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## RSNA Press Release

### Waiting for Biopsy Results May Adversely Affect Health

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OAK BROOK, Ill. — Women who've had a breast biopsy know the anxiety of waiting for the results, but that stress may cause adverse health effects, according to a new study published in the March issue of *Radiology*.

"When women express how taxing it is to have to wait for results, the medical establishment may dismiss their feelings as psychological," said the study's lead author, Elvira V. Lang, M.D., associate professor of radiology at Harvard Medical School and radiologist at Beth Israel Deaconess Medical Center in Boston. "We were able to show that this state of not knowing the diagnosis goes along with biochemical changes which can have adverse effects on wound healing and the immune system."

More than 1.2 million breast biopsies are performed in the U.S. annually, with 80 percent resulting in non-cancerous findings, according to the American Cancer Society. Women experience considerable anxiety while waiting to undergo breast biopsy and while waiting for the results. Dr. Lang and colleagues sought to establish a biochemical marker to assess the physical effects associated with the stress of extended waiting for a final diagnosis after breast biopsy.

For this study, the researchers used cortisol samples collected from the saliva of 126 women during an earlier clinical trial on patient stress during biopsy. Cortisol is a hormone produced by the adrenal gland and is often referred to as the "stress hormone." The production of cortisol is part of the body's natural response to stress. Stress-induced imbalances in cortisol secretion have been associated with impairments to immune response and wound healing.

"Cortisol helps us fight acute stress by adjusting blood pressure, blood sugar and immune response in a good way when needed," Dr. Lang said. "But when stress becomes chronic, cortisol secretion either goes into continuous overdrive or dries up, leaving the immune

#### At A Glance

- Women waiting for breast biopsy results experience biochemical changes which can have adverse effects on the immune system.
- Secretion of cortisol, known as the "stress hormone" is altered during the waiting period between biopsy and diagnosis.
- The study found that cortisol secretion in women with an uncertain diagnosis after biopsy was highly similar to that found in women with a diagnosis of cancer.

system vulnerable and other body functions less well adapted."

The women participating in the study underwent large-core breast biopsy and learned their diagnosis one to six days after the procedure. Salivary cortisol samples were collected on cotton swabs on the day of biopsy and each of the four days following biopsy.

During the period in which the samples were taken, the women learned whether their biopsy results were benign (non-cancerous), malignant (cancerous) or uncertain. By the fourth day after biopsy, 16 patients had learned they had cancer, 37 patients had benign findings and 73 patients had an uncertain diagnosis, because their results had not been communicated yet or they required further diagnostic procedures.

The results showed that cortisol secretion for the women with uncertain results was significantly different than that of the women with benign results and highly similar to secretion levels in the women with malignant results.

The researchers hope that these findings will encourage faster analysis and communication of biopsy results. They counsel women to speak to their doctors about communication procedures before undergoing breast biopsy.

"Women should ask who will communicate their results to them and how long it will take to receive them," Dr. Lang said. "Then they should schedule the biopsy accordingly, taking into account delays over weekends and holidays."

"It is no longer so easy for healthcare providers to overlook the effects of extended waiting and say 'Oh, it's just nerves,'" she added.

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"Large-Core Breast Biopsy: Abnormal Salivary Cortisol Profiles Associated with Uncertainty of Diagnosis." Collaborating with Dr. Lang were Kevin S. Berbaum, Ph.D., and Susan K. Lutgendorf, Ph.D.

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