



FAQS: BREAST CANCER

UNDERSTANDING YOUR PATHOLOGY REPORT: A FAQ SHEET

When your breast was biopsied, the samples taken were studied under the microscope by a specialized doctor with many years of training called a pathologist. The pathology report tells your treating doctor the diagnosis in each of the samples to help manage your care. This FAQ sheet is designed to help you understand the medical language used in the pathology report.

1. What is “carcinoma” or “adenocarcinoma”?

Breast carcinoma or adenocarcinoma is synonymous with breast cancer, which is malignant. However, it can be curable when caught early.

2. What is “infiltrating” or “invasive”?

These words mean the same. The normal breast is made of ducts that end in a group of blind-ending sacs (lobules). Carcinomas start out in the ducts and lobules and when they grow and break out of these structures and are no longer confined to the breast ducts or lobules, they are considered invasive or infiltrating carcinoma, which means that the tumor cells now have the potential to spread (metastasize) to other parts of your body.

3. What does it mean if my carcinoma is called “ductal” or “lobular” or “carcinoma with duct and lobular features”?

Breast carcinomas have different appearances under the microscope, the two major types being ductal carcinoma or lobular carcinoma. In some cases, the tumor can have features of both and are called mixed ductal and lobular carcinoma. In general, there is not a significantly different prognosis between invasive lobular and invasive ductal adenocarcinoma of the breast.

4. What does it mean if my report mentions E-cadherin?

E-cadherin is a test that the pathologist may use to help determine if the tumor is ductal or lobular. If your report does not mention E-cadherin, it means that this test was not necessary to make the distinction.

5. What does it mean if my carcinoma is well-differentiated, moderately-differentiated, or poorly differentiated”?

These terms are used to indicate how aggressive your carcinoma is likely to be. They are assigned by a pathologist looking at the cancer under the microscope. Well-differentiated carcinomas tend to be more slowly growing, with a better prognosis. Poorly-differentiated carcinomas are the most aggressive tumors, with a worse prognosis, and moderately-differentiated carcinomas have an intermediate prognosis.

6. What is “histologic grade” or “Nottingham grade”?

These grades are similar to what is described in FAQ 5 above, about “differentiation”. Numbers are assigned to different features seen under the microscope and then added up to assign the grade. The added numbers range from 3 to 9, with 3-5 equal to grade 1 (well-differentiated), 6-7 equal to grade 2 (moderately differentiated), and 8-9 equal to grade 3 (poorly differentiated). In some reports, the grade may be similarly described as Elston grade.

7. What does it mean if Ki67 is mentioned in my report?

Ki67 is a measurement of the cancer cell proliferation rate, which the pathologist determines under the microscope. The proliferation rate is a measure of how rapidly the cancer cells are dividing, another indicator of prognosis.

8. What does it mean if my carcinoma has “tubular”, “mucinous”, “cribriform”, or “micropapillary” features?

These are different types of ductal carcinoma which can be identified under the microscope. Tubular, mucinous, and cribriform carcinomas are types of well-differentiated cancers with typically a better prognosis. Micropapillary carcinomas are associated with a worse prognosis. However, since some tumors may have a mixture of these types, a definitive diagnosis cannot be established on needle biopsy. A definitive diagnosis can only be made if most of the tumor consists of one of these types and this can only be determined once the entire tumor is removed, by lumpectomy or mastectomy.

9. What is “vascular” or “lymphovascular” or “angiolympathic” invasion? What if my report mentions D2-40 (podoplanin) or CD34?

Tumors cells can break into small vessels seen under the microscope and this is called “vascular” or “lymphovascular invasion”. The presence of tumor in vessels is associated with an increased risk that the tumor has spread outside the breast, although this does not always occur. D2-40 and CD34 are special tests that the pathologist may use to help identify “vascular” or “lymphovascular” or “angiolympathic” invasion. These tests are not necessary in every case. If your report does not mention this type of invasion, it means it is not present. Even if it is present, your cancer could still be very curable, depending on other factors. How the presence of this finding will affect your specific treatment is best discussed with your treating doctor.

10. What is the significance of the reported size of the tumor?

The pathologist typically will measure the greatest dimension of the tumor as seen under the microscope or, if it is visible, by gross (naked eye) examination. Not all cancers on needle biopsy are given a measurement, because they may not be accurate, sampling only a portion of the tumor. A more accurate measurement will be done on the subsequent resection of the entire tumor by lumpectomy or mastectomy.

11. What is the significance of the stage of the tumor?

The Stage of the tumor is a measurement of the extent of the tumor in the breast as well as whether there is any spread of the tumor beyond the breast. A Stage is typically not given for a needle biopsy specimen because the pathologist does not have the entire tumor to evaluate (See FAQ 10 above). The Stage is usually reported using the letters T, N, and M, where T stands for tumor, N for lymph nodes, and M for distant metastasis. A “p” before each letter stands for the “pathologic” stage assigned by the pathologist (as opposed to the Stage suspected by your treating physician prior to the resection of the tumor). For lumpectomy specimens, a stage is usually reported that takes into consideration the size of the tumor, which is indicated by “pT” followed by numbers and letters to indicate its size, the larger the number, the larger the tumor size. For mastectomy specimens “pT”, followed by numbers and letters, indicates the size of the tumor along with other information about the tumor. For “pT”, the larger the number, the poorer the prognosis. “pN” followed by numbers and letters indicates the presence, if any, of tumor spread to lymph nodes as well as the extent of spread to the lymph nodes that may have been removed with the resection specimen (See also, FAQ 12 below). “pMx” means that the pathologist cannot determine whether there is spread to distant sites (ie. lung, liver, bone) because this must usually be determined by radiographic studies. There are criteria, including information not always on the pathology report, to group TNM stages into 4 major stage groups, I to IV, correlating with increasing extent

and poorer prognosis. Detailed information on Staging is present at the American Cancer Society web-site: www.cancer.org.” and at the American Joint Committee on Cancer web-site: www.cancerstaging.org, “staging resources”. How the stage of your tumor will affect your therapy is best discussed with your treating physician.

12. What if my report mentions “sentinel lymph node”?

This FAQ concerns itself with the explanation of pathologic terms in breast biopsies. Occasionally, breast biopsies done for carcinoma are accompanied by a single lymph node, designated as a “sentinel lymph node”. Information regarding breast cancer lymph nodes, including rationale for “sentinel lymph node” biopsy, can be found at the following websites:

<http://www.cancer.gov/cancertopics/factsheet/Therapy/sentinel-node-biopsy>

<http://www.cancernews.com/data/Article/202.asp>

<http://ww5.komen.org/BreastCancer/LymphNodeStatus.html>

13. What does it mean if my report mentions special studies such as high molecular weight cytokeratin (HMWCK), CK903, CK5/6, p63, muscle specific actin, smooth muscle myosin heavy chain, calponin, or keratin?

These are special tests that the pathologist sometimes uses to help make the diagnosis of invasive breast cancer or to identify metastatic cancer in lymph nodes. Not all cases need these tests. Whether your report does or does not mention these tests has no bearing on the accuracy of your diagnosis.

14. What does it mean if my report also has any of the following terms: “usual duct hyperplasia”, “adenosis”, “sclerosing adenosis”, “radial scar”, “complex sclerosing lesion”, “papillomatosis”, “papilloma”, “apocrine metaplasia”, “cysts”, “columnar cell change”, “collagenous spherulosis”, “duct ectasia”, “fibrocystic changes”, “flat epithelial atypia”, or “columnar cell change with prominent apical snouts and secretions (CAPSS)”?

All of these terms are non-cancerous changes that the pathologist sees under the microscope and are of no importance when seen on a biopsy where there is cancer.

15. What does it mean if my report mentions “microcalcifications” or “calcifications”?

“Microcalcifications” or “calcifications” are minerals that are found in both noncancerous and cancerous breast lesions and can be seen both on mammograms and under the microscope. Because some calcifications are associated with cancerous lesions, their presence on a mammogram may lead to a biopsy of the area. When they are seen by the pathologist in a biopsy specimen which was obtained because of a mammographic abnormality with calcifications, their presence is included in the pathology report to let the treating physician know that the abnormal area with calcifications seen in the mammogram was successfully sampled. Without accompanying worrisome changes in the breast ducts or lobules, “microcalcifications” or “calcifications” alone have no significance.

16. What does it mean if in addition to cancer my report also mentions “atypical duct hyperplasia (ADH)”, “atypical lobular hyperplasia (ALH)”, “ductal carcinoma in-situ (DCIS)”, “intraductal carcinoma”, “lobular carcinoma in-situ (LCIS)”, or “in-situ lobular carcinoma”?

All of these terms, some synonymous, are pre-cancerous changes, that the pathologist sees under the microscope. These typically are of no importance when seen on needle biopsy if there is invasive cancer elsewhere in the needle biopsy sample. If they are seen on an excisional biopsy (lumpectomy) where there is cancer, they may be important if present at or near a margin (see FAQ 19 below).

17. What does it mean if my report mentions “estrogen receptor (ER)” or “progesterone receptor (PR)”?

ER and PR are special tests that the pathologist does that are important in predicting response of the cancer to certain types of therapy. Women have circulating estrogen and progesterone in their blood, and some cancers might grow more readily if the circulating estrogen and progesterone attach to these receptors. If these receptors are present in the cancer, your treating physician may explore with you the possibility of using drugs that block these receptors. Results for ER and PR are reported separately and can be reported in different ways: 1) negative, weakly positive, positive; 2) percent positive; 3) percent positive and whether the staining is weak, moderate, or strong. How the results of your tests will affect your therapy is best discussed with your treating physician.

18. What if my report mentions HER2/neu?

Some breast cancers (about 15 – 20%) have on the surface of the cancer cells a protein called HER2/neu. HER2/neu is a special test done by pathologists that is predictive of both the prognosis and the response of breast cancer to certain types of therapy. HER2neu is usually first tested in breast cancer using a technique called immunohistochemistry (IHC) and typically reported as 0 (negative), 1+ (weakly positive), 2+ (moderately positive), and 3+ (strongly and diffusely positive). In certain cases the results with IHC are considered equivocal and a more precise, yet also more complicated and expensive, test is performed. This test is called fluorescence in situ hybridization (FISH) or in situ hybridization (ISH). If the protein is present, your treating physician may choose a different set of drugs to treat the breast cancer. How the results of your tests will affect your therapy is best discussed with your treating physician.

19. What if my report mentions “margins” or “ink”?

When an excisional biopsy (lumpectomy) of a breast cancer is performed, the pathologist coats the outer aspect of the specimen with ink, sometimes different colored ink. If cancer extends to the ink, it indicates that it may not have been completely removed (i.e., it is at the surgical “margin”). However, the surgeon may have removed additional tissue at the time of surgery to guard against this possibility. The management of “invasive carcinoma”, “intraductal carcinoma” (pre-cancer), “in-situ lobular carcinoma” (pre-cancer), “atypical duct hyperplasia”(early pre-cancer), or “atypical lobular hyperplasia (early pre-cancer)” at a margin is best discussed with your treating physician.