Primary squamous cell carcinoma of the thyroid (PSCCT): lessons learned from a case mistakenly diagnosed by fine-needle aspiration cytology (FNAC) and histopathology

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Clinical Presentation
An 84-year-old female was referred to our hospital presenting with a rapidly growing left cervical nodule and dyspnea. Thyroid ultrasound revealed a mass measuring 8 × 4.7 × 6.3 cm.

Cytological Findings
FNAC revealed normal follicular cells intermixed with minimal inflammatory cells and malignant epithelioid cells, which showed moderately hyperchromatic nuclei with large nucleoli and eosinophilic cytoplasm of well-defined cell borders. Tumor cell aggregates had peripheral wrapping phenomenon showing polygonal cells in the middle and elongated cells at the border. It was diagnosed as poorly differentiated carcinoma and metastasis to thyroid could not be ruled out.

Surgical Pathology
Thyroidectomy was performed after clinical workup to exclude a metastasis from other organs. Histological examination showed poorly differentiated malignant cells infiltrating in sheets, nests and cords with peripheral wrapping phenomenon showing polygonal cells in the middle and elongated cells at the border. It was diagnosed as poorly differentiated carcinoma and metastasis to thyroid could not be ruled out.

Discussion
PSCCT is very rare representing <1% of all primary thyroid carcinomas. The role of thyroid FNAC in diagnosing PSCCT is limited and only 27% of PSCCT were diagnosed as squamous cell carcinoma (SCC) or suspicious of SCC by FNAC. The characteristic tumor cells may not be picked up by FNA due to tumor heterogeneity, fibrosis, desmoplastic stroma or necrosis (1). Characteristics of malignant squamous cells were present in this case, but they were not recognized due to rarity of the disease. A metastatic squamous cell carcinoma must be excluded clinically. Strong positivity of PAX8 favors PSCCT (2), but negativity or weak positivity of PAX8 was also reported (3, 4). The differential diagnosis includes ATC which often shows severe cell pleomorphism and diffuse neutrophil infiltration, but these are not present in our case. Another important differential diagnosis is carcinoma showing thymus-like differentiation (CASTLE), which is much less aggressive as compared to SCC. Strong immunopositivity of CD5 and low Ki-67 index (5) are helpful for distinction.

REFERENCE