



Diagnostic Imaging Online
September 18, 2007

Report from AdMeTech: Prostate cancer management asks for better MRI-guided interventions

By: H. A. Abella

Physicians need improved ways to perform diagnosis, biopsy, and treatment procedures in men with prostate cancer. More powerful MR imaging magnets and MR-guided devices may offer a path to these improvements.

That was the message delivered by Dr. Clare Tempany, a professor of radiology at Harvard Medical School, speaking at the 2007 AdMeTech Foundation conference in Washington, DC.

"We still have problems identifying index lesions. We need to look carefully for lesion behavior and important biopsy markers with tools that help us find targets for biopsy sampling, focal therapy, and improved radiation dose delivery," Tempany said.

Prostate cancer affects more men in the U.S. than any other type of cancer except skin cancers. It accounts for about 9% of cancer-related deaths in men. About a quarter-million patients will get the frightful news this year, according to the American Cancer Society. The mortality rate linked to prostate cancer remains relatively low, but the number of newly diagnosed cases should double by 2015, Tempany said.

"We need to improve MR-guided approaches and move to closed-bore environments at 3T," she said.

For years, physicians have worked in low-field open magnet environments, using 0.5T and, more recently, 1.5T scanners. With more powerful magnets, prostate cancer teams -- urologists, oncologists, and diagnostic and interventional radiologists -- will be able to identify the sites of disease with more precision, plan for more accurate biopsy needle placements, and obtain tissue samples with higher diagnostic yields.

A number of different tools now under investigation will help physicians guide and perform minimally or noninvasive procedures in the prostate, Tempany said.

Collaborative efforts with the National Institutes of Health's National Center for Image-Guided Therapy, academic institutions such as Harvard and Johns Hopkins universities, and industry have produced technologies that can enable targeted needle placement for biopsy sampling and treatment delivery. One example is an MR-guided robotic needle-driving device.

"We want to develop a closed-bore 3T system for preoperative imaging and for intervention. We want imaging to locate the target and ensure correct placement of the needles," she said.

There are constraints, however. The space available with current 3T bores is only about 60-cm wide at best. This is a small area even for the transperineal approach proposed as an alternative to transrectal procedures currently in use. Researchers are hopeful, however, that the newer imaging techniques and robotic enabling technologies will help them move to the next stage in the management of prostate cancer.

"When we have that, we'll be able to carefully address the significant change in the way we diagnose and treat men with prostate cancer, as we move forward to a shift from total therapy to focal therapy, which may require one or multiple treatments," Tempany said.

