Cutaneous metastases in Breast Cancer

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Cutaneous metastases occur more often in breast cancer than in other diseases in women. Presentation often is ambiguous because the metastases can mimic other common processes (e.g., cellulitis, lymphedema). Accurate differential diagnosis identifies less obvious manifestations of progressive disease and allows for appropriate management. Although interventions are aimed at halting disease progression, cutaneous metastases indicate an incurable diagnosis. Treatment focuses on delaying progressive disease, controlling symptoms, and maintaining quality of life. The care of skin metastases evolves as the tumor spreads and more tissue destruction occurs. Skin management and topical interventions increase comfort, decrease distress, and create feelings of control in this population.

Metastatic cutaneous lesions are seen more commonly in breast cancer than in any other malignancy in women, exceeding 20% of all cutaneous metastases (Nava et al., 2009; Hussain, 2010). Cutaneous metastases indicate that the underlying tumor has infiltrated into the skin, blood capillaries, and lymph vessels (Lund-Nielson et al., 2005). The presence of skin metastases signifies widespread systemic disease and a poor prognosis (Hussein, 2010). Median survival time varies. A mean survival of 57.43 months for breast cancer with cutaneous only metastases was reported in a retrospective series by Hu et al., 2008. Median overall survival in metastatic breast cancer is about 36 months (Pal et al., 2008). Cutaneous metastases most commonly present on the chest wall. The abdomen, back, head and neck, scalp, and upper extremities also are common sites (Hu et al., 2008; Hussain, 2010) (see Figure 1).

Assessment of cutaneous metastatic disease can be perplexing because the clinical presentation appears similar to other skin maladies such as cellulitis or lymphedema (Schwartz et al., 2004). Patients present with a variety of symptoms ranging from firm, indurated skin to tiny, seed-like solid papules and large egg-sized lesions (Hussain, 2010; Nashan et al., 2009). Treatment is driven by two goals: (a) improving survival through gaining control of the disease and (b) optimizing quality of life and symptom management.

Case Study

S.M., a 65-year-old Caucasian woman, was diagnosed with T2N3M0, locally advanced, right-sided breast cancer with palpable supraclavicular and axillary nodes. Her tumor was hormone receptor negative and negative for HER2/neu oncogene overexpression. S.M. was treated initially with four cycles of neoadjuvant chemotherapy with doxorubicin and cyclophosphamide administered every two weeks, followed by four cycles of paclitaxel every two weeks. She subsequently underwent a right lumpectomy with axillary lymph node dissection, revealing 21 of 21 positive nodes with extensive extracapsular extension and nodal matting. Tumor size was 2.5 cm x 3.25 cm with clear margins. Following chemotherapy, S.M. received radiation to the right breast and axilla. After radiation, she started on capecitabine and levofloxacin.

S.M. had an appointment with her oncologist, who scheduled an office visit and prescribed levofloxacin by telephone. By the time of her visit, S.M. had been taking her antibiotic for five days. She was afebrile, and her vital signs were within normal limits. On physical examination, S.M. had new palpable lymphadenopathy in her bilateral anterior cervical and supraclavicular chains. Her right breast had diffuse erythema, and the skin was thickened on medial and inferior aspects of the breast. The breast was tender to palpation, with 4 of 10 pain reported in her right breast, chest wall, and axilla. No warmth of the site was noted. S.M. had no palpable masses or nipple discharge. As cellulitis still was a concern and S.M.’s symptoms had not responded to levofloxacin, she was switched to clindamycin.

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restaging positron-emission tomography–computed tomography (PET-CT) scan and tests for tumor markers CA-15.3 and CA-279 were ordered to evaluate for disease progression. S.M.’s tumor markers had risen substantially from 45 to 130 units/ml for CA-15.3 and from 54 to 146 units/ml for CA-279. The PET-CT scan indicated disease progression with new lymph node and soft tissue involvement. A punch biopsy of the skin of the breast was confirmatory, revealing findings consistent with her primary carcinoma as well as metastatic disease.

**Differential Diagnosis**

Lymphedema is a chronic condition characterized by swelling and recurrent skin infections (Sagen, Karesen, & Risberg, 2009). Characteristic dermatologic findings in cellulitis, a complication of lymphedema, include erythema, edema, tenderness, and warmth. Fibrosis associated with axillary lymph node dissection and radiation therapy reduces lymphatic flow from the breast and ipsilateral upper extremity, impairing the ability to clear bacteria and, therefore, predisposing patients to infection (Bennett Britton & Purushotham, 2009; Golshan & Smith, 2006; Milgrom & Higgins, 2009). Following treatment, chronic soft tissue changes lead to lymphedema and predispose patients to recurrent infection such as cellulitis (Milgrom & Higgins, 2009). Patients with cutaneous metastases can present with firm, indurated skin that mimics cellulitis and lymphedema (Hussein, 2010; Nashan et al., 2009). Differences between cutaneous metastases and cellulitis or lymphedema are found most definitively on the histologic study of tissue biopsy.

**Systemic Treatment**

Metastatic breast cancer is not curable, and an eventual resistance to cytotoxic treatment is expected (Gonzalez-Angulo, Morales-Vasquez, & Hortobagyi, 2007), although patients can live with metastatic breast cancer for many years. When choosing chemotherapy, the balance between efficacy and toxicity must be considered (Conlin & Seidman, 2008). The National Comprehensive Cancer Network (2010) recommended a variety of chemotherapeutic regimens for recurrent or metastatic breast cancer, including cyclophosphamide, doxorubicin, and fluorouracil; docetaxel and capectabine; and gemcitabine and paclitaxel. S.M. exhibited resistance to taxanes, anthracyclines, and pyrimidine analogs, with progressive disease fewer than 12 months after the dose-dense regimen. In the metastatic setting, progressive disease despite previous therapy and toxicity profiles guides the choice of regimens. Although combination chemotherapy significantly improves survival in adjuvant treatment, it is not superior to sequential single-agent treatment for metastatic disease (Conlin & Seidman, 2008).

Many ipsilateral recurrences can be treated with salvage mastectomy. The possibility for salvage mastectomy is dependent on factors including the size of the recurrence and the degree of breast and lymph node involvement. The large extent of cutaneous involvement along with supraclavicular, cervical, and axillary lymphadenopathy precluded the option of salvage mastectomy for S.M. She was started on a combination of gemcitabine and carboplatin, which has shown a marked response including a measurable reduction in induration, erythema, and lymphadenopathy.

**Management**

Progression of cutaneous metastases may lead to a fungating mass that would require skin and wound management. Fungating wounds can decrease quality of life by negatively impacting psychological well-being and increasing social isolation (Lund-Nielsen et al., 2005). Wound management aims to optimize quality of life by alleviating physical symptoms (Adlerly & Smith, 2007). Therapy is guided by the location, size, and appearance of the wound, along with characteristics of exudate, odor, surrounding skin, and any associated symptoms (Seaman, 2006). However, standardized guidelines and clinical trials to guide therapy of malignant wounds in women with breast cancer are lacking (Lund-Nielsen et al., 2005). Drainage from a wound may be contained with a surgical wound or ostomy device that is concealable under clothing (Moore, 2002). Malignant wounds that ooze blood can be contained with hemostatic agents such as absorbable gelatin products and collagen or alginate dressings (Delmore & Duran, 2009; Seaman, 2006). Wounds with little exudate can be packed with dry, sterile gauze and covered with a non-adherent dressing (Moore, 2002). Malodor can be treated with metronidazole gel and charcoal-impregnated dressings (Adderly & Smith, 2007). In addition, nonadherent dressings are less painful for dressing changes and reduce the risk of hemorrhage by minimizing the trauma to the tissue (Adderly & Smith, 2007; Delmore & Duran, 2009).

External beam radiation therapy can provide local control of cutaneous metastases for purposes of palliation. Further radiation therapy may not be an option in previously irradiated areas because of cumulative dose (Moore, 2002). S.M.’s previous therapy precluded her from this treatment option.

**Conclusion**

Cutaneous metastases present similarly to cellulitis and lymphedema. Diagnostic expertise recognizes the manifestation of progressive disease, thus allowing for appropriate treatment interventions. Treatment focuses on delaying progressive disease, managing current symptoms, and maintaining quality of life. Management strategies include systemic chemotherapy, radiation therapy, and surgery.

As S.M.’s previous treatment and extent of recurrence precluded her from radiation therapy or surgery, she received gemcitabine and carboplatin. Future follow-up will include monitoring of tumor markers, frequent assessment of her cutaneous lesions for progression, symptomatic treatment of pain and skin changes, and psychological support. Skin and wound
management aims to alleviate symptoms such as copious exudate, malodor, pain, and the risk of hemorrhage. Nursing implications for patients with malignant cutaneous breast lesions include skin assessment, treatment of skin lesions, and provision of psychosocial support.

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**References**


