

## Unusual presentation of metastatic thyroid cancer without a primary: role of diagnostic imaging in a daily clinical setting

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**SUMMARY: Unusual presentation of metastatic thyroid cancer without a primary: role of diagnostic imaging in a daily clinical setting.**

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*Papillary thyroid carcinoma (PTC) is the most common mali-*

*gnancy of the thyroid gland. In 21-90% of the patients occult lymph node metastases may occur. The case reported here describes a woman who underwent a total thyroidectomy for multinodular goiter and who presented an enlarged lymph node on the left side of the neck, which showed a metastasis from PTC. The patient underwent imaging investigation with CT and FNAB. The pathological examination diagnosed a papillary thyroid cancer metastases. The pT underwent a <sup>131</sup>I total body scan, negative for secondary localization.*

KEY WORDS: Thyroid cancer metastasis - I<sup>131</sup> total body scan.

### Introduction

Papillary thyroid carcinoma (PTC) is the most common malignancy of the thyroid gland. Thyroid carcinoma is classified according to the cell type from which it originates. About 94% of malignant thyroid cancers are "well-differentiated" including papillary carcinoma (70-80%), follicular (11%) and Hürthle cells carcinoma (3%). The other histologies are neuroendocrine (5%) and "undifferentiated"/anaplastic (1%). The average long-term survival is estimated in 98% for papillary carcinoma, 92% for follicular carcinoma and < 10% for the anaplastic forms.

PTC may be subclinical or may be present in asymptomatic thyroid mass or nodule and generally

it has an indolent character. Rarely there are symptoms like pain, difficulty in breathing or swallowing, stridor, vocal cord paralysis and haemoptysis (1).

It commonly spreads to regional lymph nodes, but cervical node dissection as first time approach remains controversial. In 21-90% of the patients occult lymph node metastases may occur, but their role as a prognostic factor for recurrence or death has not been clearly established (2-4).

At the time of diagnosis, 10-15% of patients have distant metastases to the bones and lungs. Other rare sites of distant spread are brain, liver, and skin (5, 6).

The case reported herein describes a woman who underwent a total thyroidectomy for multinodular goiter in 2004, and who presented an enlarged lymph node on the left side of the neck, in 2010, which was demonstrated a metastasis from PTC.

### Case report

A 45-year-old female came to our clinic with a history of a left laterocervical mass at level II-III

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which had been growing slowly over the previous 3 months. She was also affected by hypertension and obesity. Past medical history included a thyroidectomy seven years before for nodular goiter. Examination of the neck showed a left laterocervical mass, with immovable swallowing measuring 4x5 cm.

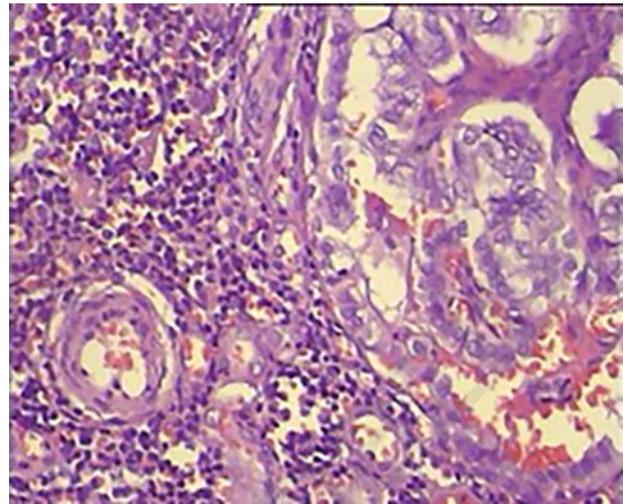
Ultrasonography of the neck revealed the presence of a hypoechoic mass measuring 5x5.5cm and another two masses in the left laterocervical region in the jugulo-digastric space.

Computed tomography (CT) scan with contrast of the head, neck, thorax and abdomen confirmed the neck mass (Figure 1).

Laboratory investigations revealed normal FT3-FT4, thyroid stimulating hormone (TSH) and thyroglobulin levels. Fine needle aspiration biopsy (FNAB) of the cervical mass revealed aspecific tumor malignant cells. The patient, therefore, underwent surgery. A cervical incision along the anterior border of the left sternocleidomastoid muscle was made and the dissection proceeded beneath the muscle and selective neck dissection (LII-LIII-LIV) was performed with radical excision of the mass (17/10/2010). The specimen was well-circumscribed. The resected tissue consisted of an apparently capsulate ovoidal mass, measuring 3x4.5 cm, between the carotid artery and the internal jugular vein.



**Figure 1 - CT of the neck before chemotherapy.**



**Figure 2 - Histology: the lymph node is infiltrated by neoplastic tissue.**

The pathological examination diagnosed a papillary thyroid cancer metastases.

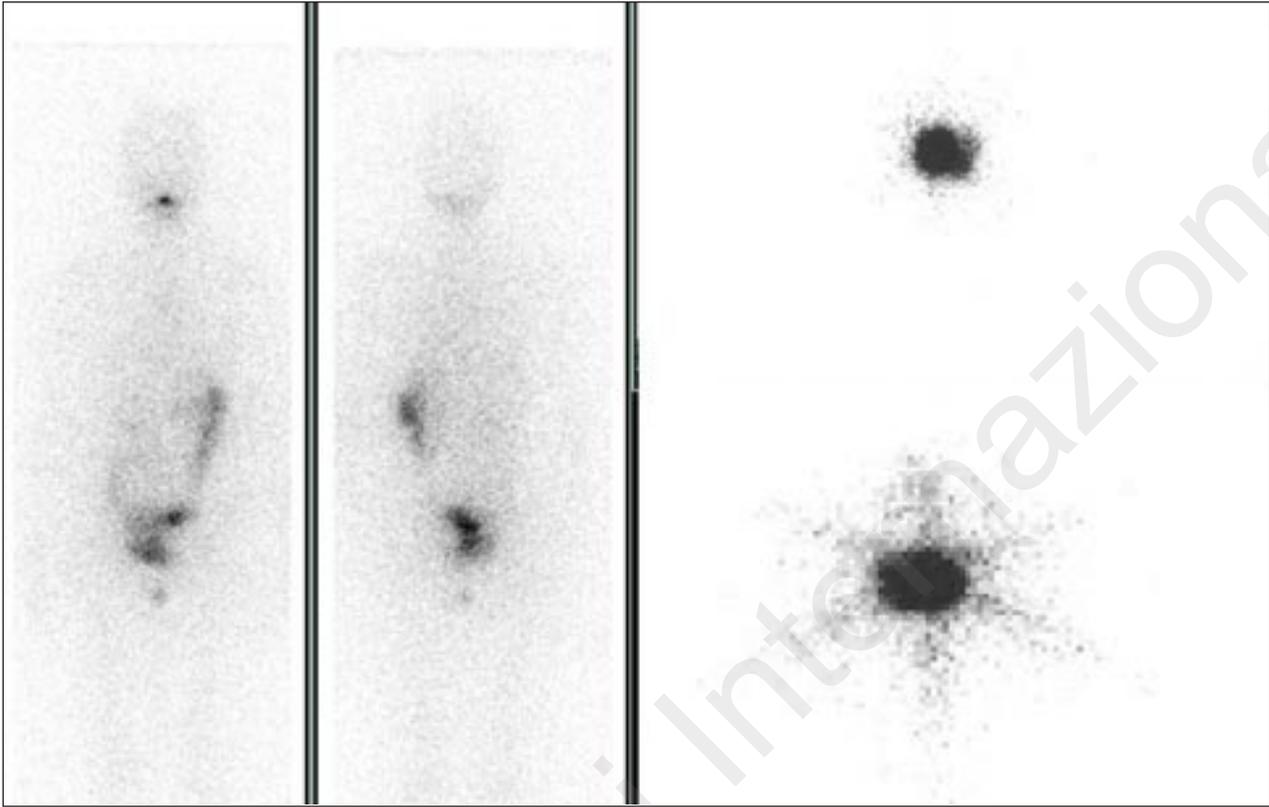
Histology: the lymph node is infiltrated by neoplastic tissue with nuclear features of papillary carcinoma of the thyroid: ground glass (optically clear) nuclei, which often have a large size and overlapping quality. Nuclear pseudoinclusions: these present invaginations of the cytoplasm and appear as sharply outlined acidophilic formations. Nuclear grooves, which represent the morphologic expression of infoldings of a redundant nuclear membrane. Mitoses are very scanty (Figure 2).

The postoperative course was regular. An ovarian struma was excluded by means of CT performed before neck surgery, and confirmed by a transvaginal US after histology report. Patient I<sup>131</sup> total body scan was negative for secondary localization (Figure 3).

Thyroglobulin after levo-thyroxin withdrawal, was < 2 ng/ml (TSH >3).

## **Discussion**

A case of metastatic lymph node of the neck from PTC incidentally found after a thyroidectomy for multinodular goiter is presented (7). The absence of a clinically detectable thyroid abnormality has been reported to exclude the possibility of extensive hematogenous and lymphatic spread from a minute or undetected carcinoma of the thyroid (7). According to the World Health Organization, PTC smaller



**Figure 3 -  $^{125}\text{I}$  whole body scintigraphy and neck. The imaging shows a focal and pathological uptake of the tracer in the anterior-left side of the neck.**

than 1 cm are classified as papillary thyroid microcarcinoma (PTMC). PTMC is defined occult when it is undetectable at clinical examination and indirectly diagnosed because of the presence of enlarged metastatic cervical lymph nodes or distant metastases, and then discovered at surgery (8, 9).

Also, thyroid carcinoma is not uncommon in patients with hyperthyroidism, as demonstrated in those undergone to surgery for hyperthyroidism (10-15), or with apparently benign thyroid disease, as in our case (14, 16, 17).

The risk of malignancy seems to be increased in patients with concomitant Grave's disease. On the contrary, it is approximately the same in patients with autonomously functioning nodules or toxic multinodular goiters compared to euthyroid patients with thyroid nodular disease (10, 18, 19).

In two recent studies (16, 17) the incidence of PTC in patients with benign thyroid diseases, including multinodular goiter was studied. In the first study (17), in 104/998 patients was found a thyroid cancer and in 99/104 it was a PTC. The majority of

incidental thyroid carcinoma was represented by microcarcinomas. In particular, tumours occurred in 13.8% of patients with multinodular goiter and was more frequent in euthyroid patients than in thyrotoxic patients ( $P < 0.03$ ) (16).

In the second study the overall incidence of PTC incidentally found was 12%, and the greatest rate of PTC was detected in patients with Hashimoto's thyroiditis, suggesting a link to thyroid cancer (17).

Metastases in unusual sites, different from lymph node, as first clinical sign of PTC are reported in literature. Recent reports found metastatic disease from PTHC in the clivus (skull base) (9) in brain (20) and in the thymus (21).

In our case, at the time of thyroidectomy (2004), there was no evidence of thyroid carcinoma: thyroid function tests were within normal range, ultrasound did not show cervical lymphadenopathy and fine needle aspiration cytology (FNAC) of the thyroid did not found papillary carcinoma focus.

Correlation between thyroid function and PTC is known to be weak, as it is possible an asymptomatic

presentation of carcinoma without a nodule or a mass.

In conclusion, considering those factors and the particularity of our case, a careful analysis of the his-

tology is mandatory in order to prevent delay in diagnosis and to follow-up patients even treated for benign thyroid disease.

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