Assessment of ovarian function and reserve based on hormonal parameters, ovarian volume, and follicle count in euthyroid girls with Hashimoto thyroiditis

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Background and Aim: Among autoimmune disorders, autoimmune thyroid diseases are the most prevalent pathologies associated with premature ovarian failure. We aimed to investigate the ovarian function and reserve in euthyroid adolescents (TSH<2.5 mIU/L) diagnosed with Hashimoto thyroiditis (HT).

Methods: Thirty adolescent girls (mean age 15.1±1.4 years) newly diagnosed as HT with presence of high thyroid antibodies with gland heterogeneity in ultrasound and age-matched 30 healthy female subjects were enrolled the study. Anti-ovarian antibody, LH/FSH ratio, estradiol, anti-mullarian hormone (AMH), inhibin-B, and total testosterone were measured and the follicle count, ovarian volumes and uterine length were evaluated using pelvic ultrasound.

Results:
1. All patients were euthyroid and had normal thyroid volume.
2. 33% (n:10) of the patients had higher ovarian antibody above the limits without any ovarian dysfunction.
3. There was no significant difference between the girls with HT and healthy controls regarding LH/FSH ratio, estradiol and inhibin-B levels.
4. Anti-ovarian antibody (365±311 vs. 168.8±148 ng/mL, p: 0.022), AMH (p:0.007) and total testosterone levels were higher in HT group than the control group (p:0.003).
5. There were no significant mean measurements for total ovarian follicle count, total ovarian volume and uterine length between the groups.
6. Anti-ovarian antibody was found to be positively correlated with LH/FSH ratio (r: 0.271, p: 0.036), AMH (r: 0.845, p: 0.0001) and Inhibin-B (r: 0.633, p:0.0001) in HT group.

Conclusion:
1. In our study, ovarian volume and total AFC of the all patients and control subjects had within normal reference ranges according to age.
2. In the study, we did not detect any pathology related to PCOS disorder in adolescents with HT.
3. The patients had higher total testosterone levels than controls although their LH/FSH ratio and estradiol levels in normal limits.
4. Increased total testosterone and AOAb measurements may be an early and sensitive sign of PCOS or DOR.
5. In conclusion, this study demonstrated that the HT girls had normal ovarian reserves based on measurements of AMH, inhibin B, FSH, LH/FSH ratio, estradiol and ovarian follicle counts.