

# Unusual bone metastasis to the rib and the tibia of a follicular variant of papillary thyroid carcinoma

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## Abstract

Usually differentiated thyroid cancer is a slow growing tumor with low metastatic potential. We present the case of female patient of 26-years-old who underwent thyroidectomy, followed by 3.7 GBq of <sup>131</sup>I. The post-therapeutic whole-body scan showed intense uptake in the left part of posterior thorax and a faint radioactivity in the upper right tibia. A Chest CT-scan and a localized knee MRI confirm that they are bone metastasis in the middle portion of the 8<sup>th</sup> right rib and in the upper tibial metaphysis.

**KEY words:** thyroid papillary carcinoma, bone metastasis

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## Background

The incidence of distant metastasis is lower in case of papillary carcinoma (3.5–3.8% of cases) [1]. The most common site of distant metastases is the lung, followed by the bone [2].

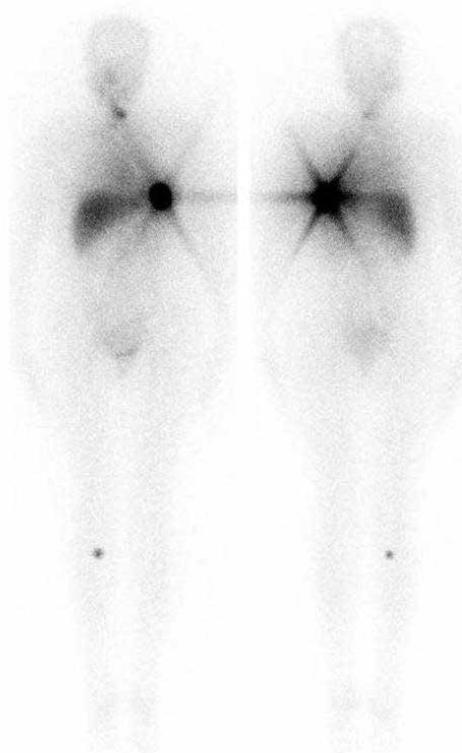
## Case report

This 26-year-old patient had no significant medical history. She had undergone a total thyroidectomy without regional lymph node dissection. Histological examination revealed a multifocal follicular variant of papillary carcinoma, well-differentiated. The TNM classification was pT<sub>1b</sub>N<sub>0</sub>M<sub>0</sub>.

Four weeks later she received, with thyroid hormone withdrawal, 3.7 GBq of <sup>131</sup>I as a treatment; no symptoms ensued. At this time, the serum thyroglobulin level was 273 ng/mL, TSH was 32.8 μIU/ml and antithyroglobulin antibody level was less than 20 IU/mL.

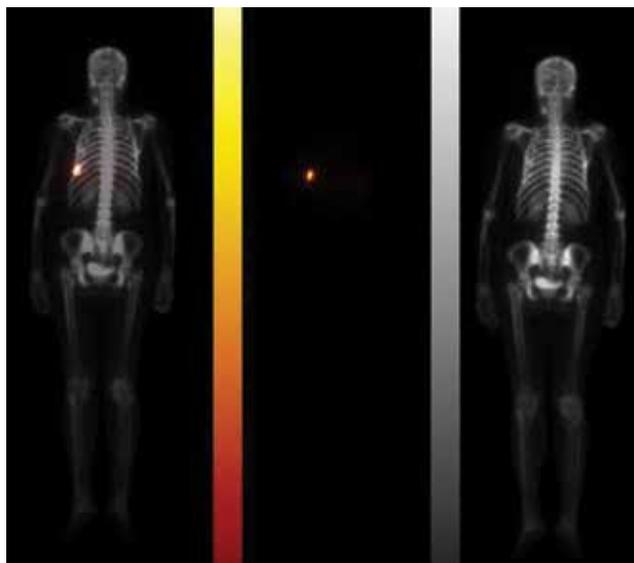
The post-therapeutic whole-body scan (Figure 1) showed intense uptake in the left part of posterior thorax and a faint radioactivity in the upper right tibia. A whole-body bone scanning was performed and matched with whole body iodine scan (Figure 2). The intense uptake was localized exactly inside of a photopenic focus on the middle portion of the 8<sup>th</sup> right rib. Chest CT-scan (Figure 3) revealed an osteolytic lesion in this focus. A localized knee MRI (Figures 4 and 5) was done showing a T1 low signal intensity with bright T2 signal in the upper tibial metaphysis.

The patient underwent a resection of the middle portion of the 8<sup>th</sup> right rib. Pathological examination (Figure 6) confirm that it was a metastasis of thyroid carcinoma.



**Figure 1.** A post-3.7 GBq of <sup>131</sup>I whole-body scan showing intense uptake in the left part of posterior thorax and in the upper right tibia

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**Figure 2.** A matching of a wholebody bone scanning and a whole body iodine scan showing that the intense uptake was localized exactly inside of a photopenic focus on the the middle portion of the 8<sup>th</sup> right rib

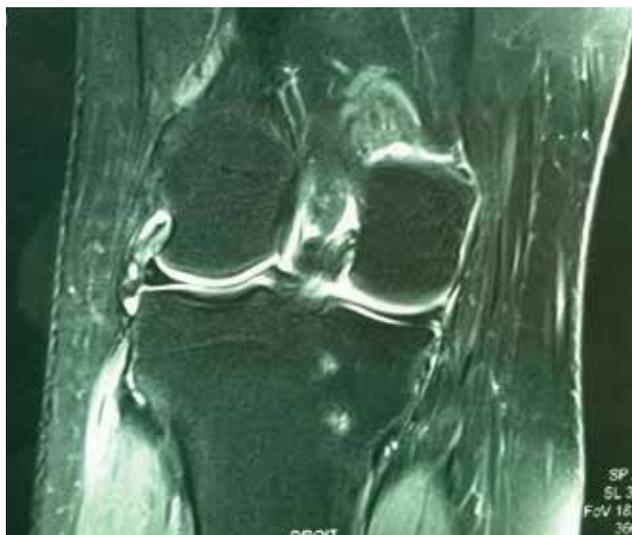


**Figure 3.** CT scan revealed an osteolytic lesion in the the middle portion of the 8<sup>th</sup> right rib

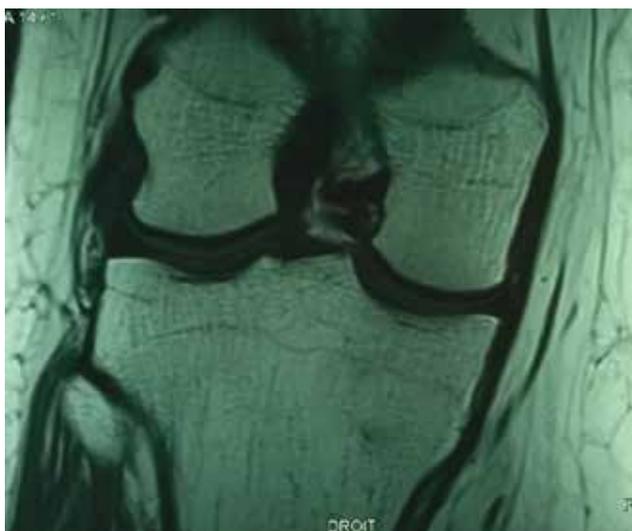
## Discussion

Only about 20% of patients with DTC show a metastatic evolution [3]. The bone metastasis represent only 9% of patients [3]. In 50–80% of cases, there are multiple bone metastases [4].

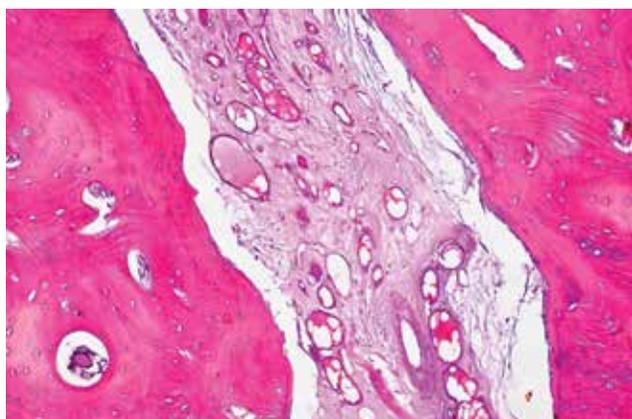
According to different studies, bone metastases are more common in patients with follicular carcinomas (15.2–33.7%) than in those with papillary carcinomas (0.6–6.9%) [5]. Distant bone metastases are rare in patients with differentiated thyroid malignancy with the sternum, ribs, and spine being the most frequent sites of osseous metastases [6]. In our case, the patient present an uncommon association of rib and tibial metastasis.



**Figure 4.** A knee MRI showing a bright T2 signal in the upper tibial metaphysis



**Figure 5.** A knee MRI showing a T1 low signal intensity in the upper tibial metaphysis



**Figure 6.** Histological examination confirm that it was a metastasis of thyroid carcinoma

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