Anti-Müllerian Hormone (AMH) and Antral Follicle Count (AFC): predictors of oocyte yield in a fertility preservation population.

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Introduction

Fertility preservation offers patients the chance to protect their fertility for medical or social reasons. AMH and AFC have been shown to be independent predictors for ovarian response to recombinant FSH (rFSH) stimulation and are used to guide optimum management of patients undergoing fertility preservation[1,2,3].

Aim

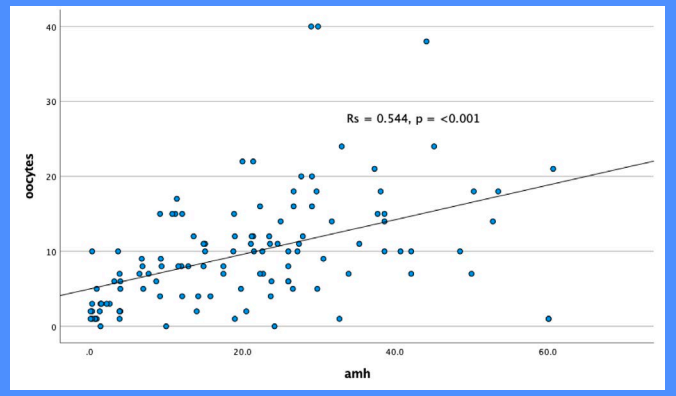
To compare the relationship between AMH and AFC with oocyte yield in a fertility preservation population.

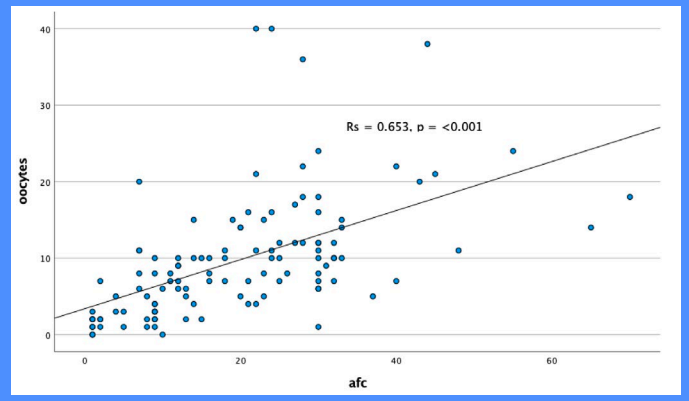
Methods

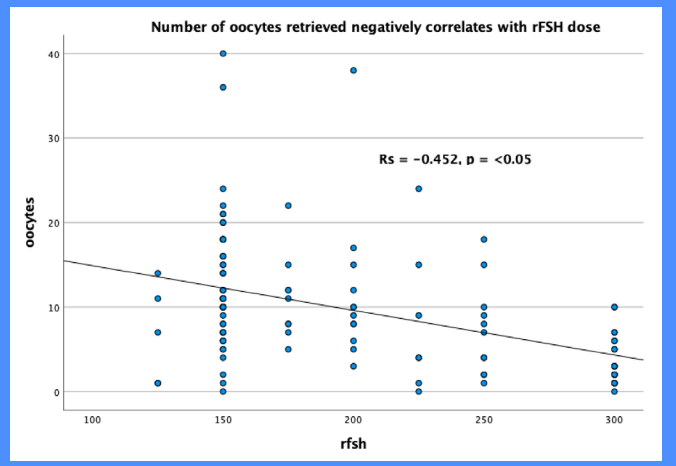
This retrospective audit of medical records included 103 women undergoing oocyte retrieval for fertility preservation in a single centre from January 1st 2020 to June 30th 2022. Patients post-gonadotoxic treatment were excluded. AMH was measured by electrochemiluminescence immunoassay (Roche). AFC was measured using transvaginal ultrasound. Data were analysed using SPSS software. Ethics approval was obtained (ETH01521).

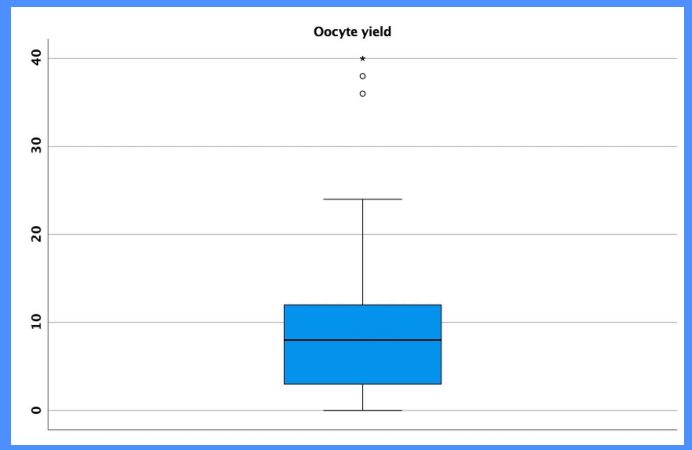
Results

Oocyte yield negatively correlated with age [Rs=-0.236, p=<0.05] and rFSH dose [Rs=-0.452, p=<0.05]. Mean AMH was 20.9pmol/L [range=<0.1-60.7] and mean AFC was 21.2 [range=1-70]. When adjusted for age, BMI and rFSH dose, a 1pmol/L increase in AMH only increased oocyte yield by 1.7% (p=0.004). A 1 unit increase in AFC increased oocyte yield by 2% (p=<0.001). Number of oocytes retrieved ranged from 0-40 but were largely distributed in an optimal range [median=8, IQR=9.5 (3-12.5)]. There was no significant change in number of oocytes retrieved by medication group or co-morbidity.









References
(1) Kotanidis et al. The use of serum antimüllerian hormone (AMH) levels and antral follicle count (AFC) to predict the number of oocytes collected and availability of embryos for cryopreservation in IVF. *J Endocrinol Invest.* 2016; 39, 1459–1464.
(2) Bonilla-Musoles et al. Predicting ovarian reserve and reproductive outcome using antimüllerian hormone (AMH) and antral follicle count (AFC) in patients with previous assisted reproduction technique (ART) failure. *Clin. Exp. Obstet. Gynecol.* 2012; 39(1), 13–18.
(3) Stamatina Iliodromiti et al. Technical and performance characteristics of anti-Müllerian hormone and antral follicle count as biomarkers of ovarian response. *Human Reproduction Update.* 2015; 21(6), 698–710.

Discussion

Our study demonstrates that oocyte yield at retrieval was closely grouped despite varied patient demographics and ovarian reserve biomarkers. This highlights how stimulation cycle design through targeted rFSH dosing can minimise the effects of AMH and AFC on oocyte yield. Our data do not reflect on the analytical variability of AMH or interobserver variability of AFC. Further research is required to validate optimisation methods for poor responders to ovarian stimulation.