

NAVIGATION

[Home](#)

News and Comment

[Headlines](#)
[Expert Viewpoint](#)

JournalOptions

Interactive Cases

[Treatment of NSCLC](#)

Treatment Updates

[ASH Update 2004](#)

Conference Coverage

[27th SABCS, December 2004](#)
[46th ASH, December 2004](#)
[40th ASCO, June 2004](#)
[45th ASH, December 2003](#)
[7th Malignancies, April 2003](#)
[Calendar](#)

Clinical Care Options Sites

[Main](#)
[Hepatitis](#)
[HIV](#)
[Oncology](#)

LIVE MEETINGS

[15th International Prostate Cancer Update](#)

[15th Annual Clinical Care Options for HIV Symposium](#)

[3rd Annual Clinical Care Options for Hepatitis Symposium](#)

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Welcome back, Mr. May

NEWS REPORT

Advances in breast cancer detection



By Thomas S. May

December 11, 2004 — Breast cancer is often undetected or incorrectly identified in younger women, due to limited accuracy of currently available screening methods. To improve detection rates and facilitate accurate identification and classification of early breast cancer, several new screening technologies are currently being tested.

One such new technique, matrix-assisted laser desorption/ionization mass spectrometry (MALDI-MS), can be used in combination with laser capture microdissection (LCM) to identify unique "protein signatures" specific to different types of breast cancer. In a study presented at the 27th San Antonio Breast Cancer Symposium, scientists from Vanderbilt University School of Medicine in Nashville, Tennessee, used MALDI-MS combined with LCM for protein profiling of tissue from frozen sections of invasive mammary carcinoma (IMC), ductal carcinoma in situ (DCIS), and normal mammary epithelium from reduction mammoplasty specimens (RM).^[1]

The investigators found that protein profiling using MALDI-MS and LCM technology was able to classify the 3 different types of tissue samples (IMC, DCIS, and RM) with remarkably high (up to 96%) accuracy. They suggested that this technique could also be used to identify the top discriminator proteins, which should provide an array of potential tumor-specific markers and drug targets.

In another study, German researchers utilized a different protein profiling technique, known as surface-enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI-TOF MS), to detect DCIS and invasive ductal carcinoma in human serum.^[2] This technology relies on readily available body fluid analysis rather than invasive biopsy.

The investigators obtained serum samples from 112 women (27 with benign breast lesions, 25 with DCIS, and 32 with invasive ductal carcinoma of the breast). Serum samples from 28 women with no breast-related lesions were also included as a control group.

The blood samples were drawn prior to surgical biopsy (blinded) and analyzed using time-of-flight mass spectrometry. The researchers were able to identify 4 unique spectral peaks, corresponding to 4 different protein profiles. These protein profiles were then correlated with histologic results, using a specially developed diagnostic algorithm.

The SELDI technique allowed the investigators to identify different tissue samples with a high degree of accuracy. Statistical analysis showed that invasive ductal carcinoma was detected with a sensitivity of 0.84 and a specificity of 0.90. Sensitivity and specificity were both 0.88 for detecting DCIS.

These results indicate that the SELDI technique may become an important screening tool for discriminating between preinvasive lesions such as DCIS and

early invasive ductal carcinoma.

Electrical impedance scanning (EIS) is another novel diagnostic tool that can be used for the early detection of breast cancer. Jointly developed by US and Israeli scientists, EIS was specifically designed for screening younger women under the age of 40.

Like the SELDI technique, EIS is noninvasive. This method is based on the assumption that cancer-induced tissue changes cause corresponding changes in electrical impedance of the breast. To test this assumption, the investigators conducted a multicenter, prospective, single-arm clinical trial.^[3]

Women undergoing screening clinical breast examination, mammography, ultrasound, or breast biopsy were eligible for enrollment. During EIS, the subjects were asked to hold an electrode in one hand, while the examiner ran a probe (similar to an ultrasound probe) over their breast.

The researchers were able to identify 29 cancers among 1103 women; 19 (66%) of these were nonpalpable, and 16 (55%) were detected in women under the age of 50. Sensitivity and specificity were highest among women younger than 40 years (50% and 89%, respectively).

While these results are encouraging, the investigators admit that the detection algorithm needs further improvements. They envision that EIS will likely be used in conjunction with other screening tools for the detection of breast cancer.

Reference

1. Sanders ME, Xu BJ, et al. Protein profiling by MALDI-MS classifies breast tumors with high accuracy and distinguishes ductal carcinoma in situ from invasive mammary carcinoma. Program and abstracts of the 27th San Antonio Breast Cancer Symposium; December 8-11, 2004; San Antonio, Texas. Abstract 7.
2. Mundhenke C, Meinhold-Heerlein I, et al. Detection of DCIS and invasive ductal carcinoma in human serum by protein profiling (SELDI). Program and abstracts of the 27th San Antonio Breast Cancer Symposium; December 8-11, 2004; San Antonio, Texas. Abstract 8.
3. Stojadinovic A, Nissan A, et al. Electrical impedance scanning (EIS) for the early detection of breast cancer in young women: preliminary results of 1,103 patients taking part in a multi-center prospective trial. Program and abstracts of the 27th San Antonio Breast Cancer Symposium; December 8-11, 2004; San Antonio, Texas. Abstract 9.

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