

Incidental diagnosis of the tall-cell variant of the papillary microcarcinoma of the thyroid gland requires completion lymphadenectomy: case report

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ABSTRACT:

Papillary thyroid carcinoma is the most common neoplasm of the thyroid gland which is usually associated with a very good prognosis.

The aim of this case report is to present the disease course of a rare tumor of the thyroid gland, which is worthwhile due to its extraordinary appearance and specific management.

A 46-year-old patient presented with a pronounced right-sided, but bilateral, multinodular goiter, with a volume of approximately 80 mL, as assessed on ultrasonography. Surgical removal was indicated as scintigraphy showed a 4-cm cold nodule that almost completely took up the right thyroid lobe. Because of the micronodular texture of the left thyroid lobe, complete thyroidectomy was performed according to well-established guidelines.

Histopathological investigation of the specimen revealed a follicular adenoma without any malignancy in the right thyroid lobe and the tall-cell variant of the papillary thyroid microcarcinoma in the left lobe, with a capsular invasion and diameter of 0.6 cm.

Because this rare tumor subtype is known for its aggressive behavior, and there was capsular invasion, low-grade differentiation, and an increased risk for lymphatic metastases, completion lymphadenectomy of the central compartments was performed after an interdisciplinary board decision. On histopathology, there were 30 tumor-free lymph nodes; final TNM classification was as follows: pT3 pNo [0/30] Lo Vo Pno Ro). The postoperative course was uneventful, and surgery was followed by radioiodine therapy. Six months after the surgery, clinical follow-up did not reveal any sign of recurrence.

The tall-cell variant is a rare and aggressive subtype of the papillary thyroid carcinoma, and it is characterized by poor 5-year survival and high recurrence rate. According to our understanding and based on current literature, this disease requires an aggressive surgical treatment and a close follow-up, as recommended by the current guidelines.

KEYWORDS:

thyroid carcinoma, tall-cell variant, completion lymphadenectomy (central compartment)

INTRODUCTION

Papillary thyroid carcinoma (PTC) is the most common type (80 %) of the thyroid neoplasms [1]. Usually, it is associated with an excellent prognosis and 5-year overall survival of up to 95% [1-4].

The tall-cell variant (TCV) is a very rare and aggressive subtype of PTC. Approximately 5.0 % (range, 4.0 - 17.0%) of all PTCs can be considered as TCVs depending on the histopathological criteria and the experience of the pathologist [2-4]. The proportion of TCV cells within the studied specimen that is necessary for making the diagnosis of TCV is still under discussion. According to the majority of histopathological definitions, at least 50.0 % of all tumor cells have to have the characteristic features of TCV, e.g., height at least twice the width, to make the diagnosis of TCV [3, 5].

Furthermore, preoperative diagnosis can be challenging due to difficult histological identification. The likelihood of an early identification and therefore adequate and aggressive therapy may be increased by combining the following methods:

- ultrasonography,

- fine-needle biopsy (and)
- cytological investigation [3, 6, 7].

In general, TCV usually appears in older patients, and is characterized by more aggressive behavior compared to typical PTC [2, 3, 6, 8, 9]. Additionally, TCV is mostly diagnosed at an advanced stage.

Typically, 74.4% of patients present with extrathyroid tissue infiltration (T3 tumor stage), and 71.0% have cervical lymph node metastases. The frequency of vascular infiltration and distant metastases is also increased compared to typical PTC; recurrence is four times more likely, leading to decreased 10-year survival (by 10.0-15.0 %) [2, 10].

Thyroidectomy with subsequent neck dissection is the gold standard treatment, which is followed by adjuvant radioiodine therapy [6, 11].

The aim of this case report is to describe the presentation, treatment, and clinical course of a rare tumor, namely, the tall-cell variant of papillary thyroid carcinoma, as it has extraordinary appearance and requires specific management. Finally, we wish to raise awareness of this relevant PTC subtype in daily endocrinological practice.

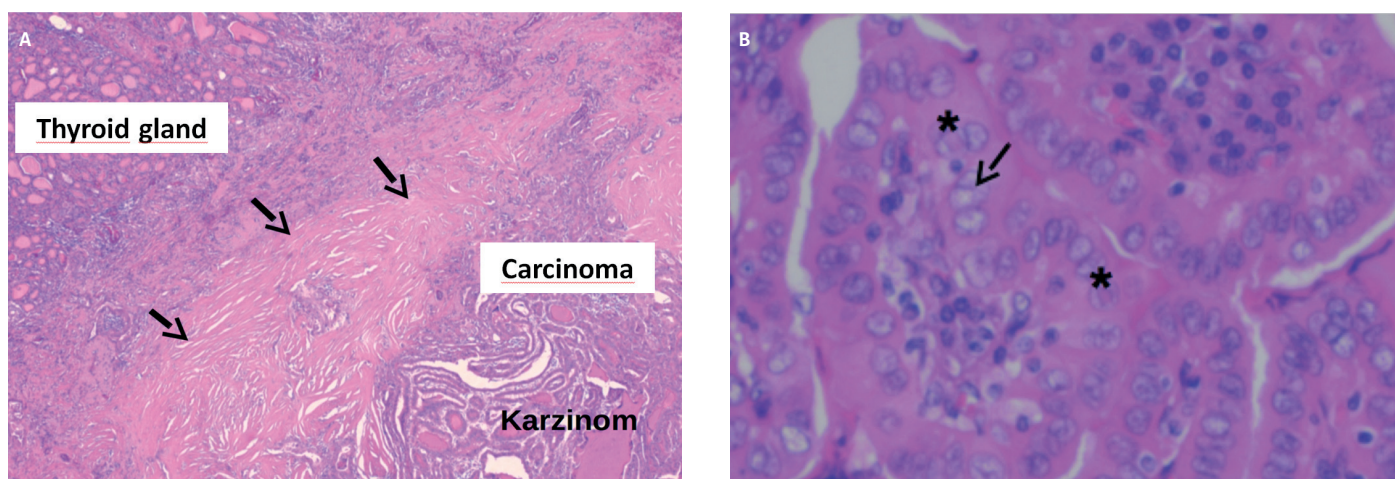


Fig. 1. Histopathological examination of the left lobule (HE stain): A) Regular thyroid tissue and the tall-cell variant of the papillary thyroid carcinoma. The infiltrating tumor mass shows collagen fibers, resulting in a shell-like appearance (magnification, 40-fold); B) Cancer cells have an eosinophilic cytoplasm and show characteristic nuclear inclusion bodies (*) and core notes (à) (magnification, 400-fold).

CASE REPORT

A 46-year-old male patient presented with bilateral multinodular goiter, with volume of approximately 80 mL, as estimated on ultrasonography. Apart from arterial hypertension, the medical history of the patient was unremarkable.

An initial diagnosis was made by the general practitioner, who also ordered scintigraphy that revealed a cold node within the right thyroid lobe. On physical examination, the patient did not present any signs of dysphagia, dyspnea, or dysphonia. On palpation, the goiter appeared not to infiltrate the surrounding tissue, and no swollen lymph nodes were found. Also, preoperative blood tests (including TSH and fT4) were normal.

On ultrasonography, the previously diagnosed cold node in the right lobe was confirmed, and it took up the entire right thyroid lobe. Furthermore, three hypoechoic nodes, < 1 cm in diameter, were seen within the left thyroid lobe.

Since distant metastases were ruled out, right hemithyroidectomy was indicated. Because of the intraoperative finding of several hard nodes within the left lobe, the patient underwent total thyroidectomy. During the postoperative period, we observed temporary, slight hypocalcaemia (2.03 mmol/L - SI), which remained asymptomatic. Apart from that, other relevant clinical and laboratory parameters remained within normal ranges, including normal postoperative phonation, as confirmed by an obligatory test of vocal cord function.

The histopathological investigation showed the right thyroid lobe, weighing 49 g, with a follicular adenoma, 40 mm in diameter. Unexpectedly, the tall-cell variant of the papillary-microcarcinoma was found within the left lobe. The diameter of that tumor was 6 mm, and infiltration of the thyroid capsule and parathyroid connective tissue was seen. Lymphatic, neural, and vascular structures appeared not to be affected.

Because of low-grade differentiation and aggressive behavior of this subtype of PTC, neck dissection of the central compartment was planned after an interdisciplinary board decision. The histopathological investigation of the resected lymph nodes revealed 17 lymph nodes

from the left and 13 from the right side, all of them were tumor-free, resulting in the following classification: pT3 pN0 (0/30) L0 V0 Pn0 R0.

Further postoperative clinical course was uneventful. Calcium values normalized (2.26 mmol/L - SI), and on the 6th day after surgery the patient was transferred for adjuvant radioiodine therapy to the Division of Nuclear Medicine.

The patient is scheduled for follow-up at six-month intervals during the first five years, and then once a year for another 5 years. On the first follow-up visit, there was no sign of recurrence. Clinical examination, ultrasonography, and blood tests (Tg and Tg-AK-titer and T3, T4, TSH) will be regularly performed according to the guidelines [12, 13].

DISCUSSION

The tall-cell variant of PTC is an extremely rare disease with an incidence of 0.13-0.7 per 100,000 [5, 14]. Histopathological diagnosis is challenging due to heterogenic morphological criteria and low prevalence [2]. However, accurate diagnosis is very important due to the aggressive behavior of this tumor compared to typical PTC.

Women are more likely to be affected (72.1-86.3% [2, 14]) between the fourth and sixth decades of life [2, 5, 14, 15].

Although an early diagnosis would definitely hasten the initiation of appropriate treatment, only 30-40% of all TCV cases are diagnosed preoperatively [8]. Even in our case, the T3 tumor stage of the TCV was only found by chance, which is in accordance with the fact that 60.5% of all cases appear to have the T3 tumor stage. For comparison, in typical (non-TCV) PTC, only 26.8% of patients present initially with the T3 tumor stage [2].

In addition, TCV is associated with worse 5- and 10-year survival (by 15%) due to higher rates of:

- Lymph node and distant metastases,
- Extrathyroid extension of tumor,
- Tumor recurrence (and)
- Vascular invasion [2, 3, 10, 11, 14].

In patients with the tall-cell variant of microcarcinoma, tumor infiltration of lymph nodes was detected in 63.4 % of cases in comparison to 42.7% in patients with typical papillary thyroid carcinoma [2].

With regard to the surgical approach and according to the current guidelines, in case of lack of tumor infiltration of the central compartment of cervical lymph nodes and lack of detectable lymph node metastases within the lateral compartment, prophylactic dissection of the latter compartment is not recommended. In particular, with regard to perioperative morbidity, among other complications such as lymphatic fistula, or cervicobrachial syndrome, there is no sufficient evidence due to lack of appropriate data that would justify dissection of the lateral compartment in the presented patient [16-24].

In the reported case, a small tumor was diagnosed (0.6 cm). Although typical PTCs do not require lymphadenectomy, this procedure was performed in our patient due to the aggressive nature of TCV. In the German guidelines, TCV is mentioned as a special variant that “could be more aggressive” [26].

Carling et al. recommend “a more aggressive approach” with “at least thyroidectomy” [26]. Since lymph nodes are affected in the majority of patients with TCV (63.4 % vs. 42.7 % in typical PTC [2]), we performed central lymphadenectomy. According to the current guidelines, lateral compartment dissection is not recommended in case of tumor-free medial compartments. For this reason, it was not performed in our patient.

REFERENCES

- Calangiu C, Simionescu C, Stepan A et al. The Assessment of Prognostic Histopathological Parameters Depending on Histological Patterns of Papillary Thyroid Carcinoma. *Curr Health Sci J* 2014; 40(1): 37–41
- Oh WJ, Lee YS, Cho U et al. Classic papillary thyroid carcinoma with tall cell features and tall cell variant have similar clinicopathologic features. *Korean J Pathol* 2014; 48(3): 201-208
- Choi YJ, Shin JH, Kim J et al. Tall cell variant of papillary thyroid carcinoma. *J Ultrasound Med* 2011; 30(6): 853-858
- Morris LGT, Shaha AR, Tuttle MR et al. Tall-Cell Variant of Papillary Thyroid Carcinoma: A Matched-Pair Analysis of Survival. *Thyroid* 2010; 20(2): 153–158
- Axelsson TA, Hrafnkelsson J, Olafsdottir EJ et al. Tall-Cell Variant of Papillary Thyroid Carcinoma: A Population-Based Study in Iceland. *Thyroid* 2015; 25(2): 216-220
- Roman S, Sosa J. Aggressive variants of papillary thyroid cancer. *Curr Opin Oncol* 2013; 25(1): 33-38
- Tötsch M, Quadbeck B, Görges R et al. Präoperative Punktionszytologie beim Schilddrüsenkarzinom. *Onkologe* 2005; 11: 40-49
- Guan H, Vandenbussche CJ, Erozan YS et al. Can the tall cell variant of papillary thyroid carcinoma be distinguished from the conventional type in fine needle aspirates? *Acta Cytol* 2013; 57(5): 534-542
- Ganly I, Ibrahimspasic T, Rivera M et al. Prognostic implications of papillary thyroid carcinoma with tall-cell features. *Thyroid* 2014; 24(4): 662-670
- Collini P, Massimino M, Mattavelli F et al. Tall Cell Variant of Papillary Thyroid Carcinoma in Children Report of Three Cases With Long-Term Follow-Up From a Single Institution. *Int J Surg Pathol* 2014; 22(6): 499-504
- Calò PG, Pisano G, Medas F et al. Total thyroidectomy without prophylactic central neck dissection in clinically node-negative papillary thyroid cancer: is it an adequate treatment? *World J Surg Oncol* 2014; 12(1): 152
- Pacini F, Schlumberger M, Dralle H et al. European consensus for the management of patients with differentiated thyroid carcinoma or the follicular epithelium. *Eur J Endocrinol* 2006; 154: 787-803
- Ernst R, Grußendorf M, Heidemann E et al. Leitlinie des OSP Stuttgart zur Diagnostik und Therapie des Schilddrüsenkarzinoms, 2011
- Kazaure HS, Roman SA, Sosa JA. Aggressive variants of papillary thyroid cancer: incidence, characteristics and predictors of survival among 43,738 patients. *Ann Surg Oncol* 2012; 19(6): 1874-1880
- Bernstein J, Virk RK, Hui P et al. Tall cell variant of papillary thyroid microcarcinoma: clinicopathologic features with BRAF(V600E) mutational analysis. *Thyroid* 2013; 23(12): 1525-1531
- Cooper D, Doherty GM, Haugen BR et al. Revised American Thyroid Association management guidelines for patients with thyroid nodules and differentiated thyroid cancer. *Thyroid* 2009; 19(11): 1167-1214
- Remmler D, Byers R, Scheetz J et al. A prospective study of shoulder disability resulting from radical and modified neck dissections. *Head Neck Surg* 1986; 8: 280–286
- van Wilgen CP, Dijkstra PU, van der Laan BF et al. Shoulder complaints after nerve sparing neck dissections. *Int J Oral Maxillofac Surg* 2004; 33: 252–527
- Kupferman ME, Patterson M, Mandel SJ et al. Safety of modified radical neck dissection for differentiated thyroid carcinoma. *Laryngoscope* 2004; 114: 403–406
- Roh JL, Kim DH, Park CI. Prospective identification of chyle leakage in patients undergoing lateral neck dissection for metastatic thyroid cancer. *Ann Surg Oncol* 2008; 15: 424–429
- Lorenz K, Abuazab M, Sekulla C et al. Management of lymph fistulas in thyroid surgery. *Langenbecks Arch Surg* 2010; 395: 911–917
- McGarvey AC, Chiarelli PE, Osmotherly PG et al. Physiotherapy for accessory nerve shoulder dysfunction following neck dissection surgery: a literature review. *Head Neck* 2011; 33: 274–280
- Ito Y, Higashiyama T, Takamura Y et al. Risk factors for recurrence to the lymph node in papillary thyroid carcinoma patients without preoperatively detectable lateral node metastasis: validity of prophylactic modified radical neck dissection. *World J Surg* 2007; 31: 2085–2091
- Perros P, Boelaert K, Colley S et al. British Thyroid Association. Guidelines for the management of thyroid cancer. *Clin Endocrinol (Oxf)* 2014; 81 Suppl 1: 1-122
- Reiners C, Dietlein M, Luster M. Radio-iodine therapy in differentiated thyroid cancer: indications and procedures. *Best Pract Res Clin Endocrinol Metabol* 2008; 22(6): 989-1007
- Carling T, Ocal IT, Udelsman R. Special variants of differentiated thyroid cancer: does it alter the extent of surgery versus well-differentiated thyroid cancer? *World J Surg* 2007; 31(5): 916-923

Adjuvant radioiodine therapy is generally recommended [25, 26], and was also applied in the presented patient.

Further follow-up is conducted in accordance with guideline recommendations. If adequate ultrasound surveillance is performed, no further radiological examination is required [12, 13].

CONCLUSION

The tall-cell papillary thyroid carcinoma is a rare and aggressive tumor. Adequate diagnosis is challenging due to heterogeneous pathological appearance, as described in earlier reports.

Although most cases of TCV are diagnosed postoperatively, aggressive surgical therapy and adjuvant radioiodine therapy are highly recommended due to:

- Aggressive behavior,
- Possible early capsular invasion and infiltration of parathyroid connective tissue,
- Possible low-grade differentiation, (and)
- An increased risk of lymphatic metastases.

After treatment, an adequate follow-up regimen over a period of 10 years is also highly recommended by the current to guidelines. It should include physical examination, ultrasound surveillance, and analysis of laboratory parameters.

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