CK20-Positive/CK7-Negative Metastatic Breast Carcinoma to the Skin

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INTRODUCTION

- Cutaneous metastases of internal malignancies are rare, encountered in an estimated 0.6% - 10.4% of all patients with metastatic cancer[1-2]
- In some cases, cutaneous metastasis represents the first sign of internal malignancy, underscoring the need for clinicians to be wary of its presentation. Unfortunately, cutaneous metastases typically present as painless nodules that can easily be misdiagnosed clinically as non-malignant pathologies[1,3]
- In women, breast cancer accounts for approximately 69% of primary malignancies associated with cutaneous metastases[1], and up to 23.9% of patients with breast carcinoma develop cutaneous disease[2]
- Metastatic carcinoma from the breast can be detected by immunostaining for estrogen (ER) and progesterone (PR) receptors, GATA3, Her-2, CEA, E-cadherin, GCDFP15, and mammaglobin.[2-8] Furthermore, breast carcinoma typically shows CK20-negative (CK20-) and CK7-positive (CK7+) immunophenotype[4-6]

CASE

- A 72-year-old Caucasian female presented to the dermatology clinic with a mass on her right chest, of recent onset. She had a 41-year history of breast cancer with metastatic disease to non-cutaneous sites over recent years. She had undergone various treatment modalities including multiple rounds of surgery, chemotherapy, and radiotherapy
- Given the cosmetically sensitive location of the mass, the patient was referred to plastic surgery for biopsy and resection
- Review of histopathology reports revealed previously biopsied systemic tumor expressed a CK20+/CK7- immunophenotype

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RESULTS

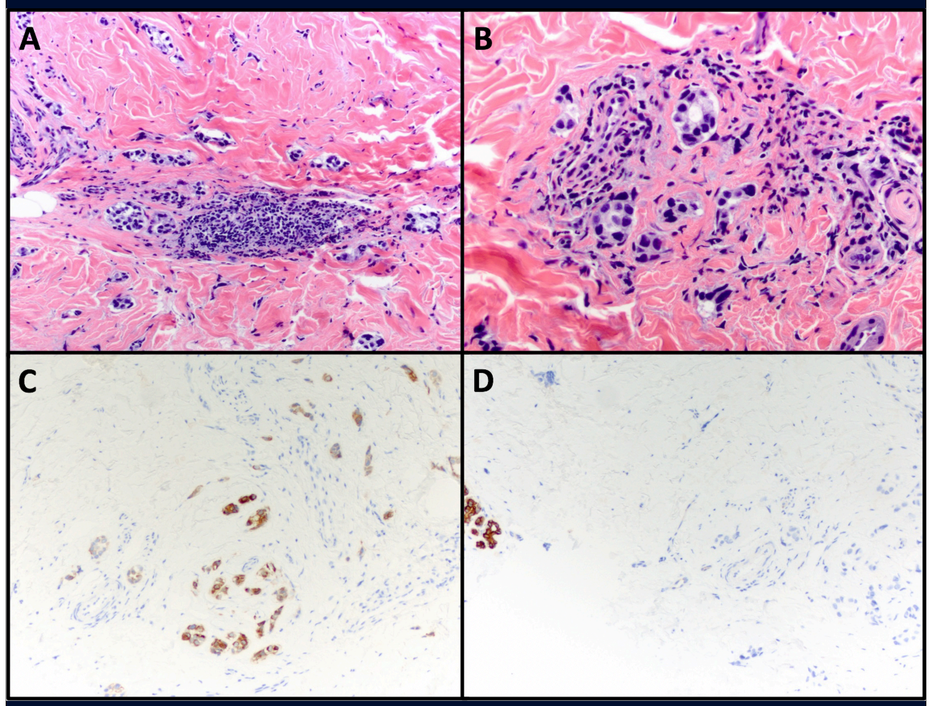

Figure 1 – (A-B) Infiltrating intradermal adenocarcinoma with pleomorphic, hyperchromatic tumor cells and evidence of ductal differentiation. By immunohistochemistry, tumor cells are (C) positive for CK20 and (D) negative for CK7 (*left*, normal sweat glands as internal positive control)
A, C, D, original magnification 200x; B, original magnification 400x

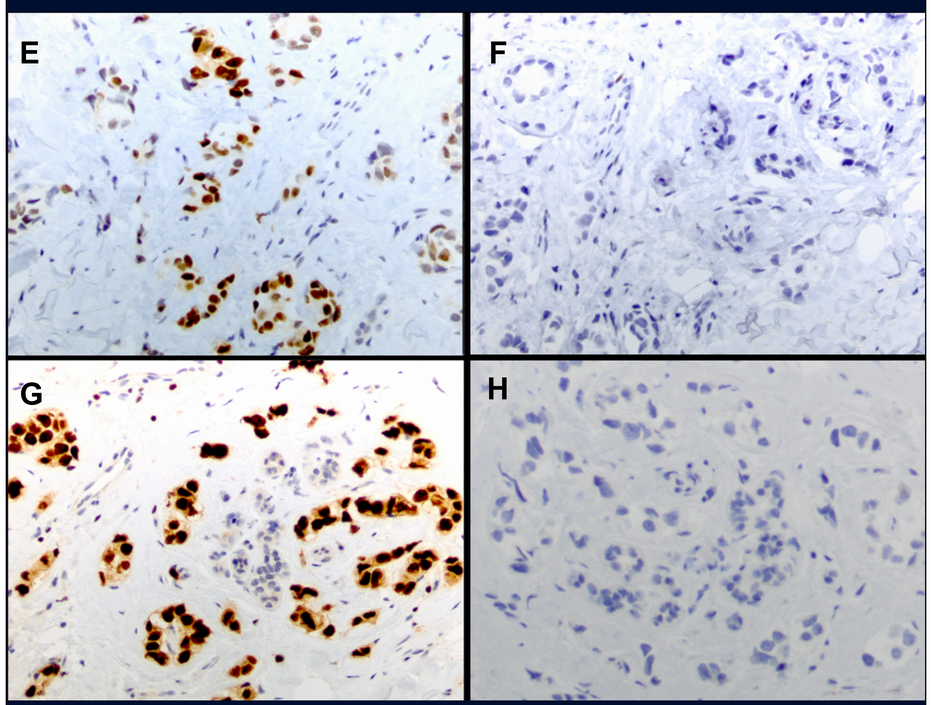

Figure 2 – By immunohistochemistry, tumor cells are (E) positive for Estrogen receptor (ER), (F) negative for Progesterone receptor (PR), (G) positive for GATA3, and (H) negative for Villin. E-H, original magnification 400x

HISTOPATHOLOGY

- Histopathological analysis showed an infiltrating intradermal adenocarcinoma composed of pleomorphic, hyperchromatic tumor cells with evidence of ductal differentiation (Figure 1A-B)
- By immunohistochemistry, tumor cells were reactive for Cam 5.2, ER, GATA3, and CK20; and negative for CK7, PR, CDX2, and Villin (Figure 1C-D and Figure 2 E-H)
- The histopathologic and immunohistochemical findings supported the diagnosis of cutaneous metastasis of the patient's known breast carcinoma with variant CK20+/CK7- immunophenotype

DISCUSSION

- The vast majority of breast cancers show CK20-/CK7+ immunophenotype[2]
- Up to 6%-8% of breast cancers express CK20,[3-7] with 1%-1.6% of cases showing a CK20+/CK7- immunoprofile, as in our case[4,5]
- The immunophenotype CK20+/CK7- is more typical of metastatic carcinoma of colorectal origin[2]. In addition, phenotypic instability for CK20, although rare, has been reported during evolution and metastatic spread of breast cancer[4,6]
- Only one prior example of CK20+/CK7- metastatic breast carcinoma has been reported in the literature.[8] This was a case of a 52-year-old woman with a previous history of breast cancer who presented with a growing soft tissue mass of the right orbit[8]

CONCLUSIONS

- This study highlights the need to obtain a complete immunohistochemical profile that includes differentiation-specific markers, in addition to the importance of correlation with clinical history and immunophenotypic profile of previously sampled tumor when making the correct diagnosis
- Our report highlights a distinct breast cancer variant for pathologists and dermatopathologists evaluating cases of suspected cutaneous malignancy