

Navigating reproductive hormones and autoimmune disorders

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Background

- Women account for ~80% of people with autoimmune disorders (ADs)
- Males often present with greater severity and progression
- Age of onset certain ADs varies between genders
- Most common ADs:
 - RA, MS, type 1 diabetes, Lupus
- Pregnancy appears to be protective for some disease activity

- Sex hormones – change in susceptibility for women
- Pregnancy related changes in disease symptomology
- Multiple ADs show improvement in disease activity during pregnancy, suggesting an impact of pregnancy factors on the immune system
- Differences in cytokine production influenced by sex hormones
- Supported by changes in disease symptomology around reproductive events (e.g., pregnancy, menstruation), oral contraceptives

- Animal models support treatment with androgens gave disease protection in EAE
- NHS USA showed treatment of hormone use during menopause gave better functioning in physical activity and quality of life
 - Hormone therapy only benefitted physical functioning in women with MS, but only for women with MS (Voskuhl and Patti, 2016)
- Which hormones are most impactful on changing disease symptomology?
 - Gender differences
 - Oestradiol latter needed at much higher doses than estriol
 - Progesterone not shown to an impact

Hormones

- Oestrogens
 - *Oestriol*
- Testosterone
- Prolactin

- Follicle stimulating hormone
- Luteinizing hormone
- Sex hormone binding globulin
- Anti-mullerian hormone
- Thyroid stimulating hormone
- Parathyroid hormone

ADs

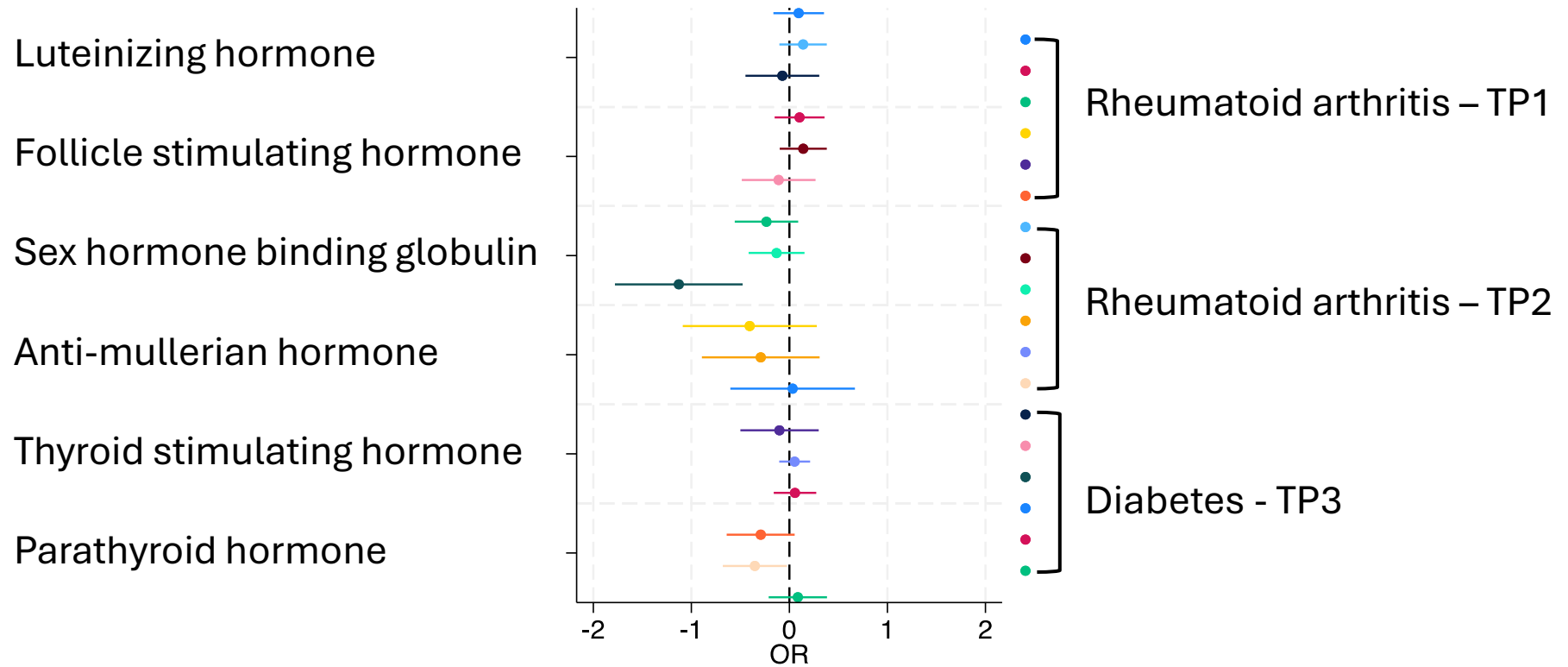
- Rheumatoid arthritis
- Multiple sclerosis
- Type-1 diabetes
- Lupus

Methods

- Avon Longitudinal Study of Parents and Children (ALSPAC)
- Rich pregnancy data
- Hormones: FSH, LH, AMH, TSH, SHBG
- Currently exploring pilot work within Rheumatoid Arthritis



Preliminary...



Ongoing work:

- Gathering data on oestrogen and testosterone hormones that the main project is interested in
- Further work planned to understand mechanisms behind ADs and reproductive hormones/events
- RA, Lupus, MS, Type one diabetes
- Mendelian Randomisation
- Triangulation of methods
- Plan to collect hormonal measurements and investigate HRT

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Thank you for listening

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