

Hormone Predicts Ovarian Function After Chemotherapy

Megan Brooks | Jun 09, 2011

June 9, 2011 (Boston, Massachusetts) — For a young woman newly diagnosed with breast cancer, a blood test that measures the anti-Mullerian hormone (AMH) will help predict her ovarian function after chemotherapy, a new study confirms.

Regardless of age, women with higher pretreatment levels of AMH are more likely to retain ovarian function 2 years after a breast cancer diagnosis, the study found.

"By measuring this hormone, we can identify women who are particularly at risk for early menopause after chemotherapy, perhaps allow some individualization of the risk, and help identify women who need to take more aggressive fertility preservation measures," Richard A. Anderson, MD, PhD, reported here at ENDO 2011: The Endocrine Society 93rd Annual Meeting.

Dr. Anderson is a professor of clinical reproductive science at the University of Edinburgh, United Kingdom. The study, conducted by he and a colleague, involved 50 premenopausal women with newly diagnosed early breast cancer. The women were between 29 and 51 years of age (mean age, 42.5 years) at recruitment, and all had regular spontaneous menstrual cycles.

AMH levels were measured before chemotherapy and 1 and 2 years after starting therapy. The women received anthracycline/cyclophosphamide-based chemotherapy; roughly half of the women received a taxane and 64% subsequently received tamoxifen. All of the women kept a menstrual diary for 2 years as an index of ovarian activity.

Rapid Drop in AMH With Treatment

The median AMH level was 0.4 ng/mL before chemotherapy, which fell rapidly with treatment, becoming undetectable (below 0.16 ng/mL) after 1 cycle of chemotherapy in 68% of women.

"These prospective data confirm the markedly accelerated loss of AMH with chemotherapy," Dr. Anderson and colleague note in the meeting abstract.

A low pretreatment AMH level, they report, correlated significantly with amenorrhea after chemotherapy. Women with a pretreatment AMH level below the median (0.4 ng/mL) were 16 times more likely to have stopped menstruating after chemotherapy as women with a pretreatment AMH level above the median. This relationship remained significant after adjustment for age, which tends to lower AMH levels ($P = .03$).

Women whose pretreatment AMH levels exceeded 0.92 ng/mL were approximately 5 times more likely to continue to have ovarian activity after treatment. "Neither age nor [follicle-stimulating hormone] could predict which women were going to have periods 2 years later," Dr. Anderson reported.

Dr. Anderson noted that because the average age of the women in the study was 42 years, it is "important to confirm these findings in a group of younger women who are perhaps in their 20s and 30s. Ideally, in future studies, build in fertility as an outcome — not just ovarian function."

"Exquisite" Test of Ovarian Function

David Seifer, MD, from Maimonides Medical Center in Brooklyn, New York, told *Medscape Medical News* that this study provides "more convincing evidence that this is a good test to be used in the context of premenopausal women undergoing cancer therapy with regard to ovarian function."

Dr. Seifer was not involved in the study, but has studied AMH as a marker of ovarian function.

"AMH is the most sensitive marker, the earliest marker, and probably the only marker that predicts the onset of menopause. It is an exquisite test of ovarian function," he said.

The study was supported by the Medical Research Council. Dr. Anderson and Dr. Seifer have disclosed no relevant

financial relationships.

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