



CASE REPORT

## Alopecia neoplastica: An uncommon presentation of metastatic breast carcinoma

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**Abstract:** Cutaneous metastasis may correspond to the initial clinical presentation of hidden internal malignancies. In patients presenting said neoplasia, clinical manifestations of breast cancer reaches 23.9%. Considering that neoplastic alopecia appears as an unusual pattern of the said metastasis, this report describes a case of such uncommon neoplastic alopecia which presents itself as a cutaneous metastasis of rapid progression in a patient with prior breast cancer history. We present a 47-year-old female patient reporting lesions at the scalp, and who was asymptomatic with a one-year evolution. The patient reported prior breast cancer history and presence of lung metastasis, and was undergoing chemotherapy at the time of consultation. A dermatological evaluation showed only a nodular lesion with erythematous surface and a diameter measuring about 4 cm, firm in consistency, and immovable. She was routed to the Department of Dermatological Surgery, and the results from histopathology were consistent with a diagnosis of metastatic breast adenocarcinoma. Neoplastic alopecia appears as an unusual form of cutaneous metastasis which is predominantly described in association with breast cancer. The lesion's clinical features play a crucial role at the differential diagnosis, as the presence of erythema could distinguish neoplastic alopecia from alopecia areata. The existence of cutaneous metastasis leads to unfavorable outcomes. As a conclusion, cutaneous evaluation of patients is essential for treating visceral metastases, since the forms of cutaneous metastasis are diverse and can also affect the scalp.

**Keywords:** alopecia; breast cancer; metastasis; skin cancer

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### Introduction

Cutaneous metastasis may correspond to the initial clinical presentation of hidden internal malignancies but may

also indicate a neoplasia relapse in previously stabilized oncological patients<sup>[1]</sup>. Such condition is seen in 0.7% to 10.4% of cancer patients, and thus is relatively unusual<sup>[2]</sup>. The mechanism of cutaneous involvement in the process

of metastasis lies in the following dissemination pathways: hematogenic, lymphatic, direct invasion of the adjacent tissue, and iatrogenic—of which, the first two occupy a prominent position in the aforesaid mechanism<sup>[3]</sup>. It is still worthy to mention that a study suggests different outcomes for cutaneous metastasis related to internal malignancies arising from different organs and that, among such conditions, breast cancer presents the best outcome<sup>[4]</sup>.

In this context, the incidence of cutaneous presentations of breast cancer in patients showing this kind of neoplasia reaches 23.9%<sup>[2]</sup>. Among the several clinical cutaneous presentations of metastatic breast cancer, neoplastic alopecia appears as an unusual pattern of this metastasis, where neoplastic cells invade the dermis of the scalp and cause either direct or indirect damages to the pilosebaceous unit<sup>[5]</sup>.

Triggered by a distinct physiopathological mechanism that has not been completely clarified, neoplastic alopecia seems to have a multifactor origin<sup>[5]</sup>. Therefore, this report describes a case of such uncommon neoplastic alopecia which presents as a cutaneous metastasis of rapid progression in a patient with prior breast cancer history.

## Case report

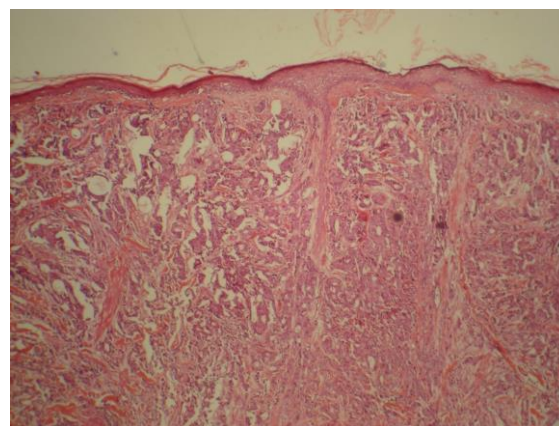
The patient is a 47-year-old female who was evaluated with a history of asymptomatic nodular lesion at the scalp, with a one-year evolution. She presented a prior breast cancer history in 2010 showing newly diagnosed lung metastasis, and was undergoing chemotherapy at the time of consultation.

Dermatological evaluation showed a nodular lesion (**Figure 1**) with erythematous surface and a diameter measuring about 4 cm, firm in consistency and immovable, with evidence of surface telangiectasia, well-defined borders, and some superficial crusted lesions at the right frontoparietal region of the scalp but without discharge and fistula formation. The patient was routed to the Department of Dermatological Surgery and, due to a clinical suspicion of cutaneous metastasis, the above-described lesion was submitted for a biopsy.

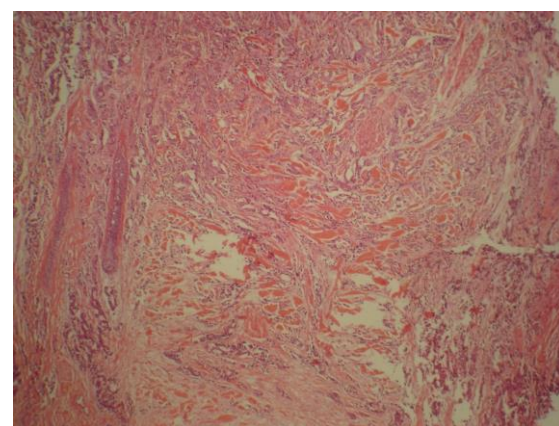
The results from histopathology evidenced a neoplasia of the epithelial line, with atypical cells that form a lobular structure of isolated strings (**Figures 2, 3, and 4**), that metastatic breast adenocarcinoma was diagnosed. Currently, the patient still undergoes chemotherapy and is under follow-up for evaluation of the lesion.



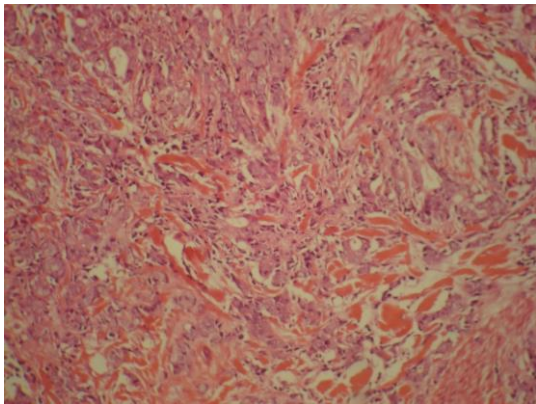
**Figure 1.** Nodular lesion showing superficial erythema and telangiectasias



**Figure 2.** Cohesive and small cells forming cords or acinar outlines that invade the stroma [Hematoxylin and Eosin stain (H&E) 100X]



**Figure 3.** The cells display round to notched ovoid nuclei (H&E 100X)



**Figure 4.** Interspersed thin collagen strands (H&E 400X)

## Discussion

Neoplastic alopecia is an unusual form of cutaneous metastasis, defined by localized hair loss caused by primary malignant neoplasia that progresses towards the scalp due to metastasis<sup>[2]</sup>. Only 25 cases have been described in literature so far, among which 21 are associated with breast cancer, thus representing 84% of these cases<sup>[5]</sup>.

Nevertheless, there are other clinical forms of cutaneous metastasis related to breast cancer, and the most frequent lesions are nodules, papules<sup>[6]</sup>, and tumoral lesions<sup>[7]</sup>, with the inflammatory form being described by a recent study as the most common<sup>[6]</sup>. Other forms, such as telangiectasias, zosteriform lesions, Paget-like metastasis, and subungual metastasis are also referred to as unusual events<sup>[2]</sup>.

It is worthy to point out the discrepancies between the clinical forms of unusual neoplastic alopecia, as several lesions showing different morphologic and quantitative patterns have already been described. Moreover, their sizes also present considerable variations, which may reach up to 20 cm<sup>[2,5]</sup>. It is still possible to verify cases of alopecia totalis due to breast cancer metastasis<sup>[8]</sup>. Such wide range of clinical forms are partially explained by the natural progression of metastatic conditions—at the beginning of its evolution, the area affected by alopecia is erythematous and well-marked<sup>[9]</sup>, as observed in the only lesion on the scalp of the patient. The lesion's clinical features also play a crucial role during differential diagnosis, as described by Cohen *et al.*<sup>[9]</sup>. Given that the presence of erythema could distinguish neoplastic alopecia from alopecia areata, this clinical finding was seen in 41% of patients presenting neoplastic alopecia<sup>[9]</sup>.

The most common histopathological findings are either single or multiple nodules at the dermis and subcutaneous tissues, which are constituted by tumor cell

aggregates surrounded by fibrotic tissue<sup>[6]</sup>. It is possible to observe telangiectasia at the dermis above the tumoral area and even an enlargement of lymph vessels at areas of cutaneous metastasis and intralymphatic tumor emboli<sup>[6]</sup>. It may be pointed out that adenocarcinoma is the cancer histological subtype that most often presents metastasis towards skin<sup>[10]</sup>.

As to outcomes, the presence of cutaneous metastasis lead to an unfavorable progression<sup>[10]</sup>. Nevertheless, some studies suggested different survival periods in cases of cutaneous metastasis originating from neoplasia in different organs, given that patients affected by breast cancer cutaneous metastasis present a relatively better outcome<sup>[3]</sup>. This fact was demonstrated by Schoenlaub *et al.*, who described a longer survival period in patients affected by breast cancer cutaneous metastasis, in comparison to patients showing lung cancer and other kinds of neoplasia<sup>[4]</sup>.

The choice of chemotherapy for the referred patient was based on two relevant conditions presented: cutaneous metastasis of rapid progression<sup>[2]</sup> and concomitant lung involvement.

## Conclusion

It is essential that patients treated for visceral metastases undergo skin evaluation since the forms of cutaneous metastasis are diverse and can also affect the scalp.

## Conflict of interest

The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

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