

The Features of Cutaneous Metastases Originated from Signet-ring Cell Gastric Cancer

Dear Editor,

Cutaneous metastases are a relatively rare skin condition, but when appear portrend unfavorable outcome of the disease. The most common skin metastases among women are those originating from breast carcinoma and melanoma. On the other side, melanoma, squamous cell carcinoma of the head and neck, lung, and colon carcinoma most commonly metastasize towards to the skin among men. The diagnosis of skin metastases often comes long after the primary cancer diagnosis (1,2). According to Globocan 2020 estimation, gastric carcinoma ranks as the fourth leading cause of cancer deaths for both genders combined (3). Cutaneous metastases of gastric carcinoma are rare, occurring in 0.2% - 2% of cases, predominantly in males (4).

We present the case of a 63-year-old Caucasian woman who was referred to a dermatologist-oncologist due to the presence of multiple infiltrative, dark red plaques of varying sizes on her back in January of 2022 (Figure 1a). Dermatoscopic examination revealed orange-yellow patches, fine, short, and linear vessels, geometric, linear, and scattered perifollicular white scales, red dots, and spermatozoa-like structures (Figure 1b). Following a detailed review of her medical history, it was revealed that three years pri-

or, she had undergone surgical treatment for gastric cancer with Krukenberg metastases. The surgery involved subtotal gastrectomy and hysterectomy with bilateral salpingo-oophorectomy. Post-operatively the patient received three cycles of cisplatin and 5-fluorouracil, followed by five cycles of capecitabine. The treatment resulted in successful locoregional control and reduced risk of relapse, until the apperance of skin lesions. These observations led the dermatologist-oncologist to suspect cutaneous metastases, prompting a biopsy of the skin plaques for pathohistological analysis, which subsequently confirmed metastatic deposits in the skin. The histopathological examination identified the cutaneous metastasis as originating from a poorly differentiated adenocarcinoma characterized by signet ring cells (Figures 2a and 2b). Considering the patient's history of gastric cancer surgery, a gastric origin for the metastasis was highly probable. However, due to an inconclusive immunohistochemical result, the possibility of breast tumor origin should be clinically ruled out. A mammography exam showed no signs of malignancy. MRI of the endocranium revealed leptomeningeal carcinomatosis, edema, and vein thromboses, as well as lesions in the cerebellum. Furthermore, metastatic deposits were observed in the scintigram



Figure 1. a- Multiple infiltrative, dark red plaques of varying sizes on patient's back; **b-**Dermatoscopic image of plaques.

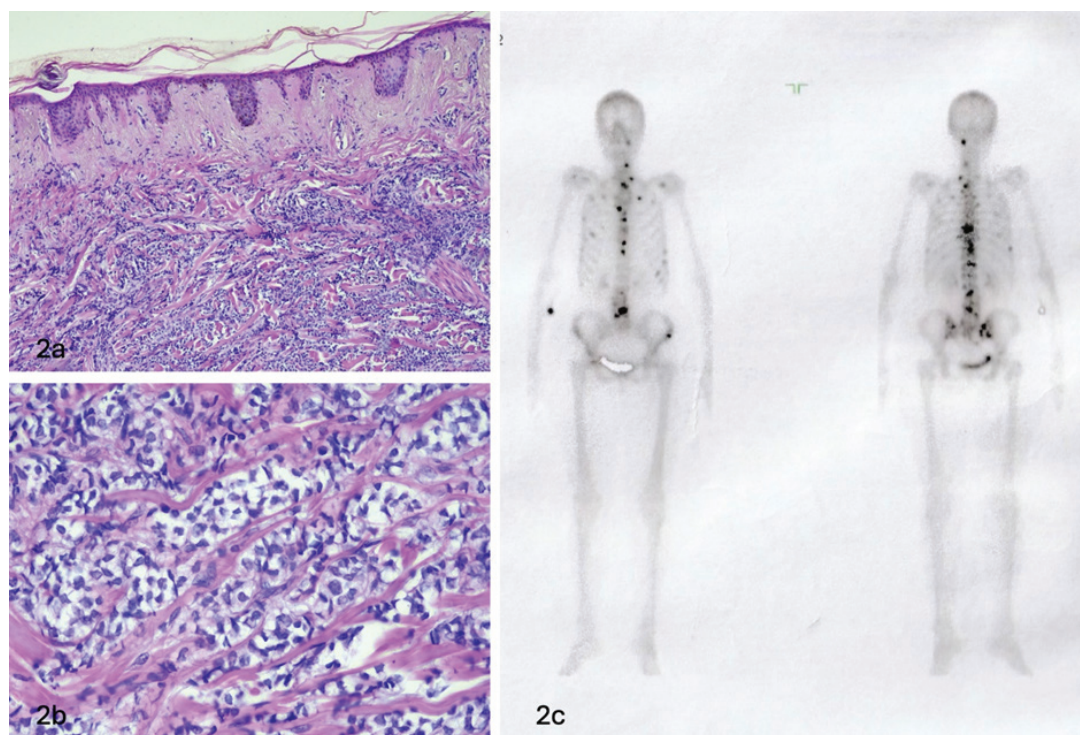


Figure 2. a- Histopathological evaluation (HE x 100). Tumor tissue consisted of trabecular clusters of atypical epithelial cells present in the dermis. Cells show less expressed stroma. b- Histopathological evaluation (HE x 400). Tumor cells with pleomorphic, irregular nuclei, some of which are hyperchromatic. Cytoplasm is bright and vacuolated. Some cells look like Signet- ring cells. c- Scintigraphy showing focal alterations suggestive of secondary deposits on the right ribs (IV, V, IX) and the left ribs (VIII, IX), as well as Th9-Th1, L1-L5 vertebrae, and carpal bones.

ribs (IV, V, IX) and the left ribs (VIII, IX), as well as Th9-Th1, L1-L5 vertebrae, and carpal bones. (Figure 2c)

Cutaneous metastases of gastric carcinoma vary in presentation, commonly appearing as nodules, plaques or inflammatory telangiectatic lesions (5). Pathohistological examination depends on the malignancy's origin, typically showing intact epidermis, a free Grenz zone, and atypical cells in the dermis. If it is unable to confirm the primary tumor, immunohistochemical staining results of the skin are very valuable (6). In our case, immunohistochemical staining helped rule out underlying breast cancer. The pathogenesis of skin metastases is complex, often involving direct postsurgical implantation or hematogenous/lymphatic spread. Poorly differentiated adenocarcinomas, especially those with signet cells, have a higher incidence of delayed cutaneous metastases comparing to other gastric cancers. The concept of *tumor dormancy* could explain the belated appearance of cutaneous skin deposits, as it refers to the arrest of tumor growth or metastatic dissemination. In terms of cutaneous metastases, it means that isolated dormant micrometastases are clinically undetectable, causing neither symptoms nor any clinical signs for a long period (7-9). The pathway of

awakening dormant cells leads to the relapse of the disease and the appearance of skin changes. The triggers for activation of dormant cells are not fully understood, but a handful number of reports suggest that the awakening of these cells is the final step of the metastatic outbreak (10). Our case confirms that manifestation of cutaneous metastases occurs at the terminal stage of the cancer disease, making it clear that timely therapy and vigilance for atypical skin changes are very important. This case underscores the need for a multidisciplinary approach to manage such manifestations.

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