

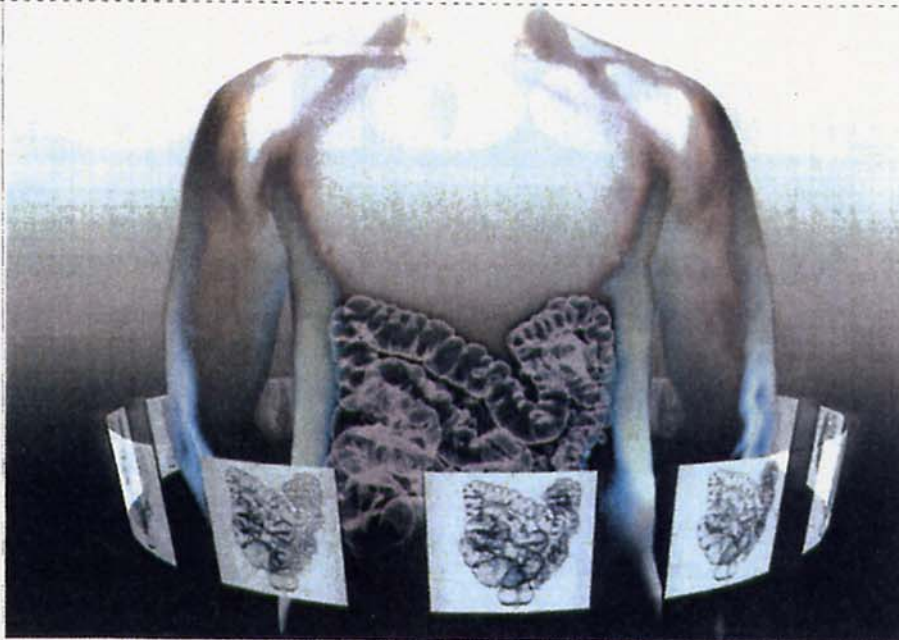
of the lesion does not meet the threshold for PET. Still, Rubenstein concludes, "These issues are a matter of use and not about PET itself."

► **The Advent of Breast MRI**

Like PET and virtual colonoscopy, breast MRI appears to be finding its niche. Since 1999, there has been a 40% boost in breast MRI examinations in the United States, particularly in staging cancer, monitoring the response to breast therapy, and screening high-risk patients. In May, the American Cancer Society endorsed breast MRI's position with an update of guidelines for breast cancer screening that said that breast MRI, when used with mammography, may enhance the effectiveness of screening and diagnosis. Approximately 8.5 million American women are described as at high risk for breast cancer. "We're seeing more and more patients come in with breast MRI scans," Gordon notes. "As radiologists get more comfortable reading them, we're going to be able to find more cancers that we have not found on mammograms."

Nancy Elliot, MD, FACS, director of Montclair Breast Center (Montclair, NJ), agrees and is so convinced of the modality's utility in breast cancer that she has decided to implement screening MRI in her practice. She explains, "One area where breast MRI use is not controversial is in women already diagnosed with breast cancer. We can use MRI to make sure that the woman is a good candidate for lumpectomy and to rule out cancer in the opposite breast." Elliot, however, intends to go one step farther, and her rationale makes a lot of sense. Currently, the Centers for Medicare and Medicaid Services (CMS of Washington, DC) have approved breast MRI for women with the BRCA 1 or BRCA 2 gene. Elliot notes, "It's not a far jump from women with a 30% risk of breast cancer [ie, women with the gene] to women with a 28% risk [ie, other high-risk women]. Breast MRI is ideal for us because we see a lot of high-risk women who have a family history of the disease, atypical changes in the breast, and had previous breast cancer."

MRI can be an effective breast cancer-screening tool because it is a dynamic and structural test. It analyzes function via the injection of gadolinium, and it provides architectural views of the breast. While mammography provides a mere four images, MRI provides thousands of 3-mm slices. As a result, the average size of breast cancer detected by MRI is



5 mm compared with 12 to 15 mm on a mammogram. "This early pickup can be a cost-savings in the end because at 5 mm the woman will not require chemotherapy," explains Elliot.

► **The Search for Answers About Lung Cancer Screening**

Cancer screening is a tricky business. Breast MRI may or may not be accepted. And it is not the only type of cancer undergoing screening scrutiny. Although there are currently no modalities approved for lung cancer screening, some groups tout spiral CT as a screening solution. Others believe chest x-rays do the job. Still others claim that early screening will not translate into saved lives.

The American College of Radiology Imaging Network (ACRIN) and the Prostate, Lung, Colorectal, and Ovarian (PLCO) cancer screening trial are undertaking a joint 8-year study. The NLST will determine, which, if either, screening modality is more effective at reducing lung cancer deaths. But final data will not be available for years.

Denise Aberle, MD, professor of radiology at the University of California, Los Angeles, and a principal investigator in the NLST, explains, "Right now, our understanding of lung cancer screening using either modality is incomplete." A few early observations can shed a bit of light on the situation. For example, Aberle says, "We know without a doubt that chest CT is more sensitive [than chest x-ray]. It picks up more nodules and cancers and more early-stage cancers. It does not pick up fewer late-stage cancers." Because late-stage lung cancer is uniformly lethal, if there is not a decrease

in late-stage cancer, researchers do not expect a decrease in mortality. Aberle says, "This suggests that screening CT picks up more indolent cancers that patients would die with but not from." It is important to note, however, that the jury is still out and researchers could detect a true stage shift toward earlier diagnosis with screening CT as more data become available. Another wrench in the screening CT scenario is that tumor size does not necessarily correlate with biology. That is, a small lesion detected by screening CT could be a late-stage lesion, so the intuitive benefit associated with detecting smaller lesions may not occur. Aberle concludes, "At this point, the data do not show any benefit from screening CT, but it could be hidden from the small size of earlier trials." The final answers will be available as the NLST draws to a close in 2009.

► **Interventional Radiology and Oncology**

Prostate cancer treatment is notoriously problematic. Gary Onik, MD, director of The Center for Surgical Advancement at Florida Hospital Celebration Health (Celebration, Fla), explains, "Treatment often leaves men impotent or incompetent. Until this point, treating prostate cancer was based on an all-or-nothing rationale. Surgical treatment is not amenable to taking a portion of the prostate gland. Brachytherapy is really confined to very low-risk patients."

Eight years ago, Onik began researching cryosurgery as a treatment for prostate cancer. The treatment employs ultrasound imaging for tumor localization; cryosurgery destroys tumors by freezing