P-599 random antral follicle count, performed at any day of the menstrual cycle, demonstrates the same predictive value for ovarian response in in vitro fertilization cycles

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Study question: Does antral follicle count (AFC) retains its predictive value for ovarian response to stimulation for in vitro fertilization (IVF) throughout the whole menstrual cycle?

Summary answer: AFC is strongly correlated to anti-mullerian hormone (AMH) and highly predictive of good ovarian response whatever the day of cycle the ultrasound is performed.

What is known already: Usually performed in the early follicular phase (at day 2-3 of the menstrual cycle), AFC and AMH are the most accurate markers of ovarian reserve. They are routinely used to predict ovarian response to ovarian stimulation for IVF and eventually to individualize the gonadotropin starting dose.

Study design, size, duration: Retrospective cohort study performed between January, 2017 and December, 2019.

Participants/materials, setting, methods: 410 consecutive women aged 20 to 42 years were included. Random AFC (r-AFC) was performed during the fertility workup whatever the day of their menstrual cycle was: early follicular phase i.e. day 1 to day 6 (eFP-AFC), mid follicular phase i.e. day 7 to 12 (mFP-AFC) and luteal phase i.e. day 13 or after (LP-AFC). A second AFC was performed before the start of the stimulation (SD1-AFC). AMH was measured in the early follicular phase.

Main results and the role of chance: Random AFC (r-AFC) was correlated to AMH ($r=0.692$; $p<0.001$), SD1-AFC ($r=0.756$; $p<0.001$) and number of oocytes retrieved ($r=0.491$; $p<0.001$). When regarding AFC depending on the cycle day group, the correlation with AMH was significantly higher for the LP-AFC, (LP-AFC) ($r=0.853$) than for the eFP-AFC ($r=0.657$; $p<0.001$) and for the mFP-AFC ($r=0.668$). The correlation with SD1-AFC was similar regardless of the time of performance of r-AFC ($r=0.739$, 0.783, 0.733, respectively for eFP, mFP and LP-AFC). Moreover, the ROC analysis showed the same predictive value for good ovarian response (more than 6 oocytes retrieved) for the eFP-AFC, mFP-AFC and LP-AFC (AUC 0.73, 0.75 and 0.84 respectively) as well as for AMH and SD1-AFC (AUC 0.74 and 0.74, respectively).

Limitations, reasons for caution: This is a retrospective analysis, however data were prospectively collected and the method for ultrasound acquisition of AFC was standardized.

Wider implications of the findings: The absence of significant variation of AFC across the menstrual cycle allows to its random performance. Ultrasound performed besides early follicular phase discloses informations on ovaries, the uterus and the endometrium. It is more comfortable and convenient for women and physicians by limiting targeted appointment during menstruation and reiterated examination.

Trial registration number: not applicable