CAN ULTRASENSITIVE AMH ASSAYS DETECT OVARIAN FUNCTION IN OLDER REPRODUCTIVE-AGED WOMEN WITH BREAST CANCER?

Karine Chung, M. D., M. S. C. E[1]., Frank Stanczyk, Ph. D.[1],Lihong Ma, M. D.[1], Mary Sammel, Ph. D.[2], Carolyn Haunschild[3], Irene Su, M. D., M. S. C. E.[3]

(1) Division of Reproductive Endocrinology and Infertility, University of Southern California
(2) Department of Biostatistics and Epidemiology, University of Pennsylvania (3) Division of Reproductive Endocrinology and Infertility, University of California , San Diego

USC Fertility
Alternatives for Today & Tomorrow

Background and Objective

- AMH is an important marker of ovarian reserve
- Clinical utility is limited when levels are undetectable by currently available assays.
- Ability to measure ovarian reserve in advanced reproductive-aged women with breast cancer may influence decisions related to fertility and cancer treatment.
- **Objective:** To evaluate the ability of 3 commercially-available AMH immunoassays to measure pre- and post-chemotherapy AMH levels in breast cancer patients of older reproductive age.

Materials and Methods

- Cross-sectional study
- Breast cancer patients <age 45 underwent blood draws prior to chemotherapy and every 6 months thereafter for up to 5 years.
- Serum samples assayed for AMH using
  1. AMH Gen II (Beckman Coulter, Brea, CA)
  2. Ultrasensitive AMH (Ansh Labs, Webster, TX)
  3. PicoAMH (Ansh Labs, Webster, TX)
- Symmetry test was used to compare proportions of detectable AMH levels by assay.

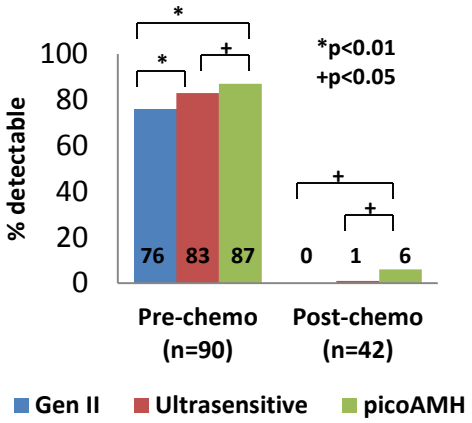
Table 1: AMH immunoassay characteristics

Assay	Standard Curve Range (ng/mL)	LOD (ng/mL)
Gen II	0.16 - 22.5	0.08
Ultrasensitive	0.1 – 14	0.07
picoAMH	0.006 – 0.74	0.01

Results

Table 1: Cohort characteristics (n=90)	
Age, mean (SD)	38.3 (5.1)
Race, n(%)	
White	65 (72)
Black	15 (17)
Other	10 (11)
BMI, mean (SD)	25.1 (6.5)
Periods past year	
>10	79 (87)
4-9	4 (5)
1-3	2 (2)
Current smoking, n(%)	4 (4)
Cancer Stage, n(%)	
I/II	71 (79)
II	47 (52)
Cancer histology	
Ductal	82 (91)
Lobular/mixed	8 (9)
Gen II (ng/mL) Median (IQR)	0.92 (0.38-1.73)
Ultrasensitive (ng/mL) Median (IQR)	1.68 (0.99-3.29)
picoAMH (ng/mL) Median (IQR)	1.52 (0.80-3.22)

Figure: Proportion of samples with AMH levels above LOD by assay. Number of samples in each box



- Post-chemotherapy samples in 19 participants with ≥ 12 months amenorrhea
- By PicoAMH assay, median (range) AMH levels in detectable samples post-chemotherapy (n=6) were 7.8 pg/mL (0.002-0.029).

Conclusions

- Ultrasensitive and picoAMH assays provide detection of AMH at very low levels.
- PicoAMH is significantly more likely to detect AMH (both pre- and post-chemotherapy) in breast cancer survivors than Ultrasensitive and AMH Gen II assays.
- Post-chemotherapy AMH may indicate residual ovarian function even in the absence of menses.
- HD058799, MRSG-08-110-01-cce