CLINICAL VIGNETTE

Long-term survival in non-visceral metastatic hormone receptor positive breast cancer

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Case Report

A 66-year-old woman underwent a right mastectomy for a high grade 5.1 cm invasive ductal carcinoma, 8/24 positive nodes, Estrogen Receptor (ER) high positive, Progesterone Receptor (PR) high positive, high ki67, and human epidermal growth factor receptor 2 (HER2) negative. PET/CT scan done postoperatively revealed multiple bone metastases (C4, right fourth rib, left ileum) and right internal mammary nodal metastases.

She was treated with the chemotherapeutic agent paclitaxel along with the vascular endothelial growth factor receptor angiogenesis inhibitor bevacizumab and the bisphosphonate zoledronic acid. After 6 cycles of this therapy, she had a complete response on imaging. At that time, she was changed to anastrazole single agent therapy and has remained without evidence of disease for 5 years, continuing on chronic anastrazole treatment.

Discussion

The treatment of metastatic breast cancer has evolved through the years as additional molecular targets have been discovered and newer systemic agents have been developed. Systemic treatments are selected based on the subtype of breast cancer, as well as the location of the metastatic disease. In general, metastatic breast cancer is felt to be incurable, but with the expanded array of effective medications, progression free survival and overall survival are increasing.

The location of metastatic disease influences prognosis. Models have been developed to take into account various prognostic features to predict outcome in patients with metastatic breast cancer.[1,2] Generally, visceral metastatic disease—toliver and lung—is associated with a worse prognosis as are metastases to bone marrow and meninges. In contrast, patients with metastases to nodes, bone, and chest wall are more likely to have a better outcome with more prolonged progression free and possibly overall survival. The patient discussed here without visceral metastases has indeed had good long-term progression free survival.

Hormone receptor positivity has generally conferred a better prognosis compared to hormone receptor negative breast cancer. Furthermore, those patients with both estrogen receptor and progesterone receptor positivity have had a better outcome compared to those with only one or no positive hormone receptor.[3]

The treatment selected for this patient was based on her specific breast cancer features and disease sites. At the time she presented with metastatic disease, the combination of the chemotherapeutic agent paclitaxel and the anti-angiogenic agent bevacizumab was utilized as the data supported improved progression free survival in this setting. After subsequent studies in this patient population, the FDA revoked the approval of bevacizumab in metastatic breast cancer due to concern about toxicities and lack of improved survival. For the patient discussed here, she had an excellent response to this combination therapy.

Zoledronic acid , a bisphosphonate, is used in the treatment of metastatic breast cancer to the bone in order to reduce skeletal-related events: pathologic fracture, radiation to the bone, surgery to bone, and spinal cord compression. Our patient has had no skeletal related events, which might have been a result of treatment with zoledronic acid. Since the time she was treated, the RANK ligand inhibitor denosumab has been demonstrated to further decrease the risk of skeletal-related events compared to bisphosphonates in the treatment of bone metastases due to solid tumors. Also of note, although not relevant to this patient's treatment, are data showing the adjuvant use of zoledronic acid in early breast cancer for postmenopausal women can potentially improve disease free survival and decrease the development of bone metastases.[4]

Systemic chemotherapy targets the more aggressive, faster growing cancer cells, which in this patient were likely present as reflected in the high ki67 and her excellent response to chemotherapy. Although the chemotherapy resulted in a complete imaging and clinical response, she most likely had residual microscopic disease, particularly given that she had hormone dependent disease. This is the setting in which consolidation treatment with endocrine therapy can potentially maintain the excellent response to the initial therapy. For this postmenopausal woman, aromatase inhibitor therapy with anastrazole was selected and has offered her continued long-term progression free survival. Breast cancer that is ER and PR positive can potentially remain indolent and recur many years after initial presentation. As long as this patient remains without evidence of disease, she will continue this therapy.

Recently the FDA approved the cyclin-dependent kinase 4/6 inhibitor palbociclib, which in combination with aromatase inhibitor therapy, has been shown to double progression free survival in the treatment of metastatic breast cancer.[5] As the armamentarium of systemic therapies in breast cancer continues to grow with the identification of newer molecular targets, it is anticipated that the prognosis for patients with metastatic disease will further improve over time.

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