Tests may someday show which breast, prostate cancers will turn aggressive

October 28 2013, by Dennis Thompson, Healthday Reporter

'Markers' in blood, tissue might help determine best treatment for each patient, studies suggest.

(HealthDay)—Doctors believe they have found telltale signs that can indicate whether breast or prostate malignancies will remain dormant or develop into aggressive cancers.

These indicators—called "biomarkers"—are found in the blood or tissues of people with breast or prostate cancer. Researchers hope to one day use them to develop tests that will determine the cancer treatment each patient will need.

"It's a dream, I would say, at the moment. And it's a hope," Dr. Clifford Hudis, president of the American Society of Clinical Oncology (ASCO), said of the potential for using biomarkers to help determine a person's

risk of aggressive cancer. "But it's not yet clinically validated, and it's not useful yet for patients."

Two research teams are scheduled to present their findings on possible biomarkers for breast and prostate cancer this week at the International Conference on Frontiers in Cancer Prevention Research, hosted by the American Association for Cancer Research, at the National Harbor in Oxon Hill, Md.

Doctors with the University of Pennsylvania reported that the presence of a protein called Vav2 in breast tissue might indicate whether a precancerous condition called ductal carcinoma in situ, or DCIS, will develop into invasive breast cancer.

Meanwhile, Johns Hopkins researchers said chromosomes in a man's blood might provide evidence that a prostate cancer will develop in an aggressive manner.

There is widespread concern that in both DCIS and prostate cancer, doctors tend to overtreat patients.

Two-thirds of DCIS cases never progress to full-fledged invasive cancer, ASCO's Hudis said, "which means when we treat DCIS, we are treating many people who would never have developed invasive cancer."

And few men with prostate cancer actually die as a result of the cancer, which has prompted much debate over whether doctors should treat it, said William Phelps, program director for the American Cancer Society. The available treatments often lead to unpleasant side effects such as incontinence and impotence.

"The treatments themselves are not very good," Phelps said of prostate cancer. "If the treatments were fairly nondamaging, you'd just say, 'Well,

let's treat everybody.'"

The Pennsylvania researchers examined 211 remnants of tissue samples that had been taken to diagnose breast cancer. Of the samples, 42 were normal breast tissue, 71 were DCIS and 98 were invasive breast cancers.

DCIS involves the presence of abnormal cells inside a milk duct in the breast. In "pure" DCIS, the cells have not become cancerous and started to spread, said senior research investigator Marina Guvakova, an adjunct assistant professor in the department of surgery at the University of Pennsylvania.

However, there also are forms of DCIS that involve either fully invasive cancer or micro-invasive cancer, in which fewer than 10 percent of the abnormal cells have spread beyond the original tumor.

The doctors found that the amount of Vav2 in pure DCIS is as low as in normal breast tissue, but that presence of the protein gradually increased in DCIS with micro-invasive cancer. The highest levels of Vav2 were found in DCIS with invasive cancer.

"Those lesions are twice as likely to have associated invasive breast cancer as lesions with low expression of Vav2," Guvakova said.

Statistical analysis revealed that the ability of Vav2 to predict progressive cancer in DCIS was 0.71. A value of 1 means the marker has a perfect discriminating power, and a value of 0.5 means that the marker's discriminating power is no better than chance.

"It is, in statistical terms, considered a very good predictor," Guvakova said. "It's definitely not by chance."

Their findings have not been published, but once that is accomplished

the team will begin designing a study that would attempt to predict the behavior of DCIS in current patients, she said.

The Johns Hopkins research into prostate cancer focused on telomeres, which are sequences of genetic material located at the ends of chromosomes, that protect them. They function in much the same way that the plastic tips at the ends of a shoelace protect the lace from unraveling.

Doctors examined the DNA in immune cells drawn from blood samples provided by 441 men who later developed prostate cancer, as well as 421 men who did not develop prostate cancer.

The researchers found that among the men who developed prostate cancer, those with the shortest telomeres in their immune cell chromosomes were more than twice as likely to have developed aggressive prostate cancer compared to those men who had the longest telomeres.

Smoking appears to play a strong role. When the researchers narrowed their analysis down to current or former smokers, they found that those with the shortest telomeres in their immune cells were more than four times as likely to have developed aggressive prostate cancer.

"We don't yet know why having short telomeres in blood leukocytes [white blood cells] seems to be associated with risk of aggressive prostate cancer," researcher Elizabeth Platz, a professor in the department of epidemiology at Johns Hopkins Bloomberg School of Public Health in Baltimore, said in a conference news release.

"It may tell us about a person's exposure to factors that increase their risk of prostate cancer, or it may be an indication of an inherent inability to maintain telomere length, which could put them at increased risk for

this disease," Platz said. "If so, it might be that measuring telomere length in blood leukocytes could even predict risk of many different forms of cancer."

Because the studies were presented at a medical meeting, the data and conclusions should be viewed as preliminary until published in a peer-reviewed journal.

More information: For more about breast cancer, visit the U.S. National Cancer Institute.