Advances in Endocrine Therapy for Breast Cancer: Considering Efficacy, Safety, and Quality of Life

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Breast cancer is the most common cancer found in women in the United States. Endocrine therapy is the standard of care for most women with hormone receptor-positive tumors in adjuvant and metastatic settings. The selective estrogen response modifier tamoxifen has been the standard treatment for postmenopausal patients for many years. Numerous new endocrine therapy agents provide women with novel treatment options, including the nonsteroidal aromatase inhibitors anastrozole and letrozole, the steroidal aromatase inhibitor exemestane, and the estrogen receptor antagonist fulvestrant. Clinical trials have begun to define the role of these agents and their unique side-effect profiles. Nurses are vital in supporting patients in the decision-making process, managing side effects of treatment, and making observations to enhance understanding of the patient experience with new treatments. This article will assist nurses in educating patients about endocrine therapy options and their associated potential short- and long-term side effects, as well as treatment demands.

Key Words: breast neoplasms, estrogen receptor modulators

Breast cancer is the most common cancer in women in the United States, with more than 215,000 new cases estimated to be diagnosed in 2004; a new case is discovered every two minutes (National Cancer Institute, 2004). For a majority of women in whom breast cancer is detected and treated at an early, primary stage, adjuvant therapy reduces the risk of recurrence and second primary breast cancers. For women with estrogen and/or progesterone receptor-positive tumors, adjuvant endocrine therapy often is recommended. For women with hormone receptor-positive metastatic disease, endocrine therapy continues to be the standard of care.

Advances in endocrine therapy for breast cancer in recent years have sparked a new era in therapy for patients. The widening range of treatment options also provides opportunities for informed oncology nurses to advise and support patients considering and undergoing endocrine treatments. By understanding the clinical properties and clinical trial results of new agents relative to the historical standard of care with tamoxifen, oncology nurses may advise patients about practical administration issues, safety, and tolerability of various options.

Selective Estrogen Response Modifiers

One of estrogen's normal activities is to cause the growth and division of healthy cells in the breast and uterus. Estrogen binds to the estrogen receptor, causing the receptor to dimerize (two receptors pair up to form one complex). On pairing up, the receptor becomes activated, causing changes in gene expression and altering the behavior of the cells (see Figure 1A). However, in some patients with breast cancer, this normal action contributes to the growth and division of cancer cells. Tamoxifen is a member of the drug class called selective estrogen response modifiers (SERMs), which compete with estrogen for binding to the estrogen receptor. SERMs therefore act by blocking (antagonizing) the proliferative effects of estrogen to stop or slow the growth of the cancer (see Figure 1B).

Tamoxifen is an established treatment for women with hormone receptor-positive breast cancer in early operable and advanced stages ("Controlled Trial of Tamoxifen," 1983; "Randomized Trial of Two Versus Five Years," 1996; "Tamoxifen for Early Breast Cancer: An Overview," 1998). However, these agents are termed "selective" because they also have a partial estrogen-like stimulating (i.e., estrogen agonist) effect in some tissues.

The partial estrogen agonist actions of tamoxifen on organs other than breast tissue have benefits and risks. For example, the estrogen agonist effects on bone and lipid levels are potentially beneficial. Conversely, the partial estrogen agonist effects can produce endometrial abnormalities, including increased

Submitted March 2004. Accepted for publication August 16, 2004. The author is on the Speaker's Bureau for AstraZeneca Pharmaceuticals LP, the manufacturer of Arimidex®, which is mentioned in this article. (Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Clinical Journal of Oncology Nursing *or the Oncology Nursing Society.)*

Digital Object Identifier: 10.1188/04.CJON.629-637