

OVARIAN PRIMORDIAL AND PRIMARY FOLLICLE DENSITY AND SERUM AMH CONCENTRATION – AN ANALYSIS BASED ON >1.000 OVARIAN TISSUE AND SERUM SAMPLES CRYOPRESERVED BEFORE GONADOTOXIC THERAPY

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Abstract Body

Introduction

Ovarian reserve is mainly determined through AMH, which however has its limitations as a prognostic factor - possibly also in predetermination the required amount of ovarian tissue for transplantation after cryopreservation. We therefore studied if the follicle density of primordial/primary follicles better reflects ovarian reserve than AMH.

Materials & Methods

1.068 female patients (3-45y) with malignant (n=955) / benign (n=48) diseases cryopreserved ovarian tissue from 03/ 2011 – 09/ 2016 at the cryobank Bonn, Germany (n=65 unknown diseases). Three standardized 2-mm biopsies, obtained from different areas of prepared ovarian cortex were collected, follicle density analyzed after tissue digestion and calcein staining (counting of fluorescent/viable follicles) and AMH measured (serum taken at the timepoint of removal of ovarian tissue). Nomograms of follicular/AMH densities were drawn in relation to age, correlation analysis of follicle density vs. AMH was performed and AMH/follicle densities were analyzed in different disease groups.

Results

Follicular density and AMH are significantly correlated ($r=0.241$, $p<0.0001$). Nomogram of AMH showed maximum mean values in the age group of 6-10y (2.38 ng/ml) and 16-20y (2.34 ng/ml). Between these both age groups, AMH decreased to 1.88 ng/ml and with further increasing age. The mean follicular density also decreased with increasing age and was higher in the groups 16-20y (187.08) and 21-25y (129.62) in comparison to the group 11-15y (122.94).

In relation to different disease groups: highest mean follicle density showed patients with sarcoma diseases (287.84) - mean age 19.71y, AMH 3.58 ng/ml, the highest mean AMH level showed patients with gastrointestinal cancers (4.03 ng/ml): mean age 30.50y and mean follicle density 118.77.

Conclusion

Follicular density and AMH levels diverge at young age, probably due to reduced ovarian activity in pre-pubertal girls and different ovarian sizes/surfaces in childhood and adulthood, additional in different disease groups. According to this study, the follicle density could better reflect the ovarian reserve.