

## FEATURE ARTICLE

# Aromatase Inhibitors and Musculoskeletal Pain in Patients With Breast Cancer

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Aromatase inhibitors are recommended for use by postmenopausal women who have estrogen receptor–positive early-stage breast cancer. They reduce local and distant recurrence more effectively than tamoxifen. Anastrozole (Arimidex®, AstraZeneca Pharmaceuticals LP), letrozole (Femara®, Novartis Pharmaceuticals Corporation), and exemestane (Aromasin®, Pfizer Inc.) inhibit aromatase activity, thus significantly decreasing estrogen production in tissues such as liver, muscle, and fat. Very low levels of estrogen may be one cause of musculoskeletal pain, a common side effect associated with the drugs. In the major adjuvant aromatase inhibitor clinical trials, 25%–30% of the patients enrolled experienced musculoskeletal pain. Although quality-of-life studies demonstrate that aromatase inhibitors are well tolerated overall, some women discontinue this treatment because of musculoskeletal pain. Little is known about how to predict, measure, or manage musculoskeletal pain caused by aromatase inhibition. Oncology nurses play an important role in the assessment and management of side effects related to cancer. This article provides an overview of the current knowledge about musculoskeletal pain in patients with breast cancer receiving aromatase inhibitor therapy.

Recent clinical trials indicate that aromatase inhibitors (e.g., anastrozole, letrozole, exemestane) should be included in the adjuvant treatment of postmenopausal women with estrogen receptor–sensitive breast cancer. Most women with breast cancer are postmenopausal, and in these women, approximately 75% of tumors are endocrine sensitive (Anderson, Chatterjee, Ershler, & Brawley, 2002). The American Society of Clinical Oncology has recommended that optimal therapy for postmenopausal women with endocrine-sensitive breast cancer include an aromatase inhibitor (Winer et al., 2005). The National Comprehensive Cancer Network (2007) has provided guidelines on the use of aromatase inhibitors for adjuvant hormonal therapy in invasive breast cancer. Oncology nurses can anticipate that they will be caring for more patients receiving adjuvant therapy with aromatase inhibitors.

Aromatase is the enzyme that converts androgens into estrogens. In postmenopausal women, estrogen is synthesized by the aromatase enzyme in peripheral tissues, rather than in the ovaries, and acts locally (Simpson, 2003) (see Figure 1). Aromatase inhibitors are orally active agents that cause near-complete inhibition of aromatase activity and, therefore, significantly deplete estrogen levels within two to four days of initiating therapy (Buzdar, Robertson, Eiermann, & Nabholz, 2002; Lonning, 1996). By decreasing the concentration of endogenous estrogens to low levels, little of the hormone is left circulating (Buzdar, 2003), effectively starving estrogen-sensitive tumor cells.

### At a Glance

- ◆ Aromatase inhibitors are indicated for the treatment of postmenopausal women with estrogen receptor–positive breast cancer, especially in patients with high-risk disease.
- ◆ Musculoskeletal pain induced by aromatase inhibitors may be a result of a reduction in systemic estrogen similar to but lower than a menopause effect.
- ◆ Nurses play an important role in the assessment, management, and education of patients experiencing musculoskeletal pain related to aromatase inhibitor therapy.

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