

What You Should Know About Aromatase Inhibitors

One of the medical diagnoses women fear most is breast cancer. It is the most common cancer in women in the United States; in 2004, there were 217,440 new cases and 40,580 deaths. In the search for new ways to prevent or treat breast cancer, one of the most promising developments is a category of drugs called aromatase inhibitors (AIs).

Estrogen and Breast Cancer

Women are more likely to get breast cancer than men, although men can and do get the disease. The female hormone estrogen is linked to breast cancer as it can promote the growth of existing tumors. Between the time you begin having menstrual periods (menarche) and the time your periods stop for good (menopause), your ovaries make most of the estrogen in your bloodstream. After menopause, your body continues to produce some estrogen, but the source is no longer the ovaries. Instead, estrogen comes mostly from male hormones, called androgens, made in your adrenal glands, which sit right above your kidneys. These androgens are changed into estrogen hormones by an enzyme called aromatase.

When women have surgery for breast cancer, the cancerous tissue is tested to see if it contains estrogen receptors—special places on cells that respond to estrogen by signaling the cells to grow and multiply. Many breast cancers have these receptors; they are called estrogen receptor-positive cancers. If the supply of estrogen in the body can be shut off, the cancer cells are less likely to grow and may even die.

Based on this fact, a drug called tamoxifen has been used for many years to treat advanced breast cancer and to keep early breast cancers from coming back in both premenopausal and postmenopausal women. Tamoxifen is a selective estrogen receptor modulator. It works by fastening itself to the estrogen receptors in the cancer cells, filling up some or all of the spots where estrogen could attach. While tamoxifen has been an effective drug in treating and preventing breast cancer, it can have some life-threatening side effects including strokes, blood clots in the lungs, and cancer of the uterine lining. Researchers have been looking for a cancer-fighting drug that works in a similar way but without these serious problems.

Treating Breast Cancer With AIs

Aromatase inhibitors work by blocking aromatase, preventing it from changing male hormones into estrogen, and reducing or eliminating the estrogen available to make cancer cells grow. Three AIs are available in the United States: anastrozole (Arimidex), exemestane (Aromasin), and letrozole (Femara). Aromatase inhibitors are only helpful in postmenopausal women, since they do not stop the ovaries from making estrogen.

Aromatase inhibitors have not been around as long as tamoxifen, but so far they do not seem to have any life-threatening side effects. However, women treated with AIs may be more likely to develop osteoporosis—a condition characterized by thinning bones, sometimes resulting in bone fractures. It is recommended that AI users be monitored with tests

Aromatase inhibitors work by blocking aromatase, preventing it from changing male hormones into estrogen, and reducing or eliminating the estrogen available to make cancer cells grow.

to check bone health and treat patients, if necessary, to prevent osteoporosis.

Aromatase inhibitors are useful in estrogen receptor-positive breast cancers in postmenopausal women. They can be used to treat advanced breast cancer when the cancer has spread (metastasized) to other areas in the body. Women treated with AIs live longer without the cancer spreading further than women treated with tamoxifen. Even more hopeful is the use of AIs in early breast cancer.

Used after surgery, AIs make it less likely that the cancer will return in the same breast, occur in the other breast, or spread to another part of the body.

Used after surgery, AIs make it less likely that the cancer will return in the same breast, occur in the other breast, or spread to another part of the body. In research studies, women treated with AIs had higher success rates than women treated with tamoxifen. In one study, an AI was 60% to 80% more effective in decreasing the risk of breast cancer occurring in the opposite breast than in women treated with tamoxifen. The AI was also 17% more effective than tamoxifen in preventing reoccurrence of cancer in the same breast. However, women treated with AIs were more likely to have bone fractures due to osteoporosis than tamoxifen users.

One association of cancer specialists, the American Society of Clinical Oncology, recommends that all postmenopausal women with estrogen-responsive breast cancers be treated with AIs after surgery, in addition to whatever other treatment is used. However, no one

knows how long the AI treatment should continue. It is not recommended that women currently being treated with tamoxifen for early breast cancer be switched to AIs, but an AI may help women whose breast cancer has progressed following tamoxifen therapy.

Preventing Breast Cancer With AIs

Some women are considered more likely than others to develop breast cancer, especially those with a genetic make-up that makes them vulnerable. When these women are treated with tamoxifen, their likelihood of developing the disease decreases. Since AIs seem to be safer drugs than tamoxifen, they might be even more useful for this purpose. Three large studies are going on right now testing whether AIs prevent breast cancer in high-risk women.

Participating in Studies

Although the news about AIs is good, there is still more to be learned. If you are interested in being part of a study, ask your doctor or nurse about any ongoing research programs in your area. You may also want to contact teaching hospitals in your area, or your local chapter of the American Cancer Society. The National Cancer Institute (see Resources, below) also lists new and ongoing breast cancer research programs that are looking for participants.

In Summary

Aromatase inhibitors are drugs that work at least as well as, and in some cases better than, tamoxifen for treating breast cancer in postmenopausal women with estrogen receptor-positive cancers. They also seem to be without life-threatening side effects, although they have not been studied as long as tamoxifen. Ongoing studies are investigating further uses of these drugs, including the use of AIs for preventing breast cancer in high-risk women.

Resources

- **National Cancer Institute**
1-800-4-cancer
<http://www.cancer.gov/cancertopics/types/breast>
<http://www.breastcancer.org>
- **American Cancer Society**
1-800-ACS-2345, <http://www.cancer.org>

This patient handout was prepared by Diane E. Judge, APN/CNP, using materials from breastcancer.org (<http://www.breastcancer.org>), the National Cancer Institute, and the American Cancer Society.