

AMH AND FSH SIGNALING IN THE OVARY OF ADULT PIG AFTER NEONATAL ANDROGEN AND ANTI-ANDROGEN EXPOSURE

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Abstract Body

Anti-Müllerian hormone (AMH) plays an inhibitory role in the initial recruitment of primordial follicles, thus preventing premature exhaustion of the ovarian reserve. AMH also modulates the responsiveness of growing follicles to follicle-stimulating hormone (FSH), thus contributing to the inhibition of premature cycling recruitment of small antral follicles. Since, we have shown that androgens play crucial role in the assembly and development of follicles in the neonatal porcine ovary, here we studied the effects of neonatal androgen or anti-androgen exposure on AMH and FSH signaling in the adult ovary. Piglets were injected with testosterone propionate (TP, androgen activity, 20 mg/kg bw), flutamide (FLU, antiandrogen, 50 mg/kg bw), or corn oil (control) between postnatal days 1 and 10 (n = 5/group). Blood samples were collected and ovaries were obtained from sexually mature gilts between days 8 and 11 of the estrous cycle. From each ovary, small antral follicles (3-5 mm) and cortical fragments for enzymatic isolation of preantral follicles were excised. Plasma AMH and FSH was determined using Enzyme ImmunoAssay kit. To assess AMH receptors (ACVR1, BMPR1A, BMPR1B, and AMHR2) and FSH receptor (FSHR) expression qPCR and Western blot were performed. Data were analyzed using Mann-Whitney U-test and the differences were statistically significant when $p < 0.05$. Both TP- and FLU-treatment decreased plasma AMH and FSH concentration. In preantral follicles, BMPR1A, BMPR1B, AMHR2, and FSHR was up-regulated by TP, while FLU administration resulted in up-regulation of BMPR1B and AMHR2 when compared to control. In small antral follicles, all examined AMH receptors were up-regulated after neonatal FLU treatment in comparison to control. Overall, neonatal exposure to androgen or anti-androgen may affect folliculogenesis in adult pigs *via* long-term effect on AMH and FSH level as well as their receptor expression in the ovary of adult pigs. Support: National Science Centre, Poland (Grant No. 2015/19/B/NZ9/00420)