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An Evolution in HER-2/neu Monitoring

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Current Advances in HER-2/neu Biomarker Testing

Serum HER-2/neu Testing for Effective Disease Management

The Serum HER-2/neu Test is a biomarker for HER-2/neu-positive, metastatic breast cancer (MBC). Increasing levels of serum HER-2/neu reflect disease progression while decreasing levels reflect therapy response or stable disease.^{1,2}

This serum test monitors HER-2/neu, an oncoprotein found elevated in the blood of some breast cancer patients. In some MBC patients, serum testing can help detect HER-2/neu-positive tumors in patients whose tissue tests were initially negative for HER-2/neu.

The Serum HER-2/neu Test does not replace tissue tests such as HercepTest® but is complementary to tissue tests. The additional insight that a Serum HER-2/neu Test offers can make an important difference in getting the right treatment to the right patient at the right time.

Serum HER-2/neu and Tissue Tests

Immunohistochemistry (IHC) or fluorescence in situ hybridization (FISH) provides a measurement of a patient's HER-2/neu status at initial diagnosis of breast cancer. The Serum HER-2/neu Test complements tissue tests when a tumor spreads by monitoring response to therapy or time to disease

progression. Serum HER-2/neu offers the following advantages:

- It is minimally invasive—requiring only a simple blood test
- HER-2/neu can be used for monitoring women who are receiving hormone therapy, chemotherapy, or combination therapies
- It is the only test that can follow a woman's HER-2/neu level once she is diagnosed with MBC and can determine if the HER-2/neu status has changed
- It can be done routinely in patients with an elevated serum HER-2/neu level (15 ng/mL or greater)

Regardless of the HER-2/neu tumor result, it is important to establish a serum

baseline using the Serum HER-2/neu Test at the time that MBC is diagnosed. Studies have shown that serum testing can help identify women whose metastasis may be HER-2/neu positive, but who tested negative by IHC or FISH in the primary tumor. Studies have shown that approximately 10-40% of women can have an incorrect HER-2/neu status.^{1,2} This has important clinical implications for determining whether a patient with MBC should receive HER-2/neu targeted treatment. Patients with an elevated serum HER-2/neu but a HER-2/neu-negative tissue test should have the original tumor retested to see if they are HER-2/neu positive.



Serum HER-2/neu and Commonly Used Tumor Markers

Because the Serum HER-2/neu Test monitors an oncoprotein rather than a tumor marker, it can provide insight into tracking patients with MBC who are receiving HER-2/neu-directed therapy.

For example, there are now specific HER-2/neu-targeted therapies, but no therapies targeted at tumor markers CEA and CA 15-3. CEA and CA 15-3 are tumor markers associated with tumor bulk, while HER-2/neu has been shown to be an independent factor with respect to tumor bulk (Ali et al.).¹⁰

Women who have an elevated serum HER-2/neu level (15 ng/mL or greater) can be routinely monitored to help manage their therapy options. Women who have a normal serum HER-2/neu level (less than 15 ng/mL) should be tested periodically to check for changes in HER-2/neu status. Conversion from less than 15 ng/mL to greater than 15 ng/mL is a sign that HER-2/neu status has changed and can be routinely monitored. Serum HER-2/neu testing provides clear information: rising levels indicate disease progression; falling levels signify treatment response or stable disease. This serum HER-2/neu testing is simple, quantitative, and informative.

For more information about the Serum HER-2/neu Test, visit www.neunews.net.

The HER-2/neu Advantage

The Serum HER-2/neu Test differs from tumor marker tests in that it is a specific biomarker for MBC patients with HER-2/neu-positive breast cancer and is an important cellular target for a variety of new cancer therapies. In contrast to traditional tumor markers such as CA 15-3 and CEA which track tumor burden, serum HER-2/neu monitors changes in the HER-2/neu oncoproteins which are independent of tumor burden. In addition, tumor markers such as CEA and CA 15-3 are not specifically associated with targeted

Definitive: HER-2/neu Levels at a Glance

Recommended Testing Guidelines

- **Normal:** If the serum HER-2/neu level is in the normal range (<15 ng/mL), the Serum HER-2/neu Test should be repeated two times a year.
- **Above normal:** If the first Serum HER-2/neu Test shows a level that is above normal (>15 ng/mL), the test should be repeated four times a year.

therapies whereas HER-2/neu is the specific target of trastuzumab. Monitoring the rise and fall of serum HER-2/neu levels can guide therapy and help in disease management of patients with HER-2/neu-positive disease.

The Serum HER-2/neu Test may be used in conjunction with tumor marker tests; in fact, studies show that serum testing for HER-2/neu may provide additional insight to monitoring with tumor markers CEA and CA 15-3.³⁻¹⁰

The advantages of HER-2/neu over commonly used tumor markers may be summarized below.

HER-2/neu and Tumor Markers: A Comparison				
	HER-2/neu	CEA	CA 15-3	CA 27.29
Converts normal cells to cancer cells	✓			
Is the target of specific therapies	✓			
Provides specific information about status of HER-2/neu-positive tumors	✓			
Guides the use of HER-2/neu targeted therapies	✓			
Independent of tumor bulk	✓			

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