



CORRESPONDENCE

Positive immunostaining of thyroid transcription factor-1 in primary nasopharyngeal papillary adenocarcinoma



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Received 19 February 2013; received in revised form 24 April 2013; accepted 29 April 2013

Thyroid transcription factor-1 (TTF-1) is known to play a critical role in cell differentiation and morphogenesis of the thyroid gland and the lung.¹ Antibodies to TTF-1 are widely used in clinical practice for tumors originating from either the thyroid or lung. Primary nasopharyngeal papillary adenocarcinoma is microscopically similar to thyroid papillary adenocarcinoma and an immunohistochemical stain with thyroglobulin antibody is typically used to distinguish between these two diseases.² In addition to thyroglobulin, an immunohistochemical stain for TTF-1 could be helpful. To clarify this issue, we performed immunohistochemical stains

with the TTF-1 antibody in one primary nasopharyngeal papillary adenocarcinoma.

A 36-year-old woman presented with right epistaxis and persistent nasal obstruction with a duration of 3 months. The physical examination revealed a pedunculated tumor at the roof of the nasopharynx. No other physical abnormalities were found. Complete excision of the tumor was performed through an endoscope. The pathology study revealed an adenocarcinoma with papillary structure and focal glandular formation. The cancer cells were non-immunoreactive to thyroglobulin, but expressed strong nuclear staining of TTF-1 (Fig. 1). Postoperatively, positron emission tomography did not show any abnormal uptake of ¹⁸F-fluodeoxyglucose in the nasopharynx, thyroid gland, or other parts of the body. No postoperative adjuvant treatment was given. The patient has not experienced any

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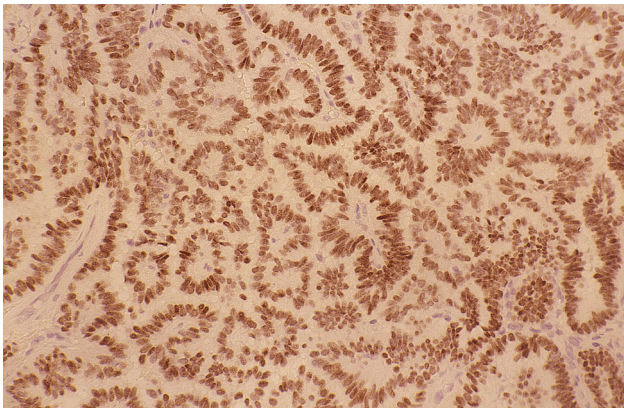


Figure 1 Immunohistochemical reactivity shows strong nuclear staining for thyroid transcription factor-1 (TTF-1) protein (original magnification, 66 \times ; Avidin-biotin complex (ABC) method).

locoregional recurrence or distant metastasis to date (31 months postoperation).

Papillary adenocarcinoma of the nasopharynx can be metastasized from the thyroid gland and the lung, or primarily originates from the nasopharynx. Because primary nasopharyngeal papillary adenocarcinoma is extremely rare, it is necessary to exclude nasopharyngeal metastasis from papillary adenocarcinoma of the thyroid gland. TTF-1 is generally thought to be specific to the thyroid gland and the lung.

Interestingly, several reports in recent years have occasionally shown positive immunohistochemical reactivity for TTF-1 in adenocarcinomas with origins other than the lung or the thyroid gland. One paper reported focal positivity for TTF-1 in 11 of 83 ovarian carcinomas and in 5 of 55 endometrial adenocarcinomas.³ Other reports described TTF-1 expression in one of 20 colon adenocarcinomas and one of 23 gastric adenocarcinomas.⁴ Based on these

findings, TTF-1 staining for determining the primary origin of the malignancy might be questionable despite these different results being only sporadically reported.

As to nasopharyngeal papillary adenocarcinoma, one recent report has demonstrated two primary nasopharyngeal papillary adenocarcinomas also showing strong nuclear expression for TTF-1.⁵ Therefore, we evaluated the immunohistochemical staining with thyroglobulin and TTF-1 antibodies for the patient. The results showed that the tumor was negative for thyroglobulin, but displayed strong nuclear expression for TTF-1. The etiology for positive TTF-1 staining in primary nasopharyngeal papillary adenocarcinoma remains unknown because the embryonic origins of the thyroid gland and the nasopharynx are different and the nasopharynx rarely has aberrant thyroid tissue.

Accordingly, TTF-1 protein might not be a suitable marker for distinguishing between metastatic or primary nasopharyngeal papillary adenocarcinoma.

References

1. Ordonez NG. Value of thyroid transcription factor-1 immunostaining in tumor diagnosis: a review and update. *Appl Immunohistochem Mol Morphol* 2012;**20**:429–44.
2. Wang CP, Chang YL, Chen CT, Yang TH, Lou PJ. Photodynamic therapy with topical 5-aminolevulinic acid as a post-operative adjuvant therapy for an incompletely resected primary nasopharyngeal papillary adenocarcinoma: a case report. *Lasers Surg Med* 2006;**38**:435–8.
3. Fujiwara S, Nawa A, Nakanishi T, Shimoyama Y, Kajiyama H, Shibata K, et al. Thyroid transcription factor 1 expression in ovarian carcinomas is an independent prognostic factor. *Hum Pathol* 2010;**41**:560–5.
4. Medina-Flores R, Lawson D, Cotsonis G. Diagnostic utility of thyroid transcription factor-1 (TTF-1) in primary and common metastatic tumors of lung. *Mod Pathol* 2000;**13**:214A.
5. Carrizo F, Luna MA. Thyroid transcription factor-1 expression in thyroid-like nasopharyngeal papillary adenocarcinoma: report of 2 cases. *Ann Diagn Pathol* 2005;**9**:189–92.