Drop in testosterone tied to prostate cancer recurrence

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Men whose testosterone drops following radiation therapy for prostate cancer are more likely to experience a change in PSA levels that signals their cancer has returned, according to new research from Fox Chase Cancer Center. The findings will be presented on October 29 at the American Society for Radiation Oncology's 54th Annual Meeting.

Specifically, men whose testosterone fell following various forms of radiation therapy were more likely to experience an increase in prostate-specific antigen (PSA)—often the first indication the cancer has recurred.

"The men who had a decrease in testosterone also appear to be the men more likely to see an increase in PSA after treatment," says study author Jeffrey Martin, MD, resident physician in the Department of Radiation Oncology at Fox Chase.

In theory, doctors may one day be able to use testosterone levels to guide treatment decisions, says Martin. "For men with a decrease in testosterone, doctors might intervene earlier with other medications, or follow their PSA more closely than they would otherwise, to spot recurrences at an earlier time."

Martin and his colleagues decided to conduct the study because there is limited information regarding testosterone levels after radiation treatment and what it means for prognosis. To investigate whether a decrease in testosterone has any clinical effects, Martin and his

colleagues reviewed medical records from nearly 260 men who received radiation therapy for prostate cancer between 2002 and 2008. The men were treated with either brachytherapy, in which doctors insert radioactive seeds in the prostate, or intensity modulated radiation therapy (IMRT), in which an external beam of radiation is directed at the prostate.

The researchers found that testosterone levels tended to decrease following both forms of radiation therapy. And men who experienced a post-radiation drop in testosterone— particularly a significant drop—were more likely to see their PSA levels rise during the follow-up period.

Still, an increase in PSA—known as biochemical failure—was relatively rare, the authors found. "Only 4% of patients with low-risk prostate cancer had biochemical failure at five years," says Martin.

Even though researchers have seen testosterone decrease following another form of radiation, these latest findings are still somewhat surprising, says Martin, because testosterone is believed to drive prostate cancer. In fact, some patients with advanced forms are prescribed hormone therapy that attempts to knock down testosterone.

"Seeing that a drop in testosterone is tied to recurrence is kind of a surprising result," says Martin. "We don't necessarily know what this means yet. I think the relationship between testosterone levels following radiation therapy and prognosis needs more study, and until then it's premature to say this is something patients should ask their doctors about."

This was a small study that needs to be validated in a larger group of men before doctors begin basing their predictions of recurrence on patients' testosterone levels, he cautions. "I think the link between

testosterone and PSA needs more study, in a larger set of patients."

Provided by Fox Chase Cancer Center

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