INTERNATIONAL JOURNAL OF HEALTH & MEDICAL RESEARCH

ISSN(print): 2833-213X, ISSN(online): 2833-2148

Volume 04 Issue 07 July 2025

DOI : 10.58806/ijhmr.2025.v4i7n02

Page No. 423-427

Thyroid Metastasis from A Plantar Melanoma: A Rare Case Report and Literature Review

NAANANI Othmane[1], CHACHA Hassane[2], A. Rhnia[3], M. Lahjaouj[4], M. Loudghiri[5], W. Bijou[6], Y. OUKESSOU[7], S.Rouadi[8], R.L. ABADA[9], M. ROUBAL[10], M. MAHTAR[11]

[1,2,3,4,5,6,7,8,9,10,11]ENT and Cervicofacial Surgery Department, CHU Ibn Rochd, Faculty of Medicine and Pharmacy, Hassan II University, Casablanc

ABSTRACT: Thyroid metastases are rare in clinical practice. We report the case of a 75-year-old woman with a history of surgically treated plantar malignant melanoma, in whom an isolated thyroid nodule was incidentally discovered during oncologic follow-up. Clinical examination revealed no compressive symptoms or signs of thyroid dysfunction. Cervical ultrasound, followed by ultrasound-guided fine-needle aspiration, showed atypical cells highly suggestive of a melanocytic origin, which was confirmed by immunohistochemistry (positive for HMB-45, S-100, and Melan- A). A total thyroidectomy was performed, and histological analysis confirmed a solitary thyroid metastasis from malignant melanoma. Thyroid function was preserved. This case highlights the importance of considering metastatic disease in the differential diagnosis of thyroid nodules in patients with a history of malignancy, even in the absence of suggestive clinical signs. Thyroidectomy allowed both definitive diagnosis and prevention of potential compressive complications.

KEYWORDS: thyroid metastasis, acral melanoma, fine-needle aspiration, immunohistochemistry

INTRODUCTION

Secondary metastases to the thyroid gland are rare, despite its rich vascular supply and high blood flow. Reported incidence in autopsy series ranges from 0.5% to 24%, (1,2) while clinically detectable metastases remain exceptional, accounting for approximately 1–3% of cases operated on for malignant thyroid disease.(3) Several hypotheses have been proposed to explain this low incidence, including the rapid intrathyroidal blood flow and the high concentrations of iodine and oxygen, which may create an unfavorable environment for the implantation and proliferation of tumor cells.(4)

The most common primary tumors associated with thyroid metastases are cancers of the kidney, breast, lung, and gastrointestinal tract.(1)

Malignant melanoma, an aggressive cutaneous tumor, has a high metastatic potential, preferentially affecting the lungs, liver, and brain. Thyroid involvement, although possible, remains exceptional, and reported cases in the literature are rare.(5)

Diagnosis is based primarily on imaging (ultrasound, PET scan) and fine-needle aspiration (FNA), but histological confirmation after thyroidectomy is often required. (3)

Therapeutic management of thyroid metastases is not standardized and depends on the progression of the primary disease. Treatment is most often based on a systemic approach, sometimes combined with surgery for diagnostic, palliative, or potentially curative purposes.(6)

We report here a rare case of thyroid metastasis from an acral lentiginous melanoma of the sole, along with a literature review to discuss the mechanisms of dissemination, diagnostic modalities, and therapeutic options for this uncommon entity.

CASE REPORT

This is a 75-year-old female patient who has been followed since 2021 for a malignant acral melanoma of the left foot, initially treated with surgery Fig 1.

Her medical history includes hypertension treated with amlodipine 5 mg/day and type 2 diabetes managed with insulin.

As part of her oncologic follow-up, a whole-body PET scan performed four months prior to admission revealed:

- No hypermetabolism suggestive of local recurrence of the plantar melanoma,
- No involvement of the popliteal or inguinal-femoral lymph nodes,
- The presence of an isolated hypermetabolic nodule in the right thyroid lobe

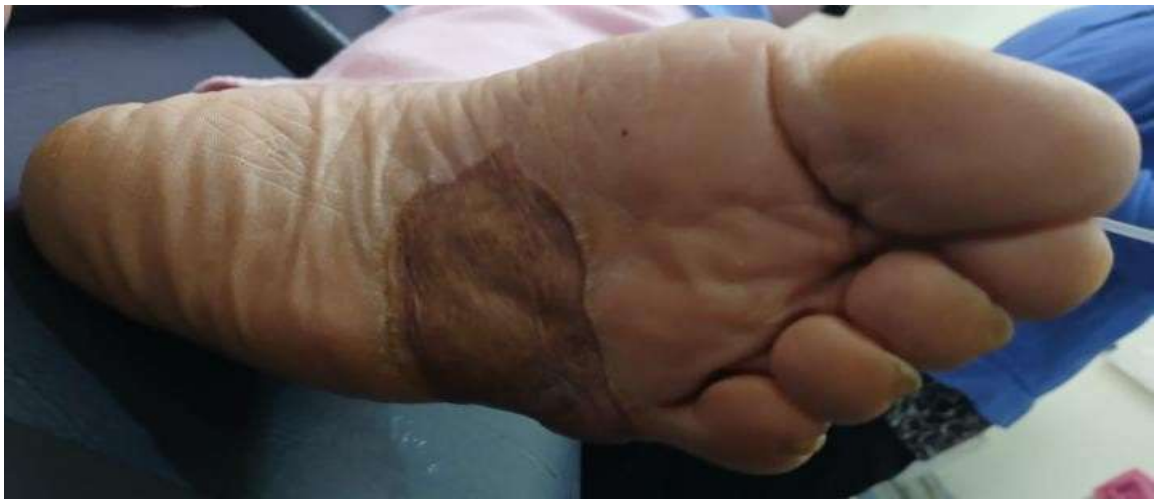


Fig 1: Image of a surgically treated plantar melanoma with reconstruction using a skin graft

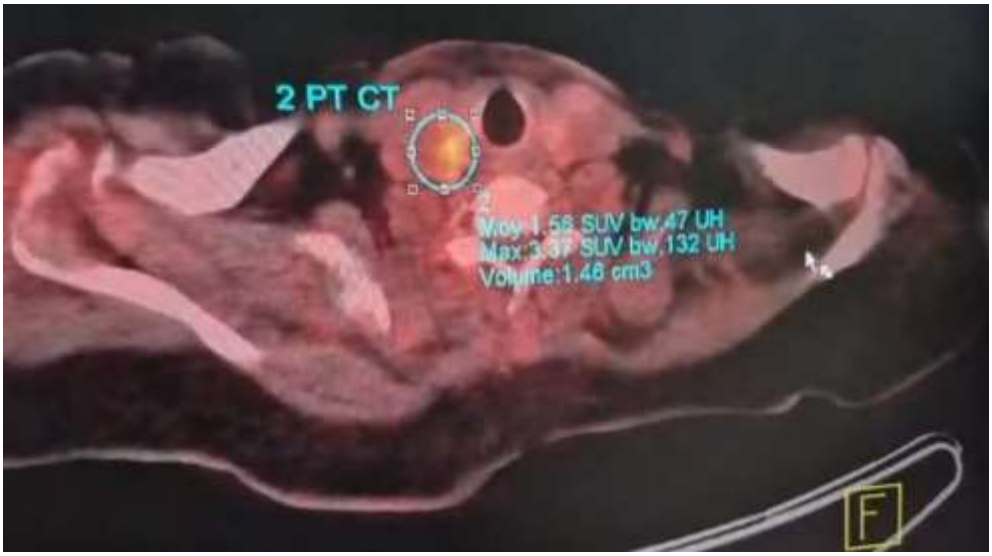


Figure 2: PET scan image showing thyroid hypermetabolism

The patient presented with no clinical signs suggestive of thyroid dysfunction or compression: no dysphonia, dysphagia, dyspnea, or symptoms of dysthyroidism.

On physical examination, a painless, right-sided thyroid swelling was noted, mobile with swallowing, without overlying inflammatory signs.

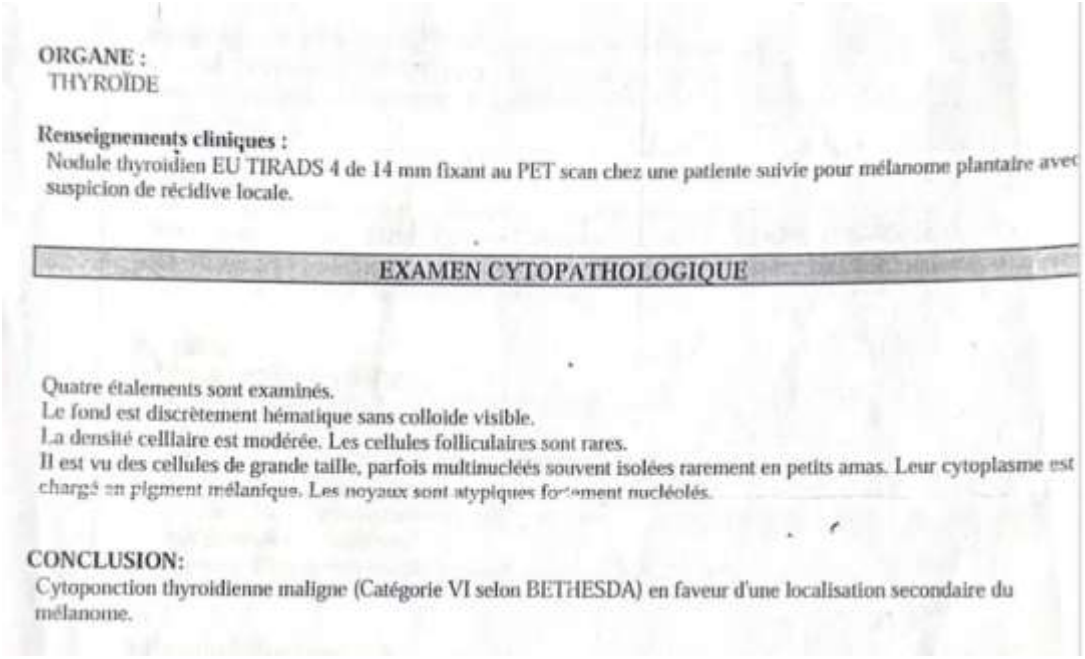
Thyroid ultrasound revealed a right medio-lobar nodule, with regular shape and borders, moderately hypoechoic, containing cystic areas, surrounded by a hypoechoic peripheral halo, and showing predominantly peripheral vascularization on Doppler imaging.

It measured 15.2 × 12.2 × 11.5 mm, with an estimated volume of 1.11 ml, and was classified as EU-TIRADS 4.

A fine-needle aspiration (FNA) was performed, showing large multinucleated cells with cytoplasm rich in melanin pigment.

Cytological examination, completed with immunohistochemical staining positive for HMB-45, S-100, and Melan-A, confirmed the diagnosis of a thyroid metastasis from malignant melanoma, in a context of apparently isolated metastatic disease Fig 3.

The patient underwent a total thyroidectomy, and histopathological analysis confirmed the melanocytic origin of the thyroid nodule.



ORGANE :
THYROÏDE

Renseignements cliniques :
Nodule thyroïdien EU TIRADS 4 de 14 mm fixant au PET scan chez une patiente suivie pour mélanome plantaire avec suspicion de récidive locale.

EXAMEN CYTOPATHOLOGIQUE

Quatre étalements sont examinés.
Le fond est discrètement hématique sans colloïde visible.
La densité cellulaire est modérée. Les cellules folliculaires sont rares.
Il est vu des cellules de grande taille, parfois multinucléés souvent isolées rarement en petits amas. Leur cytoplasme est chargé en pigment mélanique. Les noyaux sont atypiques fortement nucléolés.

CONCLUSION:
Cytoponction thyroïdienne maligne (Catégorie VI selon BETHESDA) en faveur d'une localisation secondaire du mélanome.

Fig 3: Fine needle aspiration report revealing the secondary malignant nature of the hypermetabolic nodule

DISCUSSION

Despite its rich vascularization and significant exposure to systemic blood flow, the thyroid gland remains an uncommon site for clinically apparent metastases.(7)

This apparent contradiction has prompted various hypotheses in the literature. Several authors suggest that the biochemical and physiological characteristics of the thyroid exert a protective role. Its iodine-rich environment, high peroxidase concentration, and highly oxidative milieu may limit the proliferation of circulating tumor cells. Furthermore, although the high blood flow facilitates perfusion, it may also hinder the effective adhesion of tumor cells to thyroid capillaries.(4)

From a statistical perspective, the frequency of thyroid metastases varies greatly depending on the method of study.

In clinical series, they account for approximately 1–3% of malignant thyroid tumors requiring surgery, whereas in autopsy series, their incidence is significantly higher, reaching up to 24% in patients who died from cancer.(3)

The primary tumors most commonly responsible for such metastases include renal cell carcinoma, bronchial carcinoma, and breast cancer.

Less frequently, they originate from gastrointestinal or hepatic cancers or certain sarcomas. Although malignant melanoma is known for its biological aggressiveness and high metastatic potential, it represents an exceptional cause of secondary thyroid involvement. (8)

Melanocytic metastases to the thyroid are reported in the literature only as isolated case reports or small series.(9,10)

Bozbora et al., for instance, described a case of thyroid metastasis occurring five years after the excision of a 2 mm cutaneous melanoma.(11)

The diagnosis of thyroid metastasis is often delayed due to the subtle and nonspecific nature of clinical signs, which are frequently similar to those seen in differentiated thyroid cancers.(6)

In this context, clinical diagnosis is rarely obvious. Most patients are asymptomatic, and thyroid nodules are often discovered incidentally during routine examinations or as part of staging for the primary tumor — as was the case in our patient.

When symptomatic, patients may report the appearance or enlargement of a nodule, thyroid enlargement, cervical swelling, dysphagia, dysphonia, or cough.(3,12) Most published cases provide little information on thyroid function in patients with thyroid metastases.

However, available data suggest that the majority are euthyroid, although cases of thyrotoxicosis or, more rarely, hypothyroidism have been reported.(13) Thyrotoxicosis may result from follicular destruction caused by rapidly growing metastases, leading to a massive release of hormones into circulation, or it may be due to ectopic hormone production by tumor cells. Conversely, hypothyroidism may occur secondarily due to progressive destruction of thyroid parenchyma.(14)

In our case, thyroid function was preserved, which is consistent with the majority of reports in the literature.

The diagnosis of thyroid metastases relies on a multimodal approach combining imaging, cytology, and immunohistochemistry—particularly in cases of melanocytic origin, which is often difficult to identify on initial assessment:

1. Neck Imaging

Cervical ultrasound is the first-line examination. Thyroid metastases generally appear as hypoechoic, heterogeneous nodules,

sometimes with cystic components, irregular margins, and peripheral or chaotic vascularization.(15) In the specific case of melanoma metastases, nodules may present with rich vascularization and atypical pseudo-nodular architecture.

The EU-TIRADS classification allows for risk stratification of malignancy but does not differentiate between a primary and a secondary thyroid tumor.

Computed tomography (CT) and magnetic resonance imaging (MRI) are useful in the preoperative setting, particularly to assess locoregional extension in cases of large or infiltrative masses. However, they cannot distinguish between a primary tumor and a metastasis.

18F-FDG positron emission tomography combined with CT (PET-CT) plays a central role in the oncological monitoring of malignant melanoma. Thyroid metastases typically appear as foci of focal hypermetabolism. Although this sign is not specific, the absence of other hypermetabolic sites may suggest an isolated thyroid metastasis.(8)

2. Fine-Needle Aspiration (FNA)

Ultrasound-guided FNA is a fundamental diagnostic tool, providing a preliminary cytological assessment. In the case of melanoma metastasis, cytology often reveals atypical epithelioid cells with abundant cytoplasm, which may or may not be pigmented. However, this method is rarely sufficient on its own to determine the exact origin of the lesion. In most cases, immunohistochemistry is required to establish a definitive diagnosis.(16)

3. Immunohistochemistry (IHC)

Immunohistochemistry plays a critical role in confirming the melanocytic origin, particularly when the clinical context is unclear or when presentation is atypical. The most commonly used markers in melanoma diagnosis include:

- **HMB-45**: a cytoplasmic marker specific to activated melanocytes;
- **S-100**: highly sensitive but not specific;
- **Melan-A (MART-1)**: specific, with cytoplasmic localization;
- **SOX10**: highly sensitive and specific, particularly useful in poorly pigmented forms.

In parallel, negativity for markers specific to primary thyroid tumors—such as thyroglobulin (Tg) and TTF-1—supports the diagnosis of a metastatic tumor of extrathyroidal origin.(17)

4. Management

Due to the rarity of thyroid metastases, their management is based primarily on data from retrospective series and isolated case reports. As such, no standardized consensus guidelines currently exist.(18) Treatment is primarily surgical, but the decision to operate depends on the patient's clinical condition, the site of the primary tumor, the presence of other metastatic sites, the degree of disease dissemination, and the symptoms caused by the thyroid mass. Surgery may also serve a palliative purpose, especially to relieve symptoms due to airway compression.

Most experts agree that surgery is an appropriate option in patients with resectable disease and an overall favorable prognosis. However, there is no consensus on the extent of surgery: most authors recommend an isthmectomy or lobectomy for isolated nodules, while total or near-total thyroidectomy is advised in cases of multifocal involvement.(13)

In the present case, the patient had a solitary thyroid nodule without other associated findings, which justified a surgical approach.

CONCLUSION

Thyroid metastases from malignant melanoma remain an exceptional entity, often diagnosed incidentally during oncologic follow-up. This case illustrates the importance of considering this diagnostic possibility in any thyroid nodule in a patient with known melanoma, even in the absence of specific clinical signs.

The diagnostic approach relies on a combination of imaging, ultrasound-guided fine- needle aspiration, and immunohistochemistry, which help identify the secondary nature of the lesion. Surgery—particularly thyroidectomy—plays a key role that is simultaneously diagnostic, palliative, and sometimes curative.

A multidisciplinary approach remains essential to tailor treatment to the evolving context of the disease and the patient’s overall condition.

REFERENCES

1) Nixon IJ, Coca-Pelaz A, Kaleva AI, Triantafyllou A, Angelos P, Owen RP, et al. Metastasis to the Thyroid Gland: A Critical Review. Ann Surg Oncol. 2017;24(6):1533-9.
2) Silverberg SG, Vidone RA. Carcinoma of the thyroid in surgical and postmortem material. Analysis of 300 cases at autopsy and literature review. Ann Surg. août 1966;164(2):291-9.
3) Chung AY, Tran TB, Brumund KT, Weisman RA, Bouvet M. Metastases to the thyroid: a review of the literature from the last decade. Thyroid Off J Am Thyroid Assoc. mars 2012;22(3):258-68.
4) Willis RA. Metastatic Tumours in the Thyreoid Gland. Am J Pathol. mai 1931;7(3):187-208.3.

5) Şiraneci ŞR, Yıldırım MB, Duman B, Elbeği İÇ, Dalar L. Malignant Melanoma Metastasis to the Thyroid Gland Causing Severe Central Airway Obstruction. Turk Thorac J. mars 2020;21(2):134-7.
6) Papi G, Fadda G, Corsello SM, Corrado S, Rossi ED, Radighieri E, et al. Metastases to the thyroid gland: prevalence, clinicopathological aspects and prognosis: a 10- year experience. Clin Endocrinol (Oxf). avr 2007;66(4):565-71.
7) Lam KY, Lo CY. Metastatic tumors of the thyroid gland: a study of 79 cases in Chinese patients. Arch Pathol Lab Med. janv 1998;122(1):37-41.
8) Basu S, Alavi A. Metastatic Malignant Melanoma to the Thyroid Gland Detected by FDG-PET Imaging. Clin Nucl Med. mai 2007;32(5):388.
9) Kung B, Aftab S, Wood M, Rosen D. Malignant melanoma metastatic to the thyroid gland: a case report and review of the literature. Ear Nose Throat J. janv 2009;88(1):E7.
10) Al-Harake A, Dandache I, Moukadem H, Saliba M, Chahine J, Yazbeck H, et al. Malignant carcinoma and skin melanoma neoplasms concomitantly in the thyroid. Clin Case Rep. sept 2021;9(9):e04790.
11) Bozbora A, Barbaros U, Kaya H, Erbil Y, Kapran Y, Ozbey N, et al. Thyroid metastasis of malignant melanoma. Am J Clin Oncol. déc 2005;28(6):642-3.
12) Moghaddam PA, Cornejo KM, Khan A. Metastatic carcinoma to the thyroid gland: a single institution 20-year experience and review of the literature. Endocr Pathol. sept 2013;24(3):116-24.
13) Costa MM, Belo S, Capela-Costa J, Costa J, Carvalho D. Malignant melanoma with synchronous thyroid metastases: case report and literature review. Arch
14) Endocrinol Metab. 1 févr 2017;61(2):193-7.
15) De Ridder M, Sermeus ABL, Urbain D, Storme GA. Metastases to the thyroid gland-a report of six cases. Eur J Intern Med. oct 2003;14(6):377-9.
16) Anil G, Hegde A, Chong FHV. Thyroid nodules: risk stratification for malignancy with ultrasound and guided biopsy. Cancer Imaging. 28 déc 2011;11(1):209-23.
17) Tang Z, Gao L, Wang X, Zhang J, Zhan W, Zhou W. Metastases to the thyroid gland: ultrasonographic findings and diagnostic value of fine-needle aspiration cytology. Front Oncol [Internet]. 3 août 2022 [cité 17 juin 2025];12. Disponible sur: https://www.frontiersin.org/journals/oncology/articles/10.3389/fonc.2022.93 9965/full
18) Hurlimann J, Gardiol D, Scazziga B. Immunohistology of anaplastic thyroid carcinoma. A study of 43 cases. Histopathology. juin 1987;11(6):567-80.
19) Hegerova L, Griebeler ML, Reynolds JP, Henry MR, Gharib H. Metastasis to the thyroid gland: report of a large series from the Mayo Clinic. Am J Clin Oncol. août 2015;38(4):338-42.