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New finding suggests prostate biopsy is not always necessary

WINSTON-SALEM, N.C. – Researchers at Wake Forest University School of Medicine and the University of Wisconsin-Madison have discovered that some elevated prostate-specific antigen (PSA) levels in men may be caused by a hormone normally occurring in the body, and are not necessarily a predictor of the need for a prostate biopsy.

Elevated levels of PSA have traditionally been seen as a potential sign of prostate cancer, leading to the widespread use of PSA testing. However, the researchers found that parathyroid hormone, a substance the body produces to regulate calcium in the blood, can elevate prostate-specific antigen (PSA) levels in healthy men who do not have prostate cancer. These "non-cancer" elevations in PSA could cause many men to be biopsied unnecessarily, which often leads to unnecessary treatment.

"PSA picks up any prostate activity, not just cancer," said lead investigator Gary G. Schwartz, Ph.D., M.P.H., an associate professor of cancer biology and epidemiology and prevention at the School of Medicine. "Inflammation and other factors can elevate PSA levels. If the levels are elevated, the man is usually sent for a biopsy. The problem is that, as men age, they often develop microscopic cancers in the prostate that are clinically insignificant. If it weren't for the biopsy, these clinically insignificant cancers, which would never develop into fatal prostate cancer, would never be seen."

However, because PSA screening has become so common, more men are being biopsied, Schwartz said. Most men, when told that they have prostate cancer, elect treatment even though it may not be necessary. In reality, Schwartz said, in only one of six cases does a biopsy diagnosis of prostate cancer result in a cancer that would be fatal if untreated.

High rates of prostate biopsy, therefore, lead to the over treatment of prostate cancer, he said, leading to an increased rate of the side effects of treatment, including impotence and urinary incontinence.

The study, coauthored by Halcyon G. Skinner, Ph.D., M.P.H., of the University of Wisconsin-Madison, appears in the current issue of *Cancer Epidemiology, Biomarkers & Prevention*.

For the study, the researchers analyzed data from 1,273 men who participated in the National Health and Nutrition Examination Survey 2005-2006, and who did not report any current infection or inflammation of the prostate gland, prostate biopsy in the past month, or history of prostate cancer at the time of the survey.

After adjusting for age, race and obesity – because PSA levels increase with age, are higher in black men, and are lower in overweight men – the researchers found that the higher the level of parathyroid hormone in the blood, the higher the PSA level. In men whose parathyroid level was at the high end of normal, the PSA level was increased by 43 percent – putting many in the range for the urologist to recommend a biopsy.

The finding is especially significant for black men, added Skinner. About 20 percent of black men have elevated parathyroid hormone levels, compared with about 10 percent of white men – which means blacks have a greater chance of being recommended for biopsy and over treated, he said.

This finding "could help scientists refine the prostate cancer screening test to better differentiate between those men who need to be biopsied and those who might be spared the procedure," Schwartz said. "It's likely that there are a lot of men out there with elevated PSAs that may be due to elevated parathyroid hormone rather than prostate cancer."

Parathyroid hormone is made by cells of the parathyroid glands, four small glands embedded in the thyroid. Although parathyroid hormone primarily controls calcium levels in the blood, recent research has shown that parathyroid hormone can promote prostate cancer cell growth. The research by Schwartz and Skinner is the first to suggest that parathyroid hormone also promotes prostate cell growth in men without prostate cancer.

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Wake Forest University Baptist Medical Center (www.wfubmc.edu) is an academic health system comprised of North Carolina Baptist Hospital, Brenner Children's Hospital, Wake Forest University Physicians, and Wake Forest University Health Sciences, which operates the university's School of Medicine and Piedmont Triad Research Park. The system comprises 1,056 acute care, rehabilitation and long-term care beds and has been ranked as one of "America's Best Hospitals" by U.S. News & World Report since 1993. Wake Forest Baptist is ranked 32nd in the nation by America's Top Doctors for the number of its doctors considered best by their peers. The institution ranks in the top third in funding by the National Institutes of Health and fourth in the Southeast in revenues from its licensed intellectual property.
