ISGE
GYNECOLOGICAL ENDOCRINOLOGY
THE 18TH WORLD CONGRESS
7-10 MARCH 2018 FLORENCE, ITALY

Different pathways of P-receptor complex in the process of ovulation

L Devoto (CL) [1]

Progesterone (P4) is an endogenous steroid mainly secreted by granulosa lutein cells of the Corpus Luteum but also plays a critical intra ovarian function throughout late follicular development. Thus, the early rise in P4 is a result of increased P450 scc and P450cc17 expression in theca cells following the early LH stimulus. These data suggest that the contribution of P450cc 17 theca may be critical to the follicular P4 production during the pre-ovulatory period. Progesterone binding to its receptor in granulosa cells resulting in specific signaling that enhances the action of FSH and LH rise on follicular rupture. The principal genes regulated by the PR-complex encode growth and transcription factors and several proteases like ADAMTS and Cathepsin-L implicated in follicular rupture. Our laboratory provided evidence of transient PR expression in human GC during the peri-ovulatory period, vanishing after the LH surge.

In humans, there is limited data linked follicular rupture and matrix metalloproteinase (MMPs) expression. Our hypothesis is LH, HCG and FSH increase PR expression in granulosa cells through different signaling pathways, leading to an increased expression of ADAMTS-1 and MMP3/10, which may mediate follicular rupture through the transcription factor, HIF1A. Human granulosa cells were isolated from follicular aspirates from normal women. Progesterone receptor and HIF1A expression was assessed by immunofluorescence, and PKA-PKC-PI3K- ERK1/2, ADAMTS-1 and MMP3/10 expression by Western blot in pre-ovulatory and in cultured granulosa cells. Interestingly HCG, LH and FSH regulate PR expression and activate PKA, PKC, PI3K and ERK1/2 signaling pathways in granulosa cells but PR expression is only mediated by PKA, PKC and ERK pathways. HCG, FSH and LH regulated MMPs expression through PR. Moreover, HCG-progesterone- receptor-dependent HIF1A expression stimulated MMP3/10 expression but not that of ADAMTS-1. These results suggest differential downstream OF PR signaling, as PR regulates MMP3/10 expression via HIF1A, which is not involved in ADAMTS-1 expression. In addition these data involved FSH a co-Factor in the process of ovulation.

[1] Research Institute for the Mother and Child. Department of Obstetrics and Gynecology. Faculty of Medicine. University of Chile. Santiago Chile.