Polycystic ovary syndrome and autoimmunity

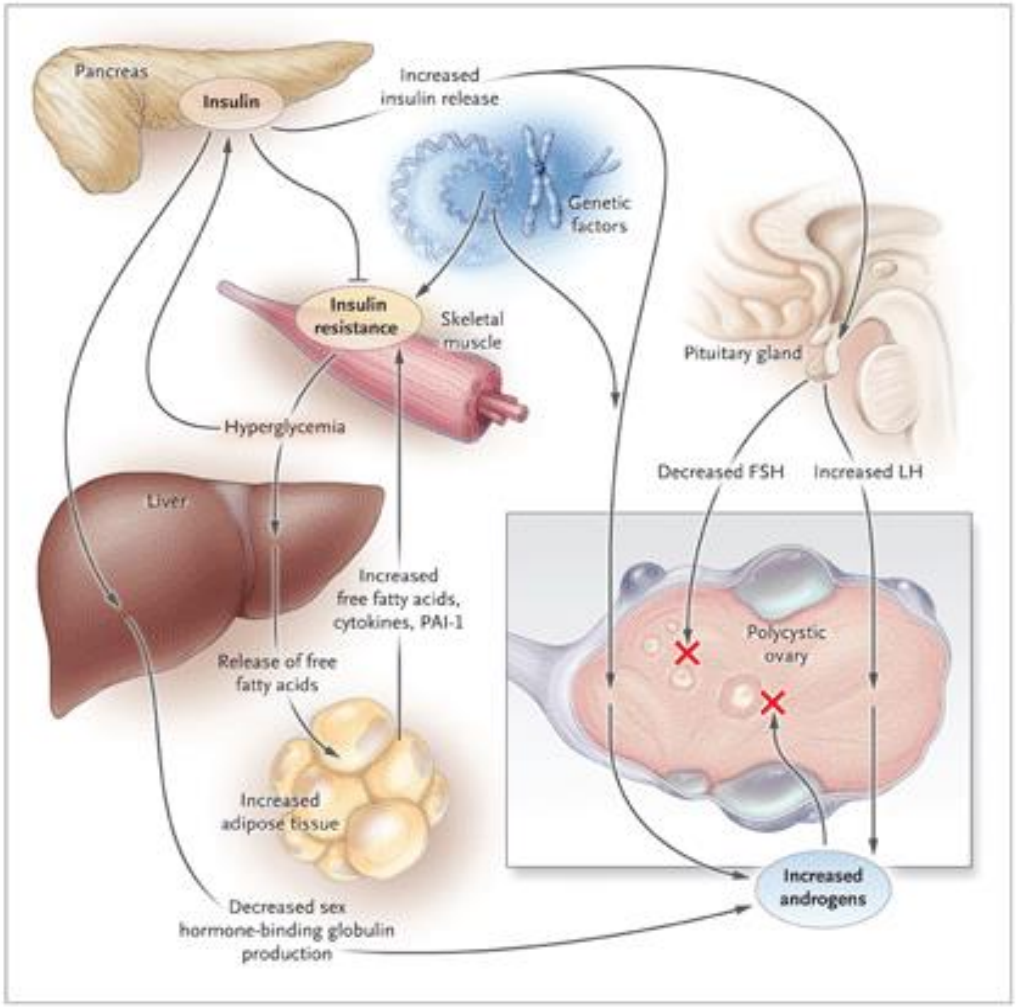
Definition of PCOS and prevalence

- chronic oligoovulatory/anovulatory state with clinical or biochemical signs of hyperandrogenism and polycystic ovaries on ultrasound
- affecting 6.5-8 % = 105 milion worldwide (*Asuncion et al., 2000)*
- most common endocrinopathy among women of reproductive age

Associated conditions

- Obesity, insulin resistance (*DeUgarte et al., 2006; Legro et al., 1998)*
- Diabetes mellitus type 2 *(Ehrmann et al., 2005)*
- Endometrial carcinoma and breast cancer *(Hardiman et al., 2003)*
- Cardio-vascular diseases *(Legro, 2003)*

Pathogenesis of PCOS



Hormonal levels and immunity

- Estrogens increase an expression of IL-4 in Th2 lymfocytes, IL-1 in monocytes, IL-6 in T-lymfocytes and interferone Ɣ in Th1 cells

- Immunostimulative function of estrogens is decreased by progesterone – PCOS have low or 0 progesterone

- Protective role of androgens on development of autoimmune diseases – PCOS patients are hyperandrogemic

PCOS AND AUTOIMMUNITY

- **Antihistone** and **anti-dsDNA** antibodies in a group of 109 patients *(Helfer – Frischmuth et al., 2009)*
- **ANA** and **SMA** positivity in 19,4 % of 36 patients, **PCA** positivity in one patient *(Reimand et al., 2001)*
- High prevalence of autoimmune tyroiditis in 26,9 % of 175 patients (**TPO** and **TG** antibodies) compared to 8,3% of controls *(Janssen et al., 2004)*
- Case report of PCOS and **autoimmune polyglandular syndrome type II** *(Lee et al., 2007)*
- Higher incidence of lupus erythematosus *(Lahita, 1999)*

Role of autoimmunity in pathogenesis of PCOS?

- Lymfocytic autoimmune oophoritis *(van Gelderen and Gomes dos Santos, 1993; Lonsdale et al., 1991)*
- Higher levels of circulating antiovarian antibodies in 44% assessed with ELISA *(Fénichel et al., 1999)*
- anti FSH class IgA against beta sub-unit of FSH significantly higher in PCOS than controls *(Haller et al., 2005)*
- functional Ab causing ovarian hyperstimulation in PCOS and impaired function in premature ovarian failure *(Gleicher et al., 2007)*

Objective

- To evaluate a group of organ specific and non-specific autoantibodies in sera of PCOS patients
- To evaluate presence of anti-ovarian autoantibodies in sera of PCOS patients
- To identify and determine specific antigenic proteins of ovarian tissue that are possibly involved in autoimmune pathogenesis

Thank you for your attention!