Female sexual hormones and cardiovascular risk protection, endothelial progenitors circulating cells and menopause

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Introduction: Endothelial progenitor cells (EPCs) are circulating mononuclear cells that participate in angiogenesis. The aim of this study was to determine the influence of HRT on the number and function of EPCs, and to investigate their relationship with circulating concentrations of sex steroids.

Methods: Twelve healthy, premenopausal, non-smoking women with menstrual cycle were studied over a total abdominal hysterectomy with bilateral salpingo-oophorectomy. Venepuncture was performed in twelve patients the day before surgery and every one month for three months. EPCs were quantified by flow cytometry and the colony-forming unit (CFU-EPC) functional assay. Circulating concentrations of steroids hormones were measured by immunoassays.

Results: The number of circulating EPCs is decreased after bilateral salpingo-oophorectomy, and increased in those with hormone replacement therapy compared to women without HRT. There is a significant positive correlation between serum steroid levels and number of circulating EPCs in postmenopausal women.

Conclusions: EPCs are important for the repairing of vascular injury; HRT induce an increase of this progenitor cells. There is a synergistic relationship between estrogen replacement therapy and progesterone replacement therapy.