PIPER BREAST CENTER
Communiqué

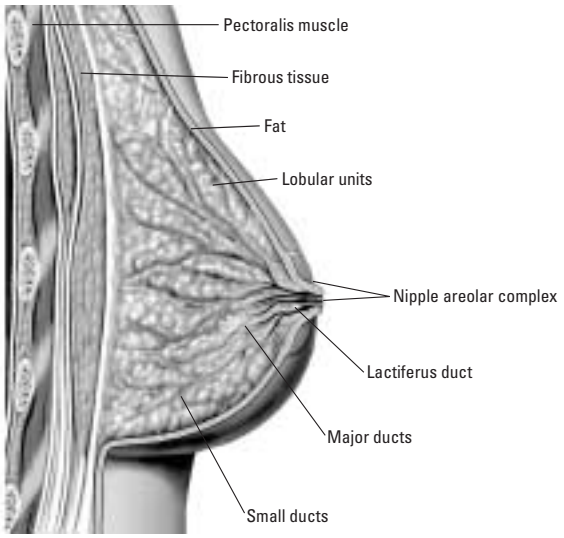
Winter 2004 Volume Four, Number One

Anatomy of the Breast

~ by Margit Bretzke, MD, and Tamera Lillemoe, MD

Understanding the breast's anatomy is important to nurses and physicians in breast disease diagnosis and treatment possibilities. This knowledge is also important to every woman as she evaluates her breasts as part of monthly self-breast exams.

The breast's function is to produce milk, and it does so in structures called lobules. The milk is then transported to the nipple through a complex ductal system that branches throughout the breast. These ducts converge in the nipple into large ducts called lactiferus ducts, which open onto the nipple surface. Milk is released secondary to hormonal influences (lactation) through these ducts. The lobules and ducts are surrounded by soft tissue, which consists of fatty and fibrous tissues that contain the blood vessels, nerves and lymphatic channels that support the breast. The lymphatic channels drain to lymph nodes, most of which are under the arm.



The soft tissue of a young woman's breast is composed mostly of fibrous tissue. As women age, their soft tissue gradually becomes more fatty, resulting in a high proportion of fatty tissue in older women. Changes in the breast's soft tissue is only one example of how breast tissue can change. Microscopic evaluation of breast tissue shows continuous changes in breast cells related to menstruation, pregnancy, lactation, hormone replacement therapy and menopause.

Breast diseases and tumors can arise from any of the tissue components of the breast. However, most cancers begin in the ductal and lobular structures. Radiologists study the breast's form and structure on mammograms and can identify architectural abnormalities that may signify possible disease. It is very difficult to detect subtle mammographic abnormalities in the densely fibrous breast tissue typical in younger women. As the fibrous tissue becomes more fatty with age, mammographic abnormalities are more easily detected.

Did You Know …

~ by Stephanie Remarke, RT (R)(M)

A *screening* mammogram is scheduled for a patient who has no new breast concerns. This would include routine annual mammograms for women 40 years and older.

A *diagnostic* mammogram is scheduled for a patient who has a new breast concern or has had an abnormal screening mammogram and needs additional imaging.

ABBOTT NORTHWESTERN HOSPITAL
Allina Hospitals & Clinics

Virginia Piper Cancer Institute

Breast Calcifications

~ by Tammy Fox, MD

A mammogram is the best screening test for evaluating healthy women for signs of early breast cancer. The mammogram is evaluated for suspicious masses, areas of distortion and calcifications.

Calcium deposits are very common in the breast. Calcifications can be seen in more than 90 percent of all mammograms. These calcium deposits result from many different processes, including breast cancer. The majority of breast calcifications have a classic appearance that allows the radiologist to know they are not associated with cancer. Several examples of non-cancerous calcifications are those seen within blood vessels, skin and cysts. When the radiologist sees these kinds of calcifications, no further evaluation is necessary.

Some breast cancers also have characteristic calcifications, which appear as clusters of tiny irregularly shaped calcium deposits, or thin linear or branching patterns. These cancerous calcifications often are just as easy to identify and evaluate as the non-cancerous calcifications. When these suspicious patterns are seen, a biopsy is required.

Sometimes the calcifications identified on the mammogram do not meet the strict criteria for non-cancerous calcifications but do not look highly suspicious for cancer. When this occurs, the patient is called back for special magnified views of the calcifications so they can be better characterized.

Many times these additional images show the calcifications are not suspicious, and then no further evaluation is needed. If the calcifications are not clearly non-cancerous, a biopsy is necessary. At the Piper Breast Center, the radiologist generally performs a needle biopsy for diagnosis. This can often be done the same day as the mammography. Biopsy results are usually available the next business day.

A follow up on MRI as a Screening Tool for Breast Cancer

In the last *Communiqué*, we discussed breast Magnetic Resonance Imaging (MRI) and its use in breast cancer screening. MRI technology is extremely sophisticated and complex, resulting in a more costly exam. If an MRI demonstrates a suspicious area, further studies or a biopsy may still be necessary. Thus, MRI is only used for screening in a very select group of women at high risk for developing breast cancer and with very dense tissue on their mammograms. The question we have been hearing is: "How do I know if I am in this group?"

It is common for a woman to over-estimate her risk of developing breast cancer. Even a breast cancer survivor is not likely to have a high enough risk to warrant a screening MRI. Some women who may benefit from this screening are those with a BRCA gene mutation, chest radiation treatment at a young age, a diagnosis of breast cancer before age 50 years, or a previous breast biopsy showing a high-risk lesion.

There are several methods available to your physician or genetic counselor to assess your cancer risk and determine if MRI is desirable as a breast cancer screening method. Various models consider the personal risks listed above, as well as other risks including first and second degree relatives' breast cancer occurrence and their age at diagnosis. All models have limitations and an individualized assessment is always best. If you are considering a genetic test to help clarify your risks, genetic counseling is recommended first to ensure you make an informed decision.

Communiqué is produced for friends of Abbott Northwestern's Piper Breast Center, 800 East 28th Street, Minneapolis, MN 55407-3799, **612-863-3150**.

Medical editor ~ Beverly Trombley, MD

Heritable Breast Cancer in Ashkenazi Jewish Women

~ by Shari Baldinger, MS, CGC

Like in many ethnic groups, Ashkenazi Jews (Jews from eastern or central Europe) have unique genetic characteristics that may lead to an increased risk of cancer. Recognizing these risks may allow more informative testing and improved management choices.

For this population, in general

- three alterations (mutations) in the two breast cancer genes, BRCA 1 and BRCA 2, account for most heritable breast and ovarian cancer
- One in every 40 Ashkenazi Jews carries one of these mutations
- 23 to 30 percent of women with breast cancer before age 40 and at least 30 percent of those with ovarian cancer carry one of these mutations.

A recent article suggested the following for Jewish mutation carriers:

- Women who carry one of these mutations have a 20 percent chance of breast cancer by age 50 and 82 percent by age 80.
- The rate of ovarian cancer with BRCA 1 was more than 50 percent by age 80 and 23 percent with BRCA 2.
- The rates of breast cancer were lower for mutation carriers born before 1940, suggesting environmental issues may play a significant role (there is no difference in ovarian cancer risks).
- Regardless of being born before or after 1940, if a woman exercised as a teen and was of normal weight, she was diagnosed with her breast cancer at a later age.
- Early onset breast cancer was frequently associated with one of the mutations even if there were no other family members with breast or ovarian cancer. Half of the women with breast cancer who had one of these mutations had a negative family history.
- Most of the women with otherwise negative histories inherited the mutation from their fathers.
- A lack of other affected family members did not suggest a lower cancer risk for mutation carriers.

Although more information is needed before we recommend BRCA gene testing for all Ashkenazi Jewish individuals, it should be offered to all Jewish women who had breast cancer at an early age or ovarian cancer at any age.