

3-D mapping biopsy finds 3x prostate cancer of ultrasound-guided biopsy

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Traditional, ultrasound-guided biopsies may miss cancer detected by the more accurate 3D mapping biopsies.

Ultrasound-guided biopsies miss prostate cancers that are detected by the slightly more expensive and slightly more invasive 3D mapping biopsies. For example, in a 2006 study of 180 men diagnosed with early stage prostate cancer via ultrasound-guided biopsy, nearly a quarter were

upgraded to a more clinically significant stage of disease after 3D mapping biopsy found pockets of cancer the first technique had missed. Now, a University of Colorado Cancer Center study reports the locations of these most-missed pockets of prostate cancer.

"There are three major reason we perform these 3D mapping biopsies in the clinic: first, a man may have rising PSA despite a series of negative biopsies and so want a more detailed opinion; second, a man may prefer additional reassurance that watching and waiting rather than treatment is the best course of action; and third, a man may pursue focal therapy in which only the cancerous sections of the prostate are removed and so need accurate information on the position of his cancer," says Al Barqawi, MD, investigator at the CU Cancer Center, associate professor at the CU School of Medicine, and the paper's senior author. Barqawi is a pioneer of the 3D mapping biopsy technique, in which needle biopsies are taken 5mm apart across the x, y and z axes of a three-dimensional grid through the prostate, and has performed over 600 of the procedures.

The current study enrolled 161 men with a mean age of 61.6 years, who had been diagnosed with low-stage prostate cancer by ultrasound-guided biopsy. The study performed 3D mapping biopsies at a mean 192 days after the first and compared the results. Overall, ultrasound-guided biopsy found an average of 1.38 cancerous zones per patient, whereas 3D mapping biopsy found nearly three times the number of positive zones, at 3.33 per patient.

The follow-up findings from the 3D mapping study resulted in upgrading the severity of many of these seemingly low-grade cancers. Specifically, after first biopsy, 7.5 percent of patients had been graded Gleason 7 – the lowest grade at which treatment is considered "medium risk" and for which treatment is a reasonable option – and after second biopsy the percentage increased to twenty-five. After first biopsy, no patients had

been scored above Gleason 7, and after 3D mapping biopsy, 4 percent were found to have Gleason 8, and 2 percent had Gleason 9.

"But we already knew that 3D mapping was likely to upgrade a prostate cancer's Gleason score," Barqawi says. "What we hoped to discover in this study is exactly where cancer is being missed by ultrasound-guided biopsy."

Of these 161 total cases, cancer was found in the left-mid section of the prostate 62 times after it had been missed by ultrasound-guided biopsy. Likewise, 3D mapping found 62 unreported cancers in the right-mid section and 41 undetected cancers in the left-apex zone.

"This study adds to our knowledge about the interface and best uses of these two techniques. The cost and invasiveness of [3d mapping](#) biopsy make it inappropriate for screening, but our message is that with the confirmation or strong suspicion of cancer, 3D mapping biopsy offers a much more accurate assessment of the location, stage and risk," Barqawi says.

More information: www.ncbi.nlm.nih.gov/pubmed/24470798

Provided by University of Colorado Denver

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