

Analysis of two assays for the measurement of AMH in women with low ovarian reserve



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Introduction

Anti-Mullerian hormone (AMH) is increasingly used as a marker of the functional ovarian reserve. However, there is a lack of standardization of the available assays, which may be important at the lower extreme of the working range.

We assessed the performance and clinical utility of the assay kits produced by *Ansh Labs* and *Beckman-Coulter* (Gen II assay: BCG_II) in two groups of women with low ovarian reserve:

- following chemotherapy for breast cancer
- about to undergo IVF with low AMH values (<7.5 pmol/L [<1.1 ng/ml]).

Methods

Serum samples were taken from women with breast cancer (n=57) after their first course of chemotherapy and at 1 year after diagnosis (90 samples).

The second group (n= 69) were undergoing IVF after screening identification of a reduced ovarian reserve (AMH < 7.5 pmol/L). The test serum was taken 2 days prior to starting stimulation, using a Flare protocol with 225 IU rFSH daily.

Stored (-20°C) samples were analysed simultaneously using both the BCG_II (Beckman Coulter Ltd, UK) and Ansh (Ansh Labs LLC, Webster, Texas, USA) assays for AMH.

The BCG_II assay was performed in kits prior to the protocol modification of summer 2013.

Results

The limit of sensitivity of the two assays was 1.5 pmol/l (0.2 ng/ml) for BCG_II and estimated to be 0.2 pmol/L (0.03 ng/ml) for the Ansh test.

The absolute values for AMH correlated closely between the two assays (r=0.96 and 0.92 in the 2 groups of women), although the Ansh absolute values were an average of 34% higher.

There remained a good relationship even at very low values (<4 pmol/l), r=0.81.

The Post-chemo group

The Ansh assay was able to detect AMH in a greater proportion of samples than BCG_II in the post chemo group (table 1).

Table 1. Cases with detectable AMH (post chemo group)

	Detectable AMH	
	(N)	(%)
BCG_II	52	58
Ansh	63	70

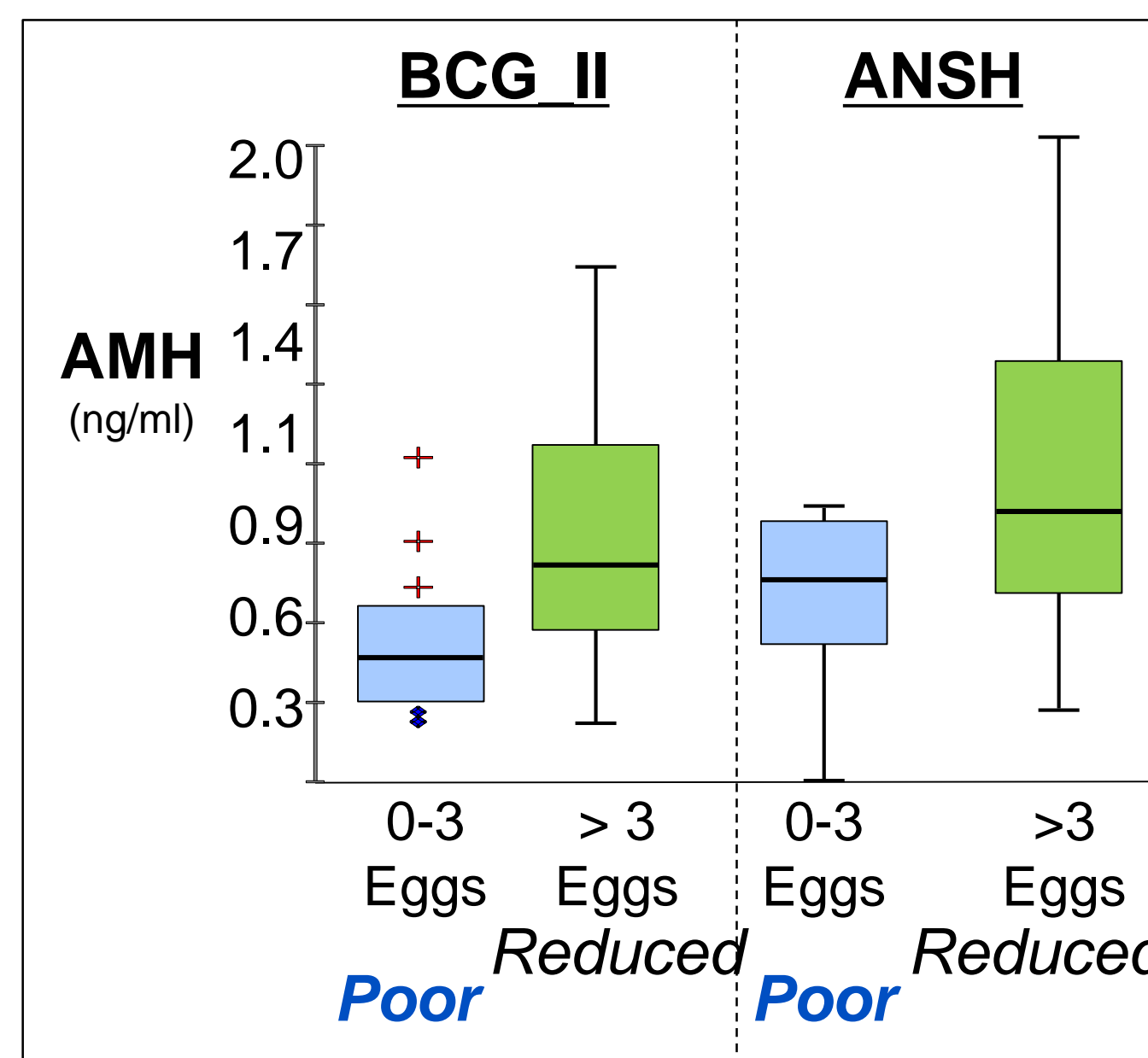
The IVF cohort

In the pre-IVF group, the correlation with oocyte yield was strong (p<0.001) with both assays:

r = 0.67 (BC_II) and 0.57 (Ansh).

The ability to discriminate between 'poor' response (0-3 eggs) and 'reduced' response (>3 eggs) was similar in the 2 assays as shown in Figure 1.

Figure 1. Ability to discriminate between 'poor' and 'reduced' response is similar in both assays



Discussion

- Absolute values of AMH were higher with the Ansh assay (approx 30%).
- It would be anticipated that absolute values achieved by the new modified BCG_II assay would now be higher than the Ansh assay

- There was a very close correlation between the 2 assays, even at the extreme low end.

- The Ansh assay showed greater sensitivity. This may be of clinical value in some situations - eg post chemotherapy.
- However, it does not appear to be of clinical value prior to IVF

- This latter observation may be because the BCG_II assay sensitivity was designed to explore AMH in the normal reproductive years, and low egg yields after ovarian stimulation represent a 'normal' phenomenon.

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