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Case Report

Mucin-secreting encapsulated follicular variant of thyroid papillary carcinoma: a case report

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Abstract

Mucin is a high molecular weight glycoprotein that is secreted by epithelia. In contrast to the common finding of mucin secretion in non-endocrine epithelial tumors, in endocrine tumors it is a very rare finding. Mucin secretion is very rare among the thyroid tumors. In the studies carried out on classifying the thyroid carcinomas in recent years, it was reported that the mucin might be secreted in thyroid carcinomas. In this paper, we present a rarely-seen follicular variant of papillary carcinoma secreting mucin.

Keywords

Mucin; Thyroid; Papillary Carcinoma

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Introduction

Mucin secretion is very rare among the thyroid tumors. Muller in the year 1871 and Wegelinin in the year 1926 reported for the first time that they observed mucinous material in thyroid carcinomas [1, 2]. But, in the studies carried out on classifying the thyroid carcinomas in recent years, it was reported that the mucin might be secreted in thyroid carcinomas [3, 4].In this paper, we present a rarely-seen follicular variant of thyroid papillary carcinoma secreting mucin.

Case Report

36-year-old female patient applied to the Department of General Surgery with the complaints of labored breathing and swelling in the neck. In the neck ultrasonography, well-circumscribed hypoechoic solid nodular structure with 2 cm in diameter was observed in upper pole of right lobe. Since the suspicious atypical epithelial cells exhibiting irregular contour notch with grouping pseudo-inclusion were observed in bloody mucinous floor, it was reported as suspicious cytology for malignancy (Figure 1). Bilateral total thyroidectomy was performed for the patient. In cross section of thyroidectomy material, there was well-shaped nodular structure having 2 x 1.5cm dimensions and grey-white solid cross section located below the capsule in upper pole of the right lobe (Figure 2). No characteristic was observed in isthmus and left lobe. The tumor consisting of solid islands, cordons, and micro-follicular structures, exhibiting nuclear symptoms of papillary carcinoma with structure circumference by smooth fibrous capsule was observed in microscopic examination. Capsule and vascular invasion were not seen in the tumor. Nuclear grooves, pseudo-inclusions, and nuclear clearing were observed in cells forming the tumor (Figure 3). There were extensive mucin depots in tumor stroma (Figure 4). In differential examination performed in order to discriminate from metastatic tumor, positive staining with TTF-1 and Thyroglobulin was observed in tumor cells (Figure 5). Focal positive staining with CK19 and HBME-1 and negative staining with galectin-3 were found in tumor. The medullary carcinoma possibility was excluded with the tumor's calcitonin and carcino-embryonic antigen (CEA) negativity. In histochemical examination, positive staining with alcian blue (Figure 6), and and Periodic Acid-Schiff (PAS) (Figure 7) was observed in mucin. Chest X-ray examination for metastases showed no mass lesions in the lung. Under the lights of these findings, the case was diagnosed with encapsulated follicular variant papillary thyroid carcinoma with mucin secretion.

Discussion

Mucin is a high-weight glycoprotein and secreted by the epithelial cells. Mucin secretion is more frequently seen in epithelial tumors, whereas it is a very rarely seen symptom in endocrine tumors. Mucin secretion might be rarely seen in follicular carcinoma, follicular adenoma, medullary carcinoma, poorly differentiated thyroid carcinoma, mucoepidermoid carcinoma, and primary mucinous carcinoma among the primary tumors of thyroid [5, 6]. The papillary carcinomas secreting stromal mucin have rarely been reported in literature. In most of these tumors, the mucin is intracellular-located, and it provides the tumors with signet-ring cell appearance. Mucin secretion might lead to diagnostic difficulties, especially in fine needle aspiration cytology. In differential diagnosis, there are mucin-secreting medullary carcinoma, mucinous variant follicular carcinoma, poorly differentiated thyroid carcinoma, and mucinous carcinoma. In the differential diagnosis of papillary carcinoma among these tumors, the HBME-1, CK19, and galectin-3 expression should be taken into consideration together with nuclear findings by performing immunohistochemical examination [7]. In the differential diagnosis of mucin-secreting metastatic carcinomas, the mucin-secreting metastatic papillary carcinoma of thyroid should be excluded [8]. The prognostic differences are observed

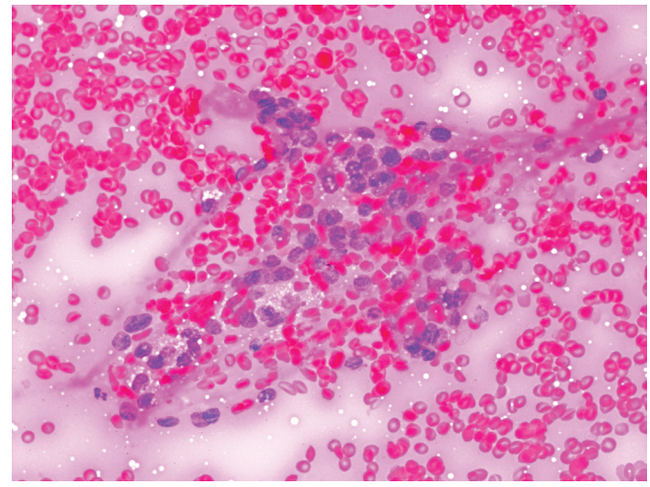

Figure 1. Follicular cells were oval-shaped in bloody mucinous background (H&Ex200)

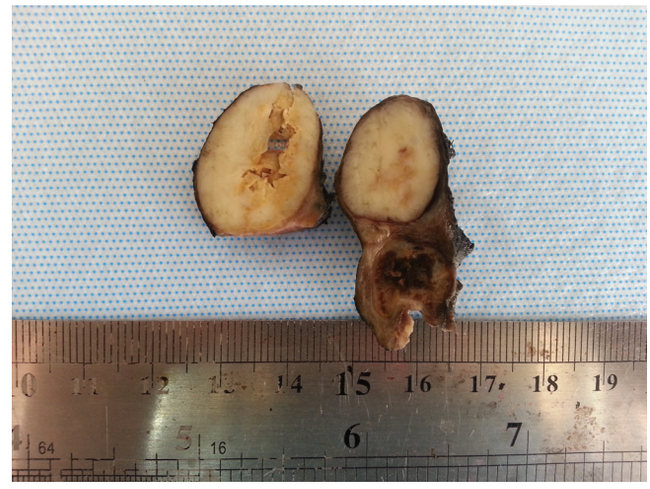

Figure 2. Macroscopically, well-encapsulated masses with thick capsules.

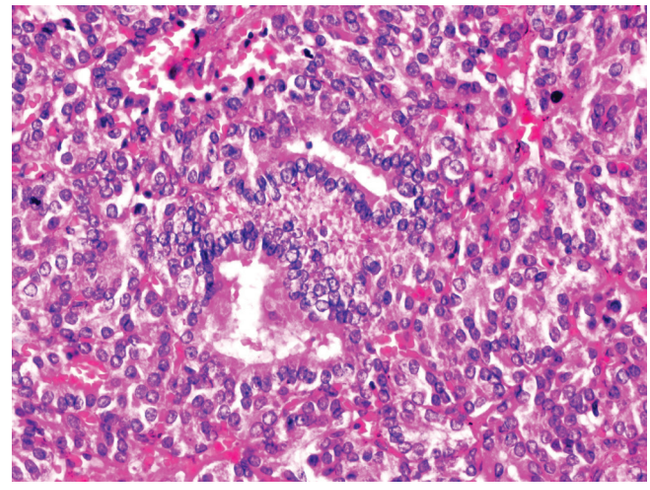

Figure 3. Nuclear grooves, pseudo-inclusions, and nuclear clearing were observed in the tumor (H&Ex200).

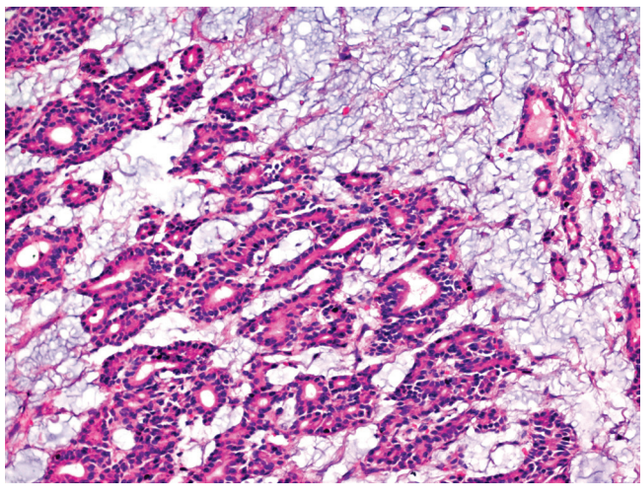

Figure 4. Extensive mucin deposits in tumor stroma (H&Ex100)

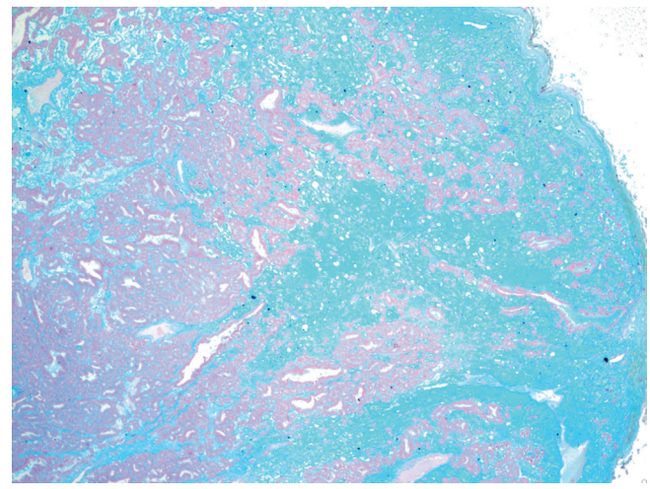

Figure 6. PAS positivity in mucin (x200).

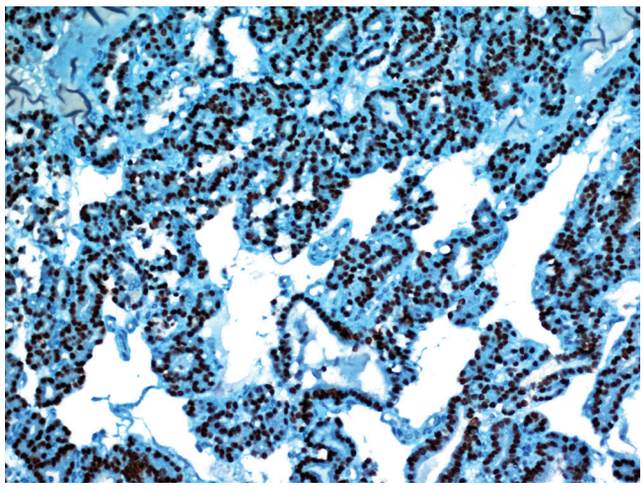

Figure 5. TTF-1 positivity in tumor cells (x200) (x200).

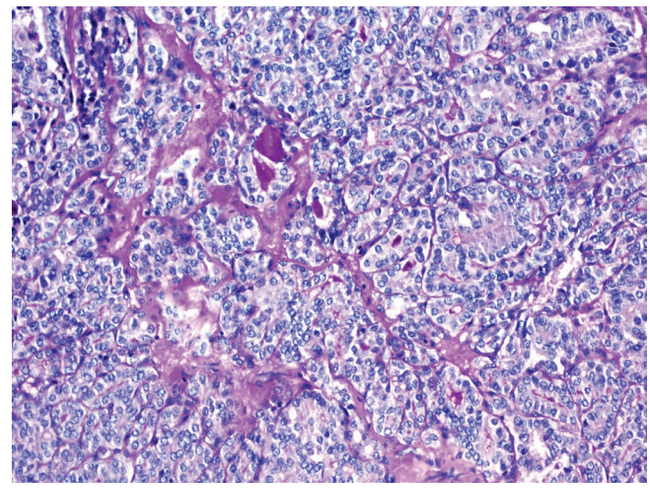

Figure 7. Alcian blue positivity in mucin (x200)

between mucin-secreting tumors of other organs and those secreting no mucin, whereas no such difference is observed in thyroid neoplasms in terms of prognosis and treatment.

In conclusion, it should be noted that the mucin-secreting tumors might be seen in papillary carcinomas of thyroid, and the differential diagnosis from the thyroid follicular neoplasms by making use of nuclear and immunohistochemical staining findings of tumor should be made in order to prevent from misdiagnosis.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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