**Cutaneous presentation of metastatic breast cancer: implications for Northeast Ohio breast cancer burden and awareness among regional Dermatologists**

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**Background**: In 2009, Ohio had the fourth-highest mortality rate resulting from breast cancer. Since Cuyahoga County is considered a “high risk” area for breast cancer and disparities in breast cancer screening have been reported in Northeast Ohio, special consideration is warranted for the implications in this region.The growing number of Dermatologists in Northeast Ohio further necessitates the need for awareness of cutaneous presentations of breast cancer. Cutaneous metastasis is the spread of malignant cells from an internal neoplasm to the skin and can occur either by contiguous invasion or by distant metastasis through hematogenous or lymphatic routes. Incidence of cutaneous metastasis from breast cancer is 23.9%. Cases of cutaneous metastasis have emerged which led to establishing the diagnosis of a previously unknown breast cancer. Early detection of breast cancer can increase survival and alter disease course, unlike some other internal malignancies.Recognizing these skin manifestations can lead to earlier detection compared to standard screening alone, especially when physical exam and mammography fail to reveal a breast lesion. A systematic review of literature was conducted to better understand the incidence and nature of cutaneous metastasis as the initial presentation (leading to diagnosis) of an underlying breast cancer.

**Methods:** This study utilized the PRISMA guidelines for systematic reviews. A review of the literature was conducted using the following databases: PubMed, Embase, CINAHL, Cochrane Library, and Medline/EBSCO. Keywords: (cutaneous metastasis) AND (breast cancer). Inclusion criteria: articles published in the last ten years, female. Exclusion criteria: patients with a previous malignant breast cancer diagnosis prior to the appearance of a cutaneous lesion. The initial search yielded a total of 722 papers and 36 papers were included, 27 of which were individual reported cases and 9 of which were retrospective reviews.

**Results:** The reported cases revealed several notable findings. 14% of the patients presented with a skin lesion before or simultaneous to the diagnosis of breast cancer. 44% reported a painful or tender lesion, 12.5% reported pruritis, and 50% were asymptomatic. Over 40% fall out of the USPSTF age range for breast cancer screening, with 24% of the patients under the age of 50 and 17% over the age of 74. The most common skin lesions were plaques and nodules. These lesions most commonly presented on the thorax. 79% presented with an erythematous lesion, two cases presented with a black nodule, making these lesions highly suspicious of melanoma. Gross characteristics of skin lesions are not specific indicators of malignancy since cutaneous metastasis can mimic many other skin conditions. Six cases presented with skin lesions that mimicked and were misdiagnosed as herpes zoster, bacterial infections, dermatitis, mastitis, and refractory eczema. The final diagnosis of cutaneous metastasis was confirmed by skin biopsy in five of these cases with one case diagnosed on imaging. Four cases reported negative mammography and ultrasound. In three of these cases, no primary tumor was ever found. Twelve cases specified the role Dermatologists played in identifying cutaneous metastasis of a primary breast cancer.

**Discussion:** Diagnosis of primary breast cancer in the form of cutaneous metastasis is a rare occurrence, but prompt biopsy and early intervention may significantly affect patient outcome. Dermatologists may have a key role in diagnosing breast cancer; general awareness about such possibilities is warranted among these physicians. Physicians should exercise a high index of suspicion for breast cancer when encountering cutaneous malignant manifestations in a female, particularly when they are found on the chest. Further studies are needed to fully elucidate the role of specialty physicians in diagnosing primary breast cancer when initially encountering skin cancer. Since significant disparities exist across income and race for breast cancer screenings in Northeast Ohio, leading to low rates of breast cancer screenings among low-income women, detection of breast cancer manifesting in diverse presentations is crucial; the role of specialists in detecting breast cancer is even more important.5 Greater awareness of unusual presentations of breast cancer among Dermatologists and other specialists is warranted in Northeast Ohio.