

# Pigmentary mammary Paget disease: Clinical, dermoscopic and histological challenge

Angelo Massimiliano D'Erme,<sup>1</sup>  
 Roberta Iozzo,<sup>2</sup> Paolo Viacava,<sup>3</sup>  
 Filomena De Luca,<sup>3</sup> Agata Janowska,<sup>4</sup>  
 Valentina Dini,<sup>4</sup> Marco Romanelli,<sup>4</sup>  
 Cristian Fidanzi,<sup>4</sup> Giovanni Bagnoni<sup>1</sup>

<sup>1</sup>Melanoma and Skin Cancer Unit AVNO (Area Vasta Nord Ovest) and Unit of Dermatology, Livorno Hospital, Livorno; <sup>2</sup>Unit of Pathology, Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa; <sup>3</sup>Unit of Pathology, Livorno Hospital, Livorno; <sup>4</sup>Unit of Dermatology, University of Pisa, Pisa, Italy

## Abstract

A very rare variant of mammary Paget disease (MPD) is the pigmented MPD, first described in 1956. It is very difficult to distinguish this variant from melanoma both clinically and dermoscopically. The diagnosis is confirmed by histopathology and immunohistochemistry. Correct diagnosis is crucial for surgical treatment, which is different for these two diseases. We report the case of a 92-year-old woman, who presented an asymptomatic pigmented lesion of the right nipple and areola. The lesion was arisen for about 6 months and was suspected for melanoma because of clinical and dermoscopic characteristics. Incisional biopsy revealed tumor cells, that proliferate in the major mammary ducts, and tumor cells in the overlying epidermis of the nipple, thus diagnosing pigmented mammary Paget disease. The patient underwent radical mastectomy.

## Introduction

Mammary Paget disease (MPD) is characterized as an erythematous, eczema-like chronic lesion at the nipple and the areola, and progressively involving a larger area. Large number of cases originate from an underlying breast carcinoma, often a ductal-type or an invasive carcinoma of the breast.<sup>1</sup> A very rare variant of MPD is the pigmented mammary Paget disease (PMPD), first described by Culbertson *et al.* in 1956, and a few cases have been described so far.<sup>2-7</sup> It is very difficult to distinguish this very

uncommon variant from melanoma both clinically and dermoscopically. Diagnosis is confirmed by histopathology and immunohistochemistry. The proper diagnosis is pivotal for the surgical treatment that is different for these two diseases.<sup>2-7</sup>

## Case Report

A 92-year-old woman presented with asymptomatic pigmented lesion on her right nipple and on the areola. She had noticed this lesion 6 months before, and progressively extended. The entire surface of the nipple was involved, showing irregular-shaped black pigmentation (Figure 1a).

At dermoscopy, the lesion was characterized by irregular brown to black pigmentation at the nipple. At the areola several regression areas were present together with a pigmented irregular network and, at the border, pigmented structures radial strikes-like (Figure 1b).

The clinical and dermoscopic manifestation suggested diagnosis of melanoma. To confirm the hypothesis, a 4mm punch biopsy was carried out.

The histopathology revealed neoplastic cells proliferating in the main mammary ducts, and neoplastic cells in the overlying epidermis of the nipple. These neoplastic cells presented atypical nuclei and abundant pale cytoplasm and melanin granules. Melanin and melanophages were seen spread through the papillary dermis and keratinocytes (Figure 2a,b).

Immunohistochemistry showed positivity for CEA, EMA, CK7 (Figure 2c-e). These atypical cells were S100 and HMB45 negative. The histology allowed to perform the proper diagnosis of PMPD.

The patient underwent a mastectomy (because underlying tumor was detected) by general surgery.

## Discussion and conclusions

The pigmented variant of MPD is a very rare and, as depicted in Table 1, there are no distinctive clinical and dermoscopic features from melanoma.<sup>2-5</sup>

Only immunohistochemistry can indicate and confirm the proper diagnosis, because Paget cells expresses cytokeratins markers, such as CK7, EMA (Epithelial Membrane Antigene), CEA and HER2, while neoplastic melanocytic cells express positivity to S-100 antibodies, HMB45 and MART-1 (MelanA).

We want to report in this case the PMPD dermoscopic features, in particular the pigmented irregular network and the

Correspondence: Angelo Massimiliano D'Erme, Dermatology Unit, Livorno Hospital, and Melanoma and Skin Cancer Unit AVNO, Livorno, Italy.  
 Tel.: +39.3498451303  
 E-mail: a.m.derme@gmail.com

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pigmented structures radial strikes-like the areola -typical signs of melanoma- in order to underlie the difficulties in the diagnosis of PMPD by clinical examination and dermoscopy alone. The correct diagnosis may be accomplished by the application of correct histopathologic and immunohistochemical criteria for each condition.

## References

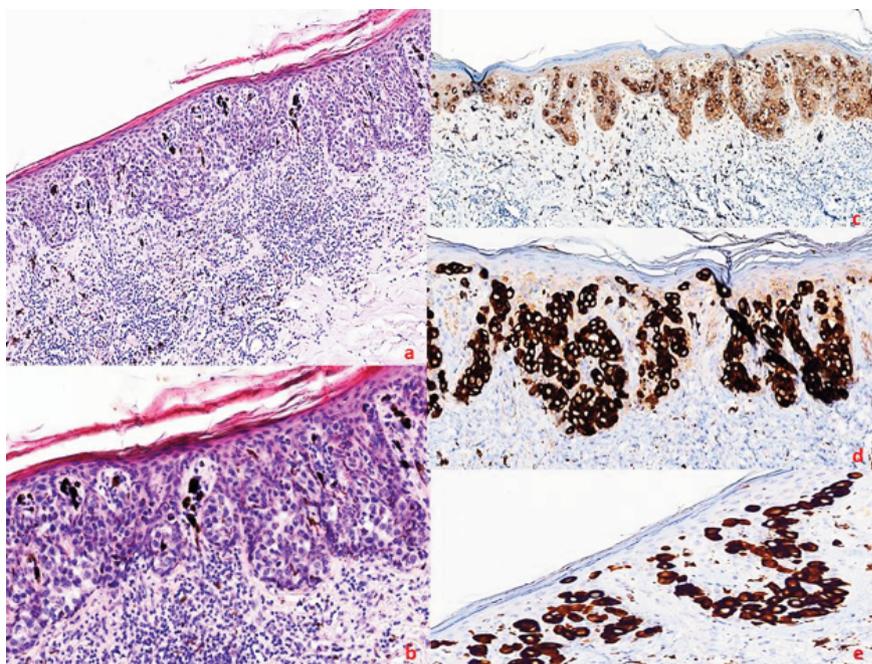
1. Kanitakis J. Mammary and extramammary Paget's disease. *J Eur Acad Dermatol Venereol* 2007;21:581-90.
2. Brugués A, Iranzo P, Díaz A, et al. Pigmented mammary Paget disease mimicking cutaneous malignant melanoma. *J Am Acad Dermatol* 2015;72:97-8.
3. Soler T, Lerin A, Serrano T, et al. Pigmented paget disease of the breast nipple with underlying infiltrating car-

**Table 1. Clinical and histological features of pigmented mammary Paget disease (PMPD) and mammary melanoma.**

	PMPD	Mammary melanoma
Clinical presentation	Eczema-like to erosive lesion of the nipple/areola area with hyperpigmentation. Itching/irritation of the area.	Area of hyperpigmentation of the nipple/areola area. Itching/irritation of the nipple may be present.
Dermoscopy	Irregular brown to black pigmentation. Irregular pigmented network, mainly at the areola with open/close polygonal rings and comedo-like structures	Irregular brown to black pigmented network. Irregular black pigmentation
Histopathology	Atypical neoplastic cells in the epidermic and dermis with hyperchromatic nuclei and wide pale cytoplasm; Neoplastic cells can contain granules of melanin; Some melanophages in the dermal papillae	Nests of atypical cells, or single atypical cells spread through the epidermis and dermis Melanophages and inflammatory cells in the dermal papillae



**Figure 1. a) Clinical manifestation: asymptomatic brown patch on the right nipple 1b). Dermoscopic features of the areola: central bluish-grey regression area and pigmented irregular network at the border with the presence (yellow arrows) of radial strikes like structures.**



**Figure 2. a,b) HE 10 and 20x. Neoplastic cells proliferating in the main mammary ducts, and in the overlying epidermis of the nipple, characterized by atypical nuclei and abundant pale cytoplasm and melanin granules. Melanin and melanophages were seen spread through the papillary dermis and keratinocytes. These cells were CEA positive (Figure 2c, 20x), EMA positive (Figure 2d, 20x) and CK7 positive (Figure 2e, 20x).**

- cinoma: a case report and review of the literature. *Am J Dermatopathol* 2011;33:54-7.
- Dando EE, Lim GFS, Ho J, James A. Image Gallery: Pigmented mammary Paget disease: a rare clinicopathological variant mimicking melanoma. *Br J*

- Dermatol* 2018;178:e143.
- Yanagishita T, Tamada Y, Tanaka M, et al. Pigmented mammary Paget disease mimicking melanoma on dermatoscopy. *J Am Acad Dermatol* 2011;64:e114-6.
- Shiomi T, Ogata D, Iwata M, et al. Pigmented mammary Paget's disease

- without underlying carcinoma. *J Dermatol* 2018;45:e321-2.
- Akay BN, Demirdag HG, Tasolar MK, et al. Pigmented mammary Paget disease mimicking cutaneous melanoma. *Int J Dermatol* 2018;57:e49-e52.