

P18. Role of adiposity over ER α and ER β phosphorylation in reproductive women during ovarian cycle

R E Ramirez Orozco (MX) [1], N Figueroa Vega (MX) [2], J M Malacara (MX) [3]

Context: Phosphorylation of estrogen receptors (ERs) predominantly on Ser-118 on ER α and Ser105 on ER β , is enhanced in response to estradiol binding. Evidence links ERs phosphorylation with inflammation, and disease progression. Obesity modulates estrogen synthesis and ERs action. Obese women are at increased risk of infertility and cancer. Phosphorylation of ERs during ovarian cycle has not been examined in detail, information needed to understand the ER activation and the study of estrogen related clinical conditions such as cancer and metabolic alterations. **Objective:** To study the influence of adiposity in estrogen receptors phosphorylation patterns during the ovarian cycle at reproductive age. **Methods:** A cross-sectional study of women at reproductive age at follicular, luteal and ovulatory phases. **Participants:** Thirty women 20 to 40 years of age in the three menstrual cycle phases, were classified according to BMI in normal-weight (n=15; BMI 18.5-24.9kg/m²), and obese (n=15; BMI >30kg/m²) were enrolled. **Interventions:** skin biopsy, using a 4 mm dermatologic punch at the gluteal area. **Main Outcome Measures:** Anthropometric parameters, body composition and gynecological history were registered. Serum levels of fasting glucose and lipids profile were measured. FSH concentrations were quantified by chemiluminescence immunoassay (CLIA). Phosphorylation of ER α (Ser118) and ER β (Ser105) was determined by means flow cytometry. **Results:** The levels of ER α phosphorylation increased from follicular phase to ovulatory: [1377 (498-5116) MFI] vs [9122 (4601-10969) MFI], (p<0,007). ER β also showed the same trend: [(771) 698-1224 MFI] vs [3786 (2504-4454) MFI], (p<0.03). The group with the higher fat levels showed decreased phosphorylation of ER α after stimulation with estradiol (E2) [7103 (1263.5-9225.5) MFI] compared to normal adiposity group [11422 (9450-15559) MFI], (p<0.03) in each ovarian cycle phase. We confirmed an inverse association of body fat percentage with phosphorylation intensity levels of both ERs [ER α : (r=-0.50; p<0,008); ER β : (r=-0.52; p<0,006)]. **Conclusion:** Phosphorylation increased at the peri-ovulatory period, possibly as a result of the hormone environment. On the other hand, women with normal-weight had higher levels of phosphorylation, but obese women showed downregulation of ER phosphorylation. The complete significance of ER phosphorylation, should be revised under other physiological conditions.

[1] Universidad de Guanajuato, Leon, [2] Universidad de Guanajuato, Leon, [3] Universidad de Guanajuato, Leon