Types of Cancer

Breast Cancer

What is breast cancer?

Cancer develops in breast tissue when cells grow out of control. Malignant cells can form a tumor that may be visible on mammograms or felt as a lump.

Breast cancer is easier to treat than many other cancers, and early detection and treatment improves outcomes. But if cancer is diagnosed after it has spread elsewhere is the body, it is harder to treat and the likelihood of survival is lower.

How is breast cancer classified?

Breast cancer usually arises in ducts in the breast that produce milk. Other types start in the cells of the muscle, fat or connective tissue. Less common types include inflammatory breast cancer, Paget disease and angiosarcoma. Ductal carcinoma in situ (DCIS) means that the cancer has not yet spread. As it progresses, breast cancer can invade surrounding tissues and nearby lymph nodes. Metastatic, or Stage IV, breast cancer has spread elsewhere in the body, often affecting the liver, bones or brain.

Breast cancer is classified according to the types of receptors it expresses. A majority of breast tumors carry estrogen or progesterone receptors (hormone receptor positive) and can be treated with hormone therapy. Others express HER2 receptors and can be treated with HER2 inhibitors such as Herceptin (trastuzumab). Triple negative breast cancer (TNBC) does not express any of these receptors and is more difficult to treat.

Who gets breast cancer?

Breast cancer is the second most common cancer among women, after skin cancer. Nearly 300,000 women are diagnosed with invasive cancer annually, according to the American Cancer Society. Men can also develop breast cancer, but this is rare. People with BRCA mutations are at high risk for breast cancer.

Around a quarter of women with early breast cancer will go on to develop metastatic disease. About 15% of breast cancer patients have hard-to-treat TNBC, which is more common among young women and Black women.

What are the risk factors for breast cancer?

According to the CDC, besides being a woman and getting older, other factors that influence the

risk of developing breast cancer include:

- Genetic mutations (including BRCA1 and BRCA2)
- Family history of breast cancer
- Early onset of menstruation or early menopause
- No full-term pregnancies or first pregnancy at an older age
- Not being physically active
- Overweight or obesity, especially after menopause
- Use of oral contracpetives or hormone replacement therapy
- Previous radiation therapy
- Drinking alcohol

What are the symptoms of breast cancer?

The most common sign of breast cancer is a lump or mass. A hard and painless mass is most likely to be malignant, but cancerous tumors can sometimes be tender, soft or painful. Other symptoms may include breast swelling, skin irritation or dimpling, breast or nipple pain, nipple retraction (turning inward), redness, scaliness or thickening of the nipples or skin of the breast and discharge from the nipple.

How is breast cancer diagnosed?

Regular screening for breast cancer can detect the disease early, when it is easier to treat. Professional guidelines vary in how often they recommend screening. The U.S. Preventative Services Task Force now recommends that women at average risk should start screening at age 40. All women and men who notice a new mass, lump or other changes in their breasts should report this to their health care provider.

If a mammogram detects changes in the breasts, an ultrasound may be done for further examination. Once diagnosed with breast cancer, MRI scan are usually done to assess the size of the tumor, look for additional tumors and determine whether the cancer has spread beyond the breasts.

A breast biopsy, or examination of a tissue sample, may be done to determine whether a tumor is malignant. Genomic testing of a tumor sample provides more information about the type of cancer and how best to treat it.

How is breast cancer treated?

Treatment for breast cancer depends on how advanced the cancer is when it is detected, including how many tumors there are, how large they are and whether they have spread to nearby lymph

nodes or other parts of the body.

Treatment can be broken down into local and systemic therapies. Local therapies, such as surgery and radiation, treat cancer in the beast. Systemic treatments, which can reach cancer cells that have spread elsewhere in the body, typically cause more side effects.

Surgery: Types of breast cancer surgery include mastectomy (removal of the breast) and lumpectomy (removal of a tumor and a margin of surrounding healthy tissue). Sometimes nearby lymph nodes are also removed. Some women choose to have breast reconstruction surgery during or after a mastectomy.

Radiation: Radiation may be used to kill cancer cells that remain after surgery or to shrink tumors that cannot be surgically removed. It is often used in conjunction with other forms of treatment.

Chemotherapy: Traditional chemotherapy works by killing fast-growing cells, including cancer cells. It can also destroy rapidly dividing healthy cells such as those in the gut and hair follicles, leading to side effects like nausea and hair loss.

Targeted therapy: Targeted drugs work against cancers with specific characteristics. For example, they may interfere with signaling pathways that promote cell growth. Some breast cancers can be treated with drugs that target the HER2 receptor. Targeted therapy is often better tolerated than chemotherapy, but cancer may develop resistance.

Hormone or endocrine therapy: This type of treatment works against cancers that grow faster in the presence of sex hormones like estrogen. Hormone-blocking drugs deprive tumors of hormones that stimulate their growth, but they can cause side effects such as premature menopause.

Immunotherapy: The newest type of treatment helps the immune system fight cancer. For example, some tumors can turn off immune responses against them, and drugs known as checkpoint inhibitors can restore T cells' ability to recognize and destroy cancer cells. Current immunotherapy drugs work for only a subset of patients, and it is hard to predict who will benefit. Vaccines that train the immune system to recognize and attack cancer cells are currently in development.

Click here for a list of approved medications used to treat breast cancer.

For more information on breast cancer, visit:

American Cancer Society

National Cancer Institute

American Society of Clinical Oncology (ASCO)

Fred Hutchinson Cancer Research Center (metastatic breast cancer)

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