Conclusions: This pilot study confirms heterogeneity in practice patterns and variable interactions of women with TS with the healthcare system, especially as patients enter adulthood. Although some women were referred to subspecialists, our initial data uncover patient uncertainty about healthcare and transition recommendations. Our preliminary data indicate the need for early patient education in a collaborative, multi-disciplinary fashion. We plan to validate and extend our initial findings by reviewing additional medical records. Ultimately, we plan for expanded education, consistent surveillance recommendations, and planned transition of patients with TS from pediatrics to adult caregivers.

Reproductive Endocrinology

FEMALE REPRODUCTIVE HEALTH: HORMONES, METABOLISM AND FERTILITY

Obese Women Exhibit Reduced Inhibin B and Estradiol SecretionFollowing Pulsatile Intravenous FSH Administration

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Introduction: Maternal obesity is an independent risk factor for reduced reproductive fitness. Decreased secretion of FSH in women with obesity is well documented but poorly understood. Furthermore, obese women secrete less protein and steroid hormones from their ovaries. In mice, prior studies have demonstrated that pulsatile release of FSH enhances ovarian function and fertility.
Hypothesis: We hypothesize that insufficient FSH pulsatility, as seen in women with obesity, results in inadequate folliculogenesis and reduced ovarian steroid production. We attempt to correct pulsatile FSH secretion in obese women by administering exogenous FSH to compensate for the suppressed circulating ovarian hormones. Our primary outcome is the change in peak inhibin B between pre- and post-treatment. We present results from our interim analysis.
Methods: Reproductive aged, regularly menstruating, normal weight (NW) (BMI 18.5-24.9) and obese (OB) (BMI >30) women were recruited for a 26hr study during the early follicular phase. Frequent blood sampling (q10min) for 10h was performed to obtain baseline hormone levels. At 10h, 3 mg of cetrorelix, a gonadotropin hormone antagonist, was given followed by a secondary dose (0.25mg) 6h later. At this time, hourly IV recombinant (r)FSH (30IU) was initiated and frequent blood sampling continued for 10h. LH, FSH, estradiol (E2) were measured by immunoassay (Advia Centaur XP, Siemens). Inhibin B was measured using an ELISA kit (Ansh labs). Differences between groups were modeled by linear regression, adjusted for age and cycle day (continuous). The relationship between change in peak inhibin B and change in peak E2 was estimated in a linear regression.
Results: A total of 36 participants (19 NW and 17 OB) were included in our interim analysis. There were no differences in age, cycle day of study, race, and waist/hip ratio. Inhibin B and E2 rises following the intervention were statistically significant within each group. Peak Inhibin B and E2 levels following intervention were lower in obese women compared to normal weight (133.4 vs 202.5 pg/mL and 85.8 vs 126.4 pg/mL, respectively). The difference in pre and post peak inhibin B levels trended lower in the obese group (-40.1 (95%CI: -86.2, 6.1, p=0.087). No difference was seen in maximal E2 response. There was no relationship between inhibin B and E2 response [0.08 (95%CI -0.26, 0.42), p=0.634].
Conclusions: These early results suggest obese women may have a lower response to pulsatile rFSH as compared to normal weight counterparts even with intravenous administration. We speculate this may be due to decreased uptake of rFSH in obese patients or a sign of ovarian dysfunction in obese women. Additional subjects are recruited to detect these differences.

Reproductive Endocrinology

FEMALE REPRODUCTIVE HEALTH: HORMONES, METABOLISM AND FERTILITY

Serum Concentrations of GDF9 and BMP15 Across the Menstrual Cycle

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Growth differentiation factor-9 (GDF9) and bone morphogenetic protein-15 (BMP15) are TGF-β proteins that regulate key processes throughout folliculogenesis and are determinants of mammalian fecundity (1). They are uniquely produced predominantly by the oocyte and have potential clinical application as markers of oocyte quality and quantity (2). However, no studies have been conducted to assess whether serum concentrations alter across the different phases of the menstrual cycle, and thus if assessment should be confined to specific cycle stages. The aim of this study was to measure serum concentrations of these proteins during the menstrual cycle in women at different stages of reproductive life. Serum was collected every 1-3 days throughout the menstrual cycle from 41 healthy ovulatory women from three cohorts: menses to late luteal phase (21-29 years of age; n=16; University of Otago) and across one interovulatory interval (18-35 years of age; n=10; and 45-50 years of age; n=15; University of Saskatchewan), with simultaneous ultrasound scans confirming ovulation. Serum concentrations of GDF9, BMP15, estradiol, FSH, LH, progesterone, inhibin A and B and AMH were measured. GDF9 and BMP15 were detectable in 54% and 73% of women and varied 236- and 52-fold between women, respectively. To detect changes, mean concentrations and variances across the cycle were statistically modelled using a generalized additive model of location, shape and scale (GAMLSS). Across the menstrual cycle, there were minimal changes in serum GDF9 or BMP15 within a woman for all