

Staging

To a large extent, the point of obtaining all of the information documented in the pathology report is to determine the stage of the cancer. Staging is an assessment of how far the cancer has progressed. We use the TNM system: it takes into account the size and extent of the tumor (T), the node status (N), and the absence or presence of distant metastases (M). Various combinations of TNM result in a classification of disease stages, ranging from "0" for in situ disease, and "I" through "IV" for invasive disease. Generally, lower stage corresponds to better prognosis.

However, every patient and every cancer is unique. Although the pathology report contains a great amount of invaluable data for diagnosis, treatment, and prognostication, only you and your doctor can best determine the meaning of this information. The contribution of the pathologist is thus just one of many important factors that will determine the quality of your care at Saint Anthony's Medical Center. We in the Department of Pathology are more than eager to serve you with our best efforts in your fight against breast cancer. *If you have any questions about your report, please call us at 219.757.6322.*



David Cheng, M.D.



Judy S. Lyzak, M.D.

Continuing Christ's Ministry In Our Franciscan Tradition



1201 South Main Street • Crown Point, IN 46307
www.stanthonymedicalcenter.com



The Challenge of Living with Breast Cancer

Understanding the nature of the disease

The modern approach to the evaluation of breast cancer, as well as its treatment, is quite sophisticated and the factors that have to be considered are many. Thus, a large part of the challenge of living with breast cancer is trying to understand the nature of the disease, the treatment options, and the prognosis. This brochure will help you to understand an important source of this information, the pathology report.

The pathology report documents the findings of the pathologist in the examination of your breast tissue. The examination includes a thorough gross and microscopic analysis of the specimen, as well as any relevant specialized tests. Your doctor uses the results to better understand your disease and to present the most appropriate treatment options. Since it is important for your doctors to understand your disease as precisely as possible, the report often uses unfamiliar, technical language and refers to obscure concepts and criteria that may not make much sense to anyone outside of the medical profession.

We hope this brochure will, by explaining and describing some of these terms, help you to better understand your pathology report.

Your Pathology Report

Sections of the Pathology Report

Demographics

Important identification information, including your name, your age, your doctor's name, medical record number, etc. are at the top of the report. Also, specimen identification numbers can be found here, as well.

Diagnosis

This section contains the most important information obtained from the examination of the specimen. This is where you will find the pathologist's opinion on the exact nature of the specimen (non-cancerous vs. cancerous, type of tumor, etc.).

Comment

Many reports will also contain this section, where additional information about the specimen is given. This is where additional tests to be performed in the future are noted. Also, if any other pathologists have reviewed the specimen, his/her opinion is given here.

Synoptic

Lumpectomy or mastectomy specimens may also have a detailed listing of the findings. Many of these may already be in the diagnosis section, but the synoptic puts the findings in a quick, easy-to-read format.

Gross Description

This section describes the specimen received, in terms of size, weight, and appearance. Any unusual findings apparent to the naked eye are described here. Finally, the parts of the specimen that are removed for further examination under the microscope are listed here.

Information Found in the Report

Anatomic Site

The right or left breast will be specified, and sometimes a more precise location, e.g. “posterior,” “10:00,” “subareolar.”

Type of Specimen

Core biopsy: Many times, the initial study consists of a small “core biopsy,” which looks like short half-inch or one-inch segments of spaghetti. A core biopsy is a sample of your breast tissue which, although small, may be a good indicator of what is wrong with the rest of the tissue in your breast. A core biopsy is usually very accurate in determining if the breast tissue is cancerous or not. In addition, special tests, such as hormone receptor and Her-2/neu assays can be performed on these specimens. However, core biopsies are not usually intended to entirely remove the abnormal tissue. Also, such information as tumor size and surgical margins cannot be determined or are not applicable to core biopsies.

Lumpectomy, biopsy: These larger specimens, which consist of the abnormal breast tissue, surrounded by a rim of normal tissue, give even more information than core biopsies. In addition to a determination of the kind of abnormality, other factors such as tumor size, surgical margins, and lymphovascular invasion can be evaluated. In addition to being diagnostic, lumpectomies are also considered to be an important component of the treatment of the disease, and often follow a diagnosis by core biopsy.

Mastectomy: This specimen is the whole breast, with (“radical”) or without (“simple”) axillary lymph nodes (nodes from the tissue extending into the armpit). Like lumpectomies, mastectomies are therapeutic. Additional information, such as skin or nipple involvement, can be obtained from these specimens.

Axillary lymph nodes: These are usually obtained at the time of lumpectomy or mastectomy, and are the best way to determine if cancer has invaded the lymphovascular system and begun spreading out of the breast.

Sentinel lymph node: Through special studies performed at the time of surgery, the surgeon can determine which of the many axillary lymph nodes will be the first involved by cancer if it invades the lymphovascular system. This node is the “sentinel” lymph node. The surgeon will send this node separately from the rest of the axillary lymph nodes. Special attention is given to this lymph node, since it gives us the earliest warning that spread out of the breast has occurred.

Size

The larger a tumor grows, the greater the chance that it will invade the lymphovascular system and spread to the rest of the body. Tumor size is given in centimeters (1 inch = 2.54 centimeters, or cm). Meaningful cutoffs are 2 cm and 5 cm.

Noninvasive vs. Invasive

Breast cancer can be understood to be noninvasive or invasive. Noninvasive cancer, also known as “in situ cancer,” is an uncontrolled growth of breast cells in a duct or lobule that has not yet breached the wall of tissue (basement membrane) surrounding normal breast ducts and lobules. The abnormal breast cells have not yet “broken out.” Once the basement membrane is breached, the cancer has become invasive (“infiltrating”). The most common form of invasive breast cancer is invasive ductal carcinoma.

Grade

The grade is determined by microscopic examination, and gives a general idea of how much the cancer cells differ from their cells of origin. Some tumors are “well-differentiated,” meaning that overall the tumor tissue closely resembles normal tissue. Other tumors are “poorly-differentiated,” meaning that the tumor tissue looks very different from normal tissue. Some are in the middle (“moderately-differentiated”). In a rough way, more poorly-differentiated tumors behave more aggressively. To determine the level of differentiation, we use the Bloom Richardson scale, which is based on an evaluation of nuclear grade, architectural differentiation, and mitotic rate. Each parameter is given a score of 1 to 3, with a score of 3 corresponding to poorer differentiation. The scores for the three parameters are added up to give a total score of 3 to 9. The higher the total score, the more poorly-differentiated the tumor.

Surgical Margins

These refer to the borders of the lumpectomy or mastectomy specimen. When the specimen is handled by the pathologist, he/she applies ink to the margins so that when the tissue is examined underneath the microscope, he/she can see if the tumor goes up to the margin. If it does, the margin is “positive.” This suggests that the tumor has not been entirely removed. Another surgical procedure may then be performed to obtain “negative” margins.

Lymphovascular Invasion

Microscopically-identified clusters of tumor cells inside blood vessels or lymphatic channels suggest penetration of the vessels, which is characteristic of more aggressive tumors with the potential to spread outside of the breast. A special consideration is invasion of the dermal lymphatics, which is associated with particularly aggressive disease.

Lymph Node Status

Your body has a network of tiny vessels, called lymphatic channels, that carry and remove fluid from different parts of your body. The lymphatics carry white cells and are connected to lymph nodes. As you might know, white cells and lymph nodes help fight infection. The breast is also drained by the lymphatic system. If breast cancer cells invade the lymphatics, they can be carried to the lymph nodes in the axilla (armpit). Examination of these lymph nodes thus tells us if the cancer has started spreading

into the rest of the body. The pathology report will note how many lymph nodes were removed and how many of them are involved by tumor (positive). Often, this is reported as a fraction, with the first number being the number of positive nodes, and the second number the total number of nodes, e.g. “3/9” indicates that there are three positive nodes out of a total of nine. In general, negative lymph node status (zero nodes positive) is better than positive node status, and a lower number of positive nodes is better than more positive nodes.

A newer method of sampling the axillary lymph nodes is called “sentinel node mapping.” This technique uses a colored dye and/or radioactive material injected into the site of the tumor. The first lymph node to “light up” is presumed to be the first lymph node that receives drainage from the tumor site and should be the first site of nodal metastases. This “sentinel” node is excised and submitted separately from any other nodes.

Hormone Receptor Status

This refers to the degree that the cancer cells possess receptors to estrogen and progesterone (“ER” and “PR,” respectively). Stimulation of the receptors by these hormones can promote growth of the cancer. Thus, if the cancer is “positive” for these receptors, its growth is influenced by estrogen and/or progesterone. While this sounds alarming, given that many women are still producing both hormones, this leads to the possibility of hormone therapy: a hormone-blocking drug, such as tamoxifen, can block the receptors on the cancer cells and thus slow growth of the cancer. This kind of therapy is commonly used to treat “ER” and “PR”-positive tumors.

Her-2 Status

The Her-2 (Her-2/neu, c-erb-2) gene produces another kind of receptor that responds to a growth factor. If the cell has too many of these receptors (the gene “overexpresses” the receptor), it becomes too sensitive to the growth factor and the cell tends to grow and divide too rapidly. Her-2-positive tumors thus tend to be fast-growing and aggressive. It is estimated that about 25-30% of breast cancers are Her-2-positive. On the other hand, a tumor that overexpresses these receptors may be treated by medications that target them, e.g. Herceptin.