Cerebral infarction, hyperthyroidism, Sleep apnea syndrome(on CPAP)

【Medicine】 Amlodipine, Olmesartan, Biaspirin, Luseogliflozin, Metimazol

Medical examination findings on admission

【Vital signs】 HR 85bpm, BP 155/100mmHg, BT 36.8℃,
RR 18, SpO2 98%(room air)

【Physical examination】 Right lobe of the thyroid gland was enlarged and hard with poor mobility. (Fine needle aspiration biopsy was done.)
Vocal cord paralysis was absent.

【Blood test】

WBC	8750 /μl	FT3	2.96 pg/ml	TSH	5.092 μIU/ml
Hb	15.6g /dl	FT4	0.89 mg/ml	Tg	68.2 ng/ml
Plt	31.5×10^4/μl	Anti-Tg Antibody	1590 IU/ml		
CRP	0.32mg/dl	Anti-TPO Antibody	4390 IL/ml		
		TRAb	0.7 IU/L		

【CECT】

Massive tumor from the right lobe of the thyroid gland protrude into the tracheal lumen. One enlarged lymph node was detected on the dorsal surface of the carotid sheath, and two small nodules was detected in the lung field.

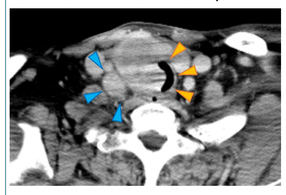

Figure 1. neck(Axial)

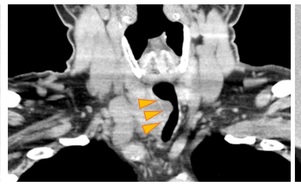

Figure 2. neck(Coronal)

Figure 3. lung(Coronal)

The narrowest part of the trachea was 4 mm, so he was hospitalized urgently.

Post-hospitalization course and examination results

【Pathology】 Undifferentiated carcinoma

【Bronchoscope】 Slim bronchoscope(4.2mm) could pass through the tumor.

【Upper GI endoscopy】 Unable to perform due to respiratory distress.

Respiratory distress was under control with CPAP at night and SpO2 did not decrease. CT on day 5 after admission showed no rapid tumor growth, so we decided to proceed to the surgery on day 11.

Operation

6mm tube was intubated smoothly with bronchoscope inside, checking tracheal lumen. We started with right cervical dissection and performed total thyroidectomy and tracheal resection.

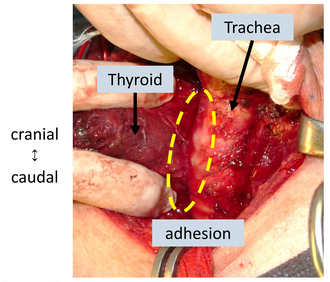

Figure 4.
The left lobe of the thyroid gland was flipped to the right and the site of adhesion with the trachea was identified.

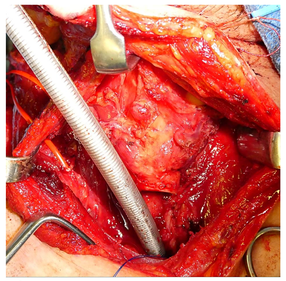

Figure 5.
A total of 7 rings from the 2nd to the 8th tracheal cartilage were ring resected.

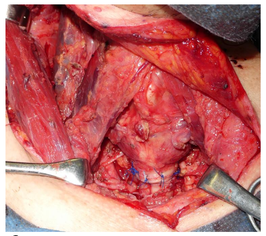

Figure 6.
After resection. The trachea was anastomosed end-to-end with 3-0 proline.

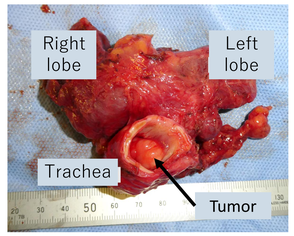

Figure 7.
Tumor is visible in the trachea.

Postoperative course

POD0 He was extubated as usual after the surgery.
Left vocal cord was paralyzed, but no laryngeal edema was detected.
POD4 Wound redness and edema in the right arytenoid region appeared, but subsided quickly after administration of antibiotics and steroids.
POD10 Discharged.
Cervical collar was worn for 3 weeks postoperatively to limit cervical extension and rotation.

Pathology

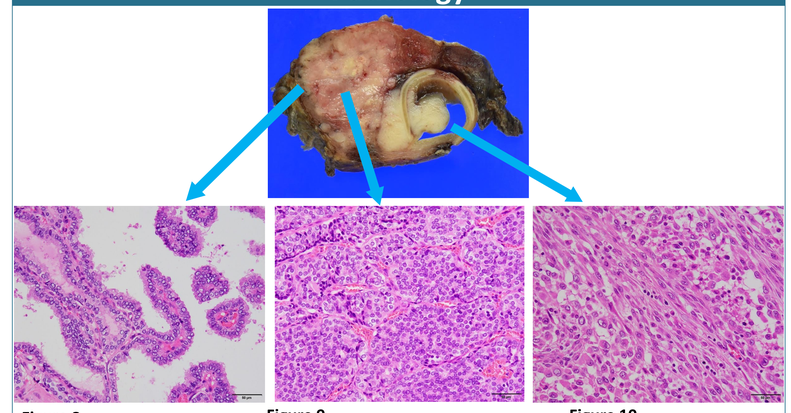

Figure 8.
Tumor surface :
Papillary thyroid carcinoma

Figure 9.
Center of tumor :
Poorly differentiated thyroid carcinoma

Figure 10.
Inside trachea :
Anaplastic thyroid carcinoma

Discussion

This is the first report of thyroid cancer in which complication of papillary, poorly differentiated, and anaplastic carcinoma. On the other hand, US papers reported that 11% of anaplastic thyroid cancer have a combination of poorly differentiated and highly differentiated cancer[4)5)] .

It is known that some poorly differentiated and anaplastic carcinomas transform from differentiated carcinomas by TP53 mutation/deletion and telomerase reverse transcriptase (TERT) promoter mutation. This case is considered to show such a metastatic process.

When there is anaplastic thyroid cancer in the tumor, complication of poorly differentiated or highly differentiated thyroid cancer may not described. There are likely many cases of mixed pathology findings within a tumor.

Conclusions

- Poorly differentiated thyroid carcinoma is a rare histological type in Japan, but there are differences between the WHO classification and the Japanese diagnostic criteria, so it should be interpreted with caution.
- This is the first case report of thyroid cancer with tree types of pathologies in Japan, but considering reports from the United States, there may be many cases of thyroid tumor with three different pathologies.

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