ARCHIVES OF HEAD AND NECK SURGERY
ISSN 2595-2544

CASE REPORT

Melanocytic variant of medullary carcinoma or primary melanocytic thyroid neoplasia?

Carlos Alberto Ferreira de Freitas[1,2]*, Vanessa Akemi Yamada[1], Gustavo Tonon Domingos[1], Andreza Negreli Santos[3], Gustavo Ribeiro Falcão[4]

Abstract

Malignant melanocytic thyroid neoplasm is a rare condition with around ten cases reported in the literature. We describe a case of a patient with thyroid nodule who underwent thyroidectomy by compressive effects. The anatomopathological diagnosis was pleomorphic malignant neoplasia, with evidences of component with melanocytic and neuroendocrine differentiation, with absolute predominance of the first one. Clinical follow-up showed no relapse after two years of follow-up, and calcitonin was low. This case demonstrates the difficulty in the diagnosis of this type of rare thyroid lesion, and especially, the great difficulty in the therapeutic conduct.

Keywords: thyroid neoplasm; malignant melanoma; medullary thyroid carcinoma.

[1]Universidade Federal de Mato Grosso do Sul (UFMS), Faculdade de Medicina, Campo Grande, MS, Brasil

[2]Serviço de Cirurgia de Cabeça e Pescoço, Hospital de Câncer Alfredo Abrão, Campo Grande MS, Brasil

[3]Universidade Federal de Mato Grosso do Sul (UFMS), Programa de Pós-graduação em Farmácia, Campo Grande, MS, Brasil

[4]Hospital de Câncer Alfredo Abrão, Serviço de Patologia, Campo Grande MS, Brasil

Financial support: None.
Conflicts of interest: No conflicts of interest declared concerning the publication of this article.
Submitted: Oct. 11, 2018.
Accepted: Jan. 15, 2019.

The study was carried out at Departamento de Cirurgia, Faculdade de Medicina, Universidade Federal de Mato Grosso do Sul, Campo Grande, MS, Brasil.

Introduction

Malignant melanoma is a neoplasm of the skin and mucous membranes, with a more aggressive behavior than other histological types, which disseminates through the lymphatic and hematogenic routes, and almost always presents great production of the pigment melanin. The presence of melanoma metastasis to the thyroid is quite rare[1]. There are reports in the literature of about a dozen cases of single malignant melanocytic lesions of the thyroid, sometimes reported as primary melanoma of the gland[1], sometimes as a rare variant of medullary carcinoma[2-5].

Medullary thyroid carcinoma is a primary malignant neoplasm that exhibits differentiation in C cells, which is characterized by the production of calcitonin[2]. It has an early spread to regional lymph nodes.

We report a case of malignant thyroid neoplasia with large melanin production that led to the initial diagnostic impression of malignant melanoma in the freezing biopsy and by inclusion in paraffin, and that after the immunohistochemical exam with the histological findings revealed malignant neoplasia with evidence of component with major melanocytic differentiation, and foci of component of minor neuroendocrine origin. This case brought a great and persistent diagnostic difficulty and therapeutic conduct.

Case report

A 67-year-old female Brazilian African patient underwent drug therapy and had a history of left nephrectomy 3 years before by Fuhrman's grade 3 chromophobe carcinoma of the left kidney. There was a history of onset of nodulation in the anterior cervical region to the left of the midline, about 1 year before, with progressive growth, without any other complaints. She was non-smoker, and had no previous history of melanoma. In the physical examination, the presence of a 5cm mass of hardened consistency in the left lobe of the thyroid, without palpable lymph nodes in the cervical region, was evidenced in the inspection and palpation. In the evaluation of the body surface, no type of melanocytic or suspicious cutaneous lesions were evident. Ultrasonography showed a predominantly solid nodular image in the left lobe of the thyroid, measuring 4.3 x 1.9cm. Plasma levels of TSH and free T4 were normal. Surgical treatment was indicated where a solid mass in the left lobe was found, of about 4cm, without compromising the thyroid capsule. In the intraoperative frozen section, the lesion presented an intense black color after cutting, leading to the suspicion of malignant melanoma (Figure 1). Total thyroidectomy including two peri-thyroid lymph nodes of level VI was completed. The examination after inclusion in paraffin was poorly differentiated pigmented pleomorphic neoplasia, without vascular or neural invasion, and without thyroid capsule invasion. The lymph nodes removed had no disease. The material was submitted to immunohistochemical analysis (Table 1), which concluded that it was a malignant neoplasm with a predominant melanocytic component and a minor neuroendocrine.

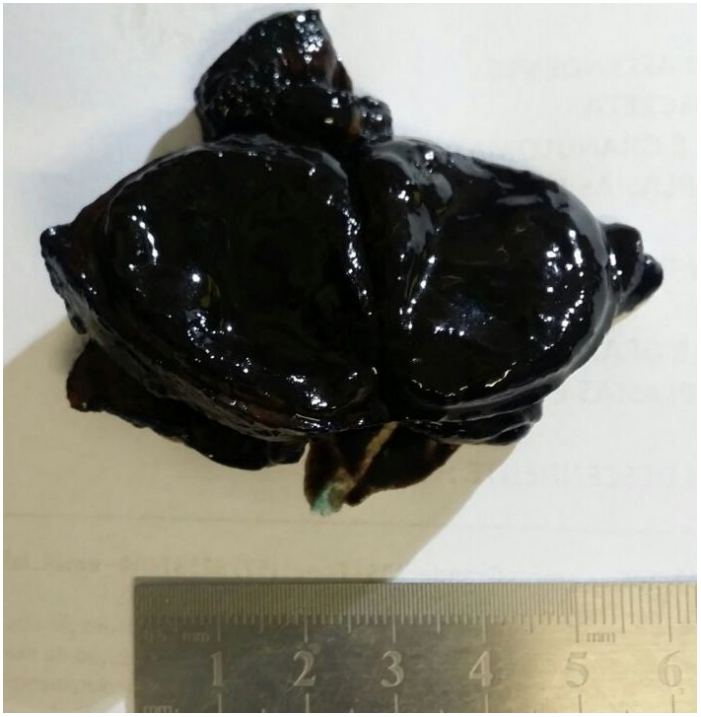

Figure 1. Thyroid gland demonstrating a node with large amount of dark material, after its opening.

Table 1. Immunohistochemical examination report (by heat antigen recovery methods, polymer amplification, DAB disclosure and positive control assays).

Marker (antibody)	Clone	Expression
AE1/AE3	AE1/AE3	Focally positive
Calcitonin	Polyclonal rabbit	Focally positive
Chromogranin A	LK2H10	Focally positive
HMB-45	HMB-45	Focally positive
Ki67	MIB-1	Positive in high index
Melan-A	A103	Focally positive
PAX-8	MRQ-50	Negative
Protein S100	Polyclonal rabbit	Focally positive
Synaptophysin	DAK-SYNAP	Focally positive
SOX-10	Polyclonal rabbit	Focally positive
Thyroglobulin	Polyclonal rabbit	Negative
TyrosinaseTTF-1	T311	Focally positive
TTF-1	8G7G3/1	Focally positive

She presented good postoperative evolution. PET/CT was performed, and it did not locate suspicious areas or other lesions. After twenty-four months of the surgical procedure, the patient is well, with no clinical evidence of relapses, with stable calcitonin of 2.0, and examinations of images of the neck, thorax and abdomen without evidence of lesions.

Discussion

Metastasis to the thyroid gland is a rare condition, with few cases reported in the literature. Still more rare is the clinical condition in which a primary melanoma develops in the thyroid gland.

One study[1] described a case in which immunohistochemical examination revealed that the tumor was strongly positive for S100 and HMB-45 protein, but negative for AE1/AE3 keratin and thyroglobulin, strengthening the diagnosis of primary malignant melanoma, since the complete investigation of the patient did not reveal any other site of skin or mucosal lesion, pigmented or not, and not even on computed tomography scans of the thorax, abdomen and brain, and bone scintigraphy, all of which were normal

Differently, another author[2] described a case of a patient with melanoma-producing medullary thyroid carcinoma. The author affirmed that the medullary carcinoma can have multidirectional differentiation, resulting in some subtypes, such as producers of mucin, with squamous differentiation and melanin production, being this last subtype extremely rare.

***Correspondence**
Carlos Alberto Ferreira de Freitas
Rua Pedro Celestino 2533, cj 04, Centro
CEP 79002-372, Campo Grande (MS), Brasil
Tel.: +55 (67) 9 9221 3634
E-mail: caff2004@hotmail.com

Authors information
CAFF - Associate Professor at the Faculty of Medicine, Federal University of Mato Grosso do Sul (UFMS); Chief in the Department of Head and Neck Surgery, Cancer Hospital Alfredo Abrão; VAY and GTD - Academics at the Faculty of Medicine, Federal University of Mato Grosso do Sul (UFMS); ANS - Master in Pharmacy - Federal University of Mato Grosso do Sul; GRF - Pathologist in chief, Cancer Hospital Alfredo Abrão, Campo Grande MS.

The latter case reported[2] presented large atypical pleomorphic cells containing the melanin pigments and was confirmed by staining and bleaching by the Fontana-Masson method; in addition, there was positive expression for calcitonin, CEA and chromogranin. It was concluded that the case was consistent with medullary carcinoma of the thyroid producing melanin, or that the tumor arose from polyclonal evolution of common precursor cells with the ability to produce hormones and melanin, or even that the marrow carcinoma itself had become a more aggressive cancer with the ability to produce melanin.

Some variants are described for small cell, squamous, giant cell, or melanotic cell carcinomas that may appear rarely in medullary thyroid carcinoma and are important in characterizing the more aggressive potential of the melanocytic variant[5].

In the present case the immunohistochemical evaluation was positive for some neuroendocrine and melanocytic markers, strongly positive for Ki67, and negative for PAX-8 and thyroglobulin. The final diagnosis was pleomorphic malignant neoplasm, with evidence of melanocytic and neuroendocrine differentiation, with absolute predominance of the first, and may represent the simultaneous evolution of both polyclonal, from precursor cells in common.

This type of thyroid lesion appears to have a better prognosis than classic malignant melanoma. Despite the size of the lesion, which was almost five centimeters, there were no signs of local aggression, or regional or distant dissemination, and there were no signs of relapse after two years of follow-up. One author stated that the prognosis of the melanocytic variant of the medullary carcinoma is similar to the other forms of the disease[4].

This type of variation in medullary carcinoma is extremely rare, and a greater number of case reports are needed in the literature for a better understanding of this disease and its prognosis[3].

References

1. Karakurt F, Bavbek N, Bayrak R, Kargili A, Kasapolu B. Isolated thyroid metastasis of malignant melanoma with unknown primary origin. Turk Jem. 2008;12:101-3.
2. Hirokawa M, Miyauchi A, Otsuru M, Daa T. Malignant melanoma arising in melanin-producing medullary thyroid carcinoma. Int J Surg Case Rep. 2016;20:118-22. **http://dx.doi.org/10.1016/j.ijscr.2016.01.029**. PMid:26852361.
3. Singh K, Sharma MC, Jain D, Kumar R. Melanotic medullary carcinoma of thyroid – report of a rare case with brief review of literature. Diagn Pathol. 2008;3(1):2. **http://dx.doi.org/10.1186/1746-1596-3-2**. PMid:18190715.
4. Lima MA, Medeiros JD, Cunha LR, Pessoa RCC, Tavares FS, Borges MF, Marinho EO. Cytological aspects of melanótic variant of medullary thyroid carcinoma. Diagn Cytopathol. 2001;24(3):206-8. **http://dx.doi.org/10.1002/1097-0339(200103)24:3<206::AID-DC1042>3.0.CO;2-H**. PMid:11241906.
5. Karaarslan S, Ertan Y, Buğdaycı MH, Taşli F, Ören D, Akali T. Medullary thyroid carcinoma showing melanocytic differentiation: a report of a rare case. Turk Jem. 2015;19:72-5.