A Case of Inflammatory Metastatic Carcinoma of the Breast

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A 51-year-old Korean woman presented with a non-tender, well-demarcated, reddish, edematous patch on the right anterior chest where a previous mastectomy and radiation therapy had been performed. She had been diagnosed as having infiltrating ductal carcinoma of the right breast about 1 year ago. Histopathological findings of the skin lesions were consistent with inflammatory metastatic carcinoma of the breast. Inflammatory carcinoma or carcinoma erysipeloides is a well-established entity most frequently associated with carcinoma of the breast. It is characterized by dermal lymphatic invasion by malignancy and clinically should be distinguished from erysipelas or cellulitis.

We describe a case of inflammatory metastatic carcinoma derived from an infiltrating ductal carcinoma of the breast which can be clinically confused with radiation dermatitis.

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Key Words : Inflammatory metastatic carcinoma of the breast.

The breast is the most common organ of cutaneous metastasis in women[1,2]. In carcinoma of the breast, metastases reach the skin largely through lymphatic channels and are often located in the overlying skin. Four types of cutaneous metastases that occur through lymphatic dissemination in carcinoma of the breast are described, i.e. inflammatory carcinoma, telangiectatic carcinoma, nodular carcinoma, and carcinoma en cuirasse[3]. Inflammatory carcinoma of the breast is a distinct clinicopathological entity that accounts for 1% of all cases of breast cancer[1-3]. Since it can clinically simulate an inflammatory or infectious process, it is frequently misdiagnosed as erysipelas or cellulitis. Histopathologically, dermal lymphatic carcinomatosis is pathognomonic[2].

We herein report a case of 51-year-old woman with inflammatory metastatic carcinoma of the breast. This case illustrates the importance of considering this entity in the differential diagnosis of unilateral chest wall erythema and induration developing in patients with breast cancer who receive surgical treatment. The literature is reviewed with respect to clinical and histopathological findings.

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CASE REPORT

A 51-year-old Korean woman, noted a lump in her right breast in early March 1993. The lump, 5 × 7cm in diameter, was located above the right nipple, and adherent to the overlying skin. In July 1993, a biopsy specimen taken from the lump revealed infiltrating ductal carcinoma. Therefore, a modified radical mastectomy was performed. Thirteen axillary lymph nodes had metastatic involvement. On immunohistochemical examination, the tumor cells were negative for estrogen receptors. After surgery, she received combination chemotherapy(5-FU, adriamycin, cyclophosphamide; 6 cycles) and radiation therapy. In October 1994, the patient was referred for dermatological evaluation of persistent skin eruptions. Cutaneous changes had been present for approximately two months. On physical exami-

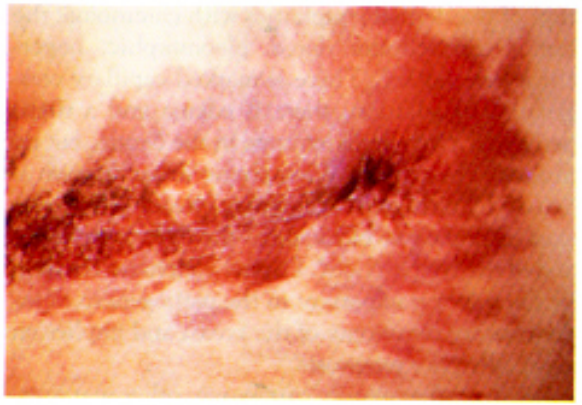

Fig. 1. Non-tender well-demarcated, reddish, edematous patch with scattered papules on the previous mastectomy site.

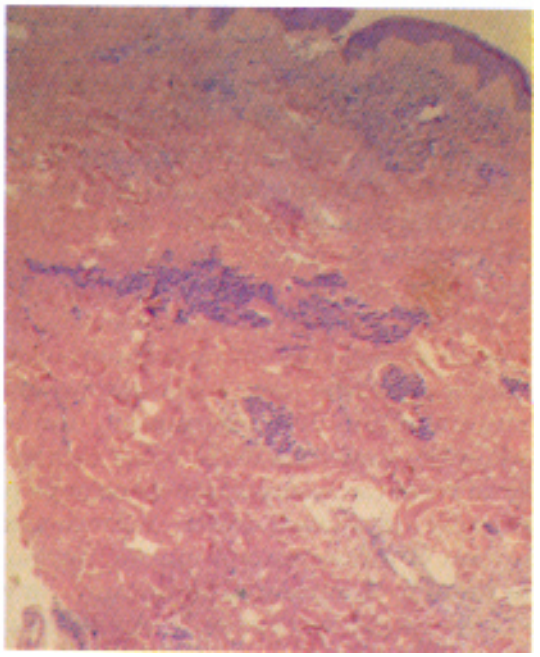

Fig. 2. Malignant cells observed in the middermis as a clumped mass(H & E stain, ×40).

nation, the patient was moderately nourished. Her temperature and other vital signs were within normal limits. A non-tender, well-demarcated, reddish, edematous, indurated patch about 5×8cm in size with scattered reddish papules was observed on the previous mastectomy site (Fig. 1). No palpable mass was in the axilla and other sites. Urinalysis, a complete blood count, electrolytes and liver function tests were normal.

On microscopic examination, a biopsy specimen

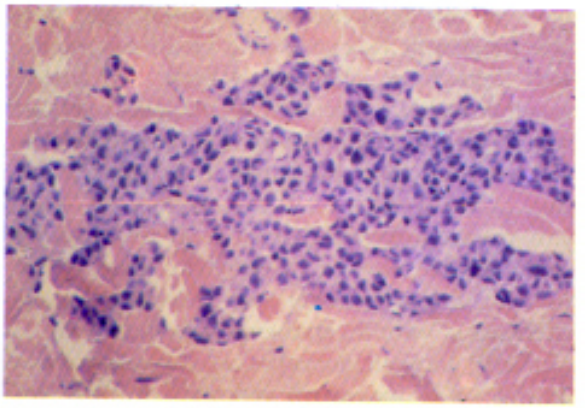

Fig. 3. Large tumor cell with a pleomorphic and hyperchromatic nucleus(H & E Stain, ×200).

taken from the skin on the right chest showed groups of malignant cells mainly in the dilated lymphatic channels in the dermis(Fig. 2). Malignant cells were also observed within the fibrous stroma and in the perivascular lymphatics. These cells were irregular, cuboidal and oval having a scant cytoplasm and hyperchromatic nuclei(Fig. 3). The dermis contained scattered infiltration of chronic inflammatory cells. A diagnosis of inflammatory metastatic carcinoma of the breast was made. Thereafter, the cutaneous disease improved temporarily with further adjuvant chemotherapy(5-FU, adriamycin, cyclophosphamide) and hormonal therapy, tamoxifen(10mg twice daily). However, two years later, she died, most likely due to multiple metastasis and sepsis.

DISCUSSION

Cutaneous metastases of various malignancies are quite uncommon[1-3]. Metastatic disease of the skin accounts for only about 2% of all metastatic lesions[4]. Certain types of malignant tumor have a higher tendency for cutaneous spread, especially breast carcinoma, which metastasizes in the skin in 25% to more than 60% of cases[5]. In women, the most common origin of cutaneous metastases is carcinoma of the breast[1].

Lee and Tannenbaum[6] were probably the first to report a large series of breast cancers associated with inflammatory skin changes, a condition they named inflammatory carcinoma. Rasch[7] in 1931 was the first to use the term carcinoma erysipela-

toides in the dermatological literature, and it is most frequently associated with breast carcinoma. Both terms have subsequently been used almost interchangeably, particularly with respect to breast carcinoma with inflammatory skin changes associated with invasion of dermal lymphatics[6,7]. Because of tumor emboli in dermal lymphatics, some authors have suggested that the term inflammatory carcinoma be reserved to designate this type of histological feature rather than the clinical characteristics of warmth, erythema and tenderness[8].

Inflammatory carcinoma has been appreciated as a clinical entity for over a century[1-5]. Initially described as inflammatory carcinoma in patients with breast cancer, it most commonly affects young women and, on occasions, can be present bilaterally[9]. The incidence of inflammatory carcinoma of the breast was 1% in patients with untreated breast cancer in a series by Robbins et al[10] and approximately 2% in that of Stocks and Simsons Patterson[11]. The primary neoplasia may not be in the underlying breast tissue, and inflammatory carcinoma has been reported in association with melanoma, the pelvic organs, rectum, colon, stomach, lung, parotid, prostate and pancreatic tumors[12-17]. Our patient's cutaneous metastatic disease, localized to the right anterior chest, suggested a lymphatic dissemination typical of breast cancer.

Taylor and Meltzer[18] have classified these lesions as primary or secondary. Primary inflammatory carcinoma is the type in which the signs of inflammation arise simultaneously with carcinoma in a previously normal breast. Secondary inflammatory carcinoma denotes abrupt inflammation in a breast known to harbor neoplasia. Our case was true of secondary inflammatory carcinoma in this sense.

Clinically, inflammatory carcinoma presents as diffuse, edematous, warm, well-demarcated areas of erysipelas-like erythema[6-10]. Frequently, it is asymptomatic but can be painful. In our case, the clinical progression was similar to that of reported cases. After 1 year from the time of diagnosis of breast cancer, she developed well-demarcated, reddish, edematous, indurated patches on the skin on the right chest. At the time of diagnosis, there were no consistent laboratory abnormalities, although the clinical findings manifested signs of infection and fever. However our patient had a normal temperature.

Histopathological examinations show infiltration of the dermal lymphatics with carcinoma; the tumor cells contain large, pleomorphic, hyperchromatic nuclei[8]. There is marked capillary congestion. In addition, there is edema and a slight perivascular lymphoid infiltrate in the dermis, but no fibrosis. The extensive lymphatic dissemination is caused by retrograde lymphatic spreading into the skin secondary to blockage of the deep lymphatics and of the lymph nodes[8]. Dermal lymphatic invasion by the tumor is important in the pathogenesis of inflammatory carcinoma of the breast and implies an especially poor prognosis[8,12,13,20].

Besides inflammatory carcinoma, other metastatic breast cancers include nodular carcinoma, telangiectatic carcinoma, and carcinoma en cuirasse[2,13]. Nodular carcinoma, the most common form of metastasis caused by lymphatic dissemination, is characterized by non-inflammatory, firm nodules that histologically demonstrate grouped tumor cells in dermal stroma and lymphatics and varying amounts of fibrosis. Telangiectatic carcinoma presents as multiple purpuric papules and pseudovesicles. Carcinomatous cells are present in the superficial dermal lymphatics and blood vessels. Carcinoma en cuirasse presents as the peau d'orange skin change, woody induration and is histologically characterized by tumor cells scattered singly or in clusters among collagen bundles.

It is not clear why some cutaneous metastases are characterized by more inflammation than others[13]. Possibly, some types of the tumor such as intraductal breast carcinoma possess inherent properties capable of inciting greater inflammation[13]. Most cases of inflammatory metastatic carcinoma of the breast have intraductal breast cancer, as was true of the patient we described[19]. Another factor may include heterogeneity in the host response to the spread of the tumor[13]. Patients with inflammatory carcinoma may be misdiagnosed as having infectious mastitis, cellulitis or erysipelas. Careful attention to clinical features, lack of febrile responses, and absence of leukocytosis should assist in making the correct diagnosis of a non-infectious process[20]. Lymphoma of the breast, radiation dermatitis, tuberculosis of the breast should be included in the differential diagnosis[21]. Our patient's cutaneous manifestations were similar to that of radiation dermatitis. Clinicians should distinguish inflammatory carcinoma from other infectious diseases, as a prompt diagnosis and therapy are essential.

Patients with inflammatory carcinoma have a relatively poor prognosis when compared with that for the entire population of patients with breast cancer[12,21]. Several recent series have demonstrated that prolonged survival is possible in 25 to 35% of patients with inflammatory carcinoma of the breast who receive optimal treatment with currently available modalities[21]. The use of intensive, combined-modality therapy has improved the formerly dismal prognosis of inflammatory carcinoma of the breast[21].

REFERENCES

1. Brownstein MH, Helwig EB: Metastatic tumors of the skin. Cancer 29:1298-1307, 1972.
2. Lever WF, Schaumburg-Lever G: Histopathology of the skin. Philadelphia: J B Lippincott, 651-653, 1990.
3. Reingold IM: Cutaneous metastases from internal carcinoma. Cancer 19:162-168, 1966.
4. Rosen T: Cutaneous metastases. In:The Medical Clinics of North America. Philadelphia: W.B.Saunders, 1980;885-900.
5. Mehregan A: Metastatic carcinoma to the skin. Dermatologica 123:311-325, 1961.
6. Lee BJ, Tannenbaum NE: Inflammatory carcinoma of the breast. Surg Gynecol Obstet 39:580-595, 1924.
7. Rasch C: Carcinoma erysipelatoides. Br Dermatol Syph 43:351-354, 1931.
8. Ellis DL, Teitelbaum SL: Inflammatory carcinoma of the breast: a pathologic definition. Cancer 33:1045-1047, 1974.
9. Sina B, Samorodin CS: Bilateral inflammatory carcinoma of the male breast. Cutis 33:501-502, 1984.
10. Robbins GF, Shah J, Rosen P, et al: Inflammatory carcinoma of the breast. Surg Clin North Am 54:801-810, 1974.
11. Stocks LH, Simmons Patterson FM: Inflammatory carcinoma of the breast. Surg Gynecol Obstet 143:885-889, 1976.
12. Haupt HM, Hood AF, Cohen MH: Inflammatory melanoma. J Am Acad Dermatol 10:52-55, 1984.
13. Cox SE, Cruz PD Jr: A spectrum of inflammatory metastasis to skin via lymphatics: three cases of carcinoma erysipeloides. J Am Acad Dermatol 30:304-307, 1994.
14. Lever LR, Holt PJA: Carcinoma erysipeloides. Br J Dermatol 124:279-282, 1991.
15. Ingram JT: Carcinoma erysipelatoides and carcinoma telangiectum. Arch Dermatol 77:227-231, 1958.
16. Schwartz RA, Rubenstein DJ, Raventos A, et al: Inflammatory metastatic carcinoma of the parotid. Arch Dermatol 120:796-797, 1984.
17. Edelstein JM: Pancreatic carcinoma with unusual metastasis to the skin and subcutaneous tissue simulating cellulitis. N Engl J Med 242:779-781, 1950.
18. Taylor GW, Meltzer A: "Inflammatory carcinoma" of the breast. Am J Cancer 33:33-49, 1938.
19. Silverberg E, Lubera J: Cancer statistics, 1987. CA 37:2-19, 1987.
20. Finkel LJ, Griffiths CEM: Inflammatory breast carcinoma (carcinoma erysipeloides) : an easily overlooked diagnosis. Br J Dermatol 129:324-326, 1993.
21. Sherry MM, Johnson DH, Page DL et al: Inflammatory carcinoma of the breast: Clinical review and summary of the Vanderbilt experience with multimodality therapy. Am J Med 79:355-364, 1985.