
RSNA Press Release

New MRI Technique May Identify Cervical Cancer Early

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OAK BROOK, Ill. — Using high-resolution magnetic resonance imaging (MRI) with a special vaginal coil, a technique to measure the movement of water within tissue, researchers may be able to identify cervical cancer in its early stages, according to a new study being published in the November issue of *Radiology*.

The new technique offers better imaging of smaller tumors and may also improve surgical options when fertility-sparing procedures are being considered.

"Small lesions are often difficult to image, but imaging their full extent is important in surgical planning," said study author Nandita deSouza, F.R.C.R., professor and co-director of the Cancer Research UK Clinical Magnetic Resonance Research Group at The Institute of Cancer Research in London, U.K. "By adding this technique to image the diffusion, or movement, of water within tissue, we can improve the accuracy of detecting small tumors."

The American Cancer Society estimates that 11,070 American women will be diagnosed with invasive cervical cancer in 2008. Largely attributable to increased use of the Pap test, cervical cancer death rates declined 74 percent between 1955 and 1992 and continue to decline by nearly 4 percent annually.

"Cervical cancers increasingly are being picked up at an earlier stage," deSouza said. "This procedure causes no more discomfort than a Pap test and the diffusion-weighted imaging itself only takes 84 seconds." The entire procedure takes approximately 15 minutes.

In the 22-month study period, 59 women, ages 24 to 83, were accepted for inclusion into the study and placed into two groups. Group 1 consisted of 20 women awaiting biopsies due to abnormal cervical tissue development at screening and 18 women who had invasive cervical cancer confirmed by biopsy. Group 2 consisted of 21 women in whom it was necessary to evaluate the presence of the invasive disease.

At A Glance

- A new study has found that a new MRI technique may be able to identify cervical cancer in its early stages.
- By measuring the movement of water within the tissue of the cervix, researchers can differentiate between normal and cancerous tissue.
- An estimated 11,070 American women will be diagnosed with invasive cervical cancer this year.

The patients underwent high-resolution MRI with the addition of a ring coil inserted into the vagina and positioned around the cervix. The coil was designed specifically to image the cervix and enabled measurement of diffusion of water within the tissue cells. The researchers found that the diffusion of water was reduced in cancerous tissue compared to normal tissue.

"Measurement of water diffusion enabled us to differentiate cervical cancers from the normal glandular lining of the cervix," deSouza said. "Use of these measurements in conjunction with conventional MRI makes detection of early stage cervical cancer easier. I am hopeful that this technique will be used routinely in the future in patients with suspected small tumors."

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"Diffusion-weighted Imaging in Cervical Cancer with an Endovaginal Technique: Potential Value for Improving Tumor Detection in Stage Ia and Ib1 Disease." Collaborating with Nandita deSouza were Elizabeth M. Charles-Edwards, F.R.C.R., Christina Messiou, F.R.C.R., Veronica A. Morgan, F.R.C.R., Sonali S. De Silva, F.R.C.R., Norman McWhinney, F.R.C.R., Mike Katesmark, F.R.C.R. and Ayoma D. Attygalle, F.R.C.R. Journal attribution requested.

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