

In breasts considered 'healthy,' too much of one protein identifies abnormal growth

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By examining tissue removed during breast reduction surgery in healthy women, researchers at Georgetown Lombardi Comprehensive Center have found a molecule they say identified women who had atypical hyperplasia, a potentially precancerous condition in which cells are abnormally increased.

Their findings, presented at the AACR 101st Annual Meeting 2010, suggest that this protein, transforming growth factor beta 1 (TGF- β 1), could be part of a panel of genes and proteins that physicians might one day use to identify women who are at future risk of developing <u>breast</u> cancer. Such a test would allow women at risk to receive appropriate monitoring, counseling, and potential preventive treatment.

"Our study indicates that higher than normal levels of TGF- β 1 in breast cells may be important in the very beginning of the cancer process," says the study's lead investigator, Jose Angel Montero Santamaria, a tumor biology PhD student who is conducting research in the laboratory of Peter Shields, MD, professor in the departments of oncology and medicine and deputy director of Lombardi.

TGF- β 1 is essential for the normal housekeeping of a cell, which requires a balance of cell growth and cell death, Santamaria says. Normally, it exhibits a Dr. Jekyll-like role, controlling normal growth, but once a cell begins to morph toward cancer, TGF- β 1 is over-produced and exhibits its Mr. Hyde side, promoting the malignant transformation process.



In this study, Santamaria examined breast tissue samples donated from 92 healthy women undergoing <u>breast reduction</u> surgery. Santamaria's team examined RNA and <u>protein</u> expression from 75 of these samples. By examining the <u>cells</u> carefully, they were able to identify nine <u>women</u> with proliferative lesions, and a molecular and histological test showed over production of TGF- β 1 in all of these women's breast tissue samples.

"The changes in their tissue can not be seen on a mammogram any other screening process we use today, which is why we are trying to develop a panel of molecular tests that will accurately determine an individual woman's future risk of developing breast cancer," Santamaria says.

Provided by Georgetown University Medical Center

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