

256 Involvement of cyclic AMP on oocyte maturation in rabbits. Y.Yoshimura, Y.Nakamura, T.Oda*, T.Ohno*, H.Yamada, M.Ando, Y.Ubukata, M.Suzuki, Dept. Obst. and Gynec., Kyorin Univ. Sch. Med., Tokyo, *Dept. Obst. and Gynec., Tokyo Dental College, Ichikawa General Hosp., Chiba.

The involvement of cyclic AMP (cAMP) in mammalian oocyte maturation was assessed using cultures of rabbit cumulus-oocyte-complexes (COC) and in vitro perfused rabbit ovaries. COC were cultured in Brackett's medium with or without dibutyryl cyclic AMP ((Bu)₂cAMP) at 10^{-3} ~ 10^{-5} M for 12h. At 4h and 6h spontaneous maturation was significantly inhibited by (Bu)₂cAMP. When ovaries were continuously perfused in vitro for 12h with (Bu)₂cAMP, neither ovulation nor maturation of follicular oocytes occurred. When ovaries were perfused in vitro with or without (Bu)₂cAMP for the first 2h and then transferred to medium without (Bu)₂cAMP for additional 10h, transient exposure to (Bu)₂cAMP stimulated meiotic maturation of follicular oocytes. Both intrafollicular and oocyte cAMP concentrations significantly increased within 1h following hCG exposure and then declined abruptly. Meiotic maturation was initiated within 2h after hCG, concomitantly with the decrease of intrafollicular and oocyte cAMP levels. In conclusion, transient, but not continuous, elevation of cAMP after gonadotropin surge may be required for the initiation of oocyte maturation.

257 Effect of endothelin-1 and endothelin-3 on steroidogenesis by rat ovarian follicles and a proposal of ovarian ERAANPS. S.Usuki, A.Hosokawa, H.Iwasaki, Dept. Obst. and Gynec., Institute of Clinical Medicine, University of Tsukuba, Ibaraki.

Ovaries of rats injected with 10 IU of pregnant mare serum gonadotropin at 27 days of age were resected at 28 and 29 days of age, incubated, and perfused with media containing endothelin-1 (ET-1), endothelin-3 (ET-3), and dibutyryl cyclic adenosine 3', 5'-monophosphate. Estrogen, progesterone (P), testosterone (T) and cyclic adenosine 3', 5'-monophosphate (cAMP) were assayed by radioimmunoassay. ET-1 or ET-3 significantly increased the concentration of estradiol (E₂), P and T in media, having a predominant production of P. ET-1 and ET-3 also augmented the release of E₂, P and T from ovaries perfused. ET-1 was more effective than ET-3. Furthermore, ET-1 and ET-3 caused a significant increase in the cAMP levels in ovaries incubated. These results suggest that ET-1 or ET-3 stimulates ovarian steroidogenesis at least through a cAMP or post cyclic AMP system. Furthermore, combined with our previous reports on the existence of renin-angiotensin-atrial natriuretic peptide system (RAANPS) in the ovary, we propose the ERAANPS (endothelin-RAANPS) in ovaries.

258 Influence of progesterone on ovarian 15-HETE during ovulation in the gonadotropin-primed immature rat. N.Tanaka, L.L.Espey*, H.Okamura, Dept. Obst. and Gynec., Kumamoto Univ. Med. Sch., Kumamoto, *Trinity Univ., Texas, USA.

We previously reported the role of 15-hydroxyeicosatetraenoic acid (15-HETE), one of the lipoxygenase products, and progesterone (P) in the ovulatory process. In the present study, We investigated the relation between 15-HETE and P during ovulation in the PMSG/hCG-primed immature rats. Ovarian levels of 15-HETE and P increased significantly at 4 h after hCG and reached a peak at 10 h. When 3.16mg/rat of epostane (EPO), an inhibitor of 3 β -hydroxysteroid dehydrogenase, was administered at various times before and after hCG, the maximum inhibition of ovulation and ovarian 15-HETE occurred at 3 h after hCG. On the other hand, the greatest inhibition of ovarian P and estradiol occurred just before EPO injection. Ovarian prostaglandin E and F were slightly suppressed. Exogenous administration of P (0.4-50mg/rat) recovered the EPO-induced inhibition of ovulation and ovarian 15-HETE in a dose-dependent manner. The results suggest that P plays an important role in the initial 4 hours of the ovulatory process by influencing the ovarian levels of 15-HETE. (This study was supported by the Lalor Foundation and NIH Grant HD 21649.)