Hormone Therapy in Women with Cancer

The hormone estrogen is produced predominantly by a woman's ovaries until she reaches menopause. Estrogen promotes the growth of about two thirds of breast cancers. Recognition of the hormonal influence upon a breast cancer is determined by identifying hormone receptor status. If a tumor is ER (+) or PR (+) it indicates that the tumor’s growth is being stimulated by the hormones estrogen and /or progesterone. When a tumor has a (+) hormone receptor status, several approaches are used to block the influence of hormones upon the tumor or to lower estrogen levels in the body in order to treat the breast cancer (Burstein, Temin, Anderson, Buchholz, Davidson, Gelmon, ... Stearns, 2014).

Tamoxifen:

Tamoxifen attaches to the hormone receptor in the cancer cell, blocking estrogen from attaching to the receptor. This slows or stops the growth of the tumor by preventing the cancer cells from getting the hormones they need to grow.

*Tamoxifen can be used to treat breast cancer in both premenopausal and postmenopausal women*

Tamoxifen is the anti-estrogen drug most widely used. It is taken daily in pill form. Tamoxifen is used after surgery, usually for 5 years, and has been demonstrated to be effective in reducing disease recurrence by about 50% for women with an early stage of breast cancer and a tumor with (+) hormonal receptor status. Tamoxifen is also used to treat metastatic breast cancer.

Treatment with tamoxifen lowers the risk of (Howlader, Noone, Krapcho, et al, 2016):

- Breast cancer recurrence
- Breast cancer in the opposite breast
- Death from breast cancer

Tamoxifen is a pill taken every day for 5-10 years. The benefits from tamoxifen last long after it is stopped.

*Tamoxifen is used to prevent the recurrence of breast cancer*

Findings from a large randomized clinical trial demonstrated that taking tamoxifen for 10 years reduced the risk of breast cancer recurrence and death more than taking tamoxifen 5 years (Davies C, Pan H, Godwin, et al. 2013). These findings have led to increased use of tamoxifen for more than 5 years, especially among premenopausal women who cannot take aromatase inhibitors.

*Tamoxifen has side effects*

Tamoxifen can increase the risk of developing endometrial cancer. Endometrial cancer is usually diagnosed at a very early stage and is generally curable by surgery. Tamoxifen can also increase the risk of uterine sarcoma, a rare cancer of the connective tissue of the uterus. If
woman is taking tamoxifen, she must be educated to inform her doctor immediately about any unusual vaginal bleeding (Rimawi, Osborne, 2013). Blood clots are another serious side effect of tamoxifen. Other side effects of tamoxifen may include weight gain, hot flashes, vaginal discharge, mood swings and early cataracts. Some patients whose cancer has spread to their bones may experience a "tumor flare" with pain and inflammation in the muscles and bones when treated with tamoxifen. It usually subsides quickly. However, the patient may also develop a high calcium level in the blood that cannot be controlled. If this occurs, the treatment may need to be stopped (Rimawi, Osborne, 2013).

For most women with breast cancer, the benefits of taking tamoxifen far outweigh the risk

Aromatase inhibitors:

Hormone receptor-positive breast cancers need estrogen and/or progesterone to grow. Aromatase inhibitors are hormone therapy drugs that can slow or stop the growth of hormone receptor-positive tumors. They lower estrogen levels in the body by blocking aromatase, an enzyme that converts other hormones into estrogen. This prevents the cancer cells from getting the hormones they need to grow. Post menopause, the adrenal glands begin to produce a hormone which is converted into estrogen by the enzyme aromatase. Three drugs that stop estrogen production in postmenopausal women have been approved for use in treating both early and advanced breast cancer. These drugs are:

- Letrozole (Femara)
- Anastrozole (Arimidex)
- Exemestane (Aromasin)

They work by blocking the enzyme, aromatase, which is responsible for producing small amounts of estrogen in postmenopausal women from the adrenal glands. They cannot stop the ovaries of pre-menopausal women from producing estrogen, therefore...

**Aromatase Inhibitors are only effective in postmenopausal women**

(Dowsett, Forbes, Bradley, et al. 2015). Among postmenopausal women with hormone receptor-positive breast cancer, aromatase inhibitors (alone or after Tamoxifen) offer the same or slightly greater benefit compared to Tamoxifen alone. Anastrozole, exemestane and letrozole are equally effective and have similar side effects (Bliss, Kilburn, Coleman, et al. 2012). A recent randomized clinical trial compared 10 years of use of the aromatase inhibitor Letrozole to 5 years of use. Women who used Letrozole for 10 years had

- Improved disease-free survival
- Lower risk of cancer in the contralateral breast

However, overall survival was the same whether a woman took the aromatase inhibitor for 5 years or 10 years; women who took Letrozole for 10 years continued to have side effects from
the drug, including a higher number of bone fractures and a higher rate of osteoporosis (Goss, Ingle, Pritchard, et al. 2016). However, after treatment, most breast cancer survivors report having a good quality of life. Some may have long-term side effects from treatment, such as those related to menopause, fatigue and sexual function (Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006). These side effects vary from person to person.

References


