

EVOLVING BREAST CANCER STAGING

By Dr Rick Cornella, MD, Medical Director at *Solis Mammography*



The diagnosis and treatment of breast cancer continue to evolve and improve. Mammography screening remains the most effective and cost-efficient tool we have. Ultrasound and breast MRI are frequently used as additional, supportive means to exclude or suggest the possibility of breast cancer. Early detection and treatment remain paramount in successfully treating invasive breast cancer. Diagnostic modalities continue to improve, and studies show that mammography screening has decreased breast cancer-related deaths by 30%.

Imaging plays a significant role in the current staging of breast cancer. This staging is based on the primary tumor size, the spread to regional lymph nodes, and distant spread or metastatic disease. While these factors maintain their importance in determining treatment and prognosis, other criteria have emerged as significant contributors in the decision-making process regarding prognosis and therapy. These factors are termed biomarkers, including estrogen receptor, progesterone receptor and human epidermal growth factor receptor (HER 2). It's now accepted that these factors, as well as tumor grade and genomic panels, are significant in establishing appropriate treatment and prognosis.

The issue of incorporating biologic factors was carefully considered by a group of experts on behalf of the American Joint Committee on Cancer. The first of the biologic factors to be recognized was grade or tumor differentiation, indicating how closely the tumor appears to normal breast tissue. Tumors with a microscopic appearance very similar to normal tissue are said to be well differentiated. This is based on the appearance of cellular structures and how rapidly cells appear to divide/multiply. Tumors closest to normal breast tissue in these characteristics are termed grade 1. Poorly differentiated tumors are considered grade 3, while grade 2 is intermediate.

Another biologic factor of importance is the tumor's response to the hormones estrogen and progesterone. Most breast cancers grow in response to these hormones, and are then considered estrogen receptor positive and/or progesterone receptor positive (ER+/PR+). Tumors in this category are more likely to respond to hormonal therapy than those that are ER/PR negative. Hormonal therapy may help prevent the return of cancer by blocking the effects of estrogen and progesterone. This can be accomplished several ways. Some medications may help prevent recurrence by blocking hormone receptors, thereby preventing hormones from binding to them and stimulating growth. An alternative is to use medications that stop the estrogen production.

An additional factor is the presence of the protein HER-2 (Human epidermal growth factor). In approximately 20% of breast cancer cases, cells overproduce this protein. These cancers tend to be more aggressive. However, medication can significantly decrease the risk of cancer recurrence.

A final factor to consider is genomic testing. The most commonly utilized of these tests analyzes the activity level of



specific genes in early-stage breast cancer. It's possible that this may eventually be used in treatment decisions based on the possibility of cancer returning within 10 years after treatment. The major impact of a multigene panel is the downstaging of biologically low-risk Stage 2 cancer. The expert panel evaluating biological factors did not endorse a particular assay. At this time, no upstaging is recommended based on multigene panel testing. It's also recommended that these panels be used only for selected subsets of breast cancer, limiting their utility.

Not all oncologists use biomarker assays, possibly resulting in staging disparities. Some will choose not to incorporate this data, secondary to financial considerations or other complicating medical problems. Despite this, it's anticipated that utilization will continue to increase based on evidence that this data is critical in maintaining clinical relevance of the staging system. Anatomic staging must be preserved because biological markers are not available in many parts of the world and are, therefore, not relevant. Ignoring the relevance of anatomic staging would be detrimental to patient treatment in many countries.

In summary, the most recent edition of the American Joint Committee on Cancer staging system for breast cancer is based on anatomic involvement and histology (cell type), and uses several biomarkers to refine prognostic information to improve therapy and prognosis selection. Thus, a group of patients with a favorable prognosis may avoid the need for chemotherapy.

We expect modifications to this newest staging system as additional validated information becomes available.

Dr. Cornella received both his Bachelor of Arts in Zoology and his Doctor of Medicine from the University of North Carolina. He also served as hospital Chief of Staff as well as radiology Medical Director. Dr. Cornella has been in practice since 1988, with a concentration in mammography for over 20 years.



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