Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

with & 7 without AA) ages 18-40. AA was defined as the % ratio of truncal fat to total body fat measured by DEXA that was 2SD above the mean of controls without AA. NFκB activation, IκB protein content and TNFα mRNA content were respectively quantified by electrophoretic mobility assay, Western blotting and RT-PCR in MNC isolated from blood samples drawn fasting and 2, 3 and 5 hours after dairy cream ingestion (100 ml). Androgens were measured by RIA from blood samples drawn fasting and 24, 48 and 96 hours after HCG administration (5000 IU). Insulin sensitivity was derived by IS_{OGTT}.

RESULTS: Compared with controls, the change from baseline (%) in NFκB activation and TNFα mRNA content increased ($p<0.02$) and IκB protein content decreased ($p<0.0001$) in both PCOS groups at 2 hours (NFκB – with AA: 27±4 vs. 4±5, without AA: 23±4 vs. -17±1; TNFα – with AA: 23±6vs. -13±3, without AA: 26±9 vs. -8±9; IκB – with AA: -35±2 vs. 18±5, without AA: -30±4 vs. 17±5) and 3 hours (NFκB – with AA: 25±4 vs. 2±4, without AA: 20±4 vs. -16±1; TNFα – with AA: 25±12 vs. -14±3, without AA: 29±15 vs. -14±6; IκB – with AA: -41±2 vs. 23±6, without AA: -35±5 vs. 20±5), and returned to baseline at 5 hours (NFκB – with AA: 1±1 vs. 0±1, without AA: 1±1 vs. -1±1; TNFα – with AA: 2±12 vs. -7±4, without AA: 2±6 vs. -3±6; IκB – with AA: -1±1 vs. 1±1, without AA: -1±1 vs. 1±1). Compared with controls, both PCOS groups exhibited greater ($p<0.05$) HCG-stimulated area under the curve (AUC) for testosterone (T) (with AA: 6466±775 vs. 3858±531, without AA: 6157±1026 vs. 3064±587) and androstenedione (A) (with AA: 501±35 vs. 307±24, without AA: 516±38 vs. 300±36). For the combined groups, the lipid-stimulated incremental AUC (iAUC) for NFκB activation and TNFα mRNA content was positively correlated with HCG-stimulated androgen AUC (NFκB – T: $r=0.53$, $p<0.006$; A: $r=0.62$, $p<0.0009$; TNFα – T: $r=0.41$, $p<0.05$; A: $r=0.55$, $p<0.004$). IS_{OGTT} was negatively correlated with the lipid-stimulated iAUC for NFκB activation ($r= -0.39$, $p<0.05$) and TNFα mRNA content ($r= -0.48$, $p<0.02$), and positively correlated with the lipid-stimulated iAUC for IκB protein content ($r=0.53$, $p<0.006$).

CONCLUSIONS: Lipid-stimulated NFκB activation and TNFα mRNA content are increased and lipid-stimulated IκB protein content is decreased in PCOS independent of AA. We speculate that this proinflammatory phenomenon in PCOS promotes hyperandrogenism and insulin resistance, and is further perpetuated by AA.

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P-938 3:30 PM Wednesday, October 21, 2020

EXOSOMES DERIVED FROM HUMAN UMBILICAL CORD MESENCHYMAL STEM CELLS PROMOTE PROLIFERATION OF ENDOMETRIAL STROMAL CELL.

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OBJECTIVE: To investigate whether the exsomes derived from Umbilical cord mesenchymal stem cells (UCMSCs) could improve the regeneration of endometrium in an experimental model of thin endometrium.

DESIGN: Randomized, control trial, animal research.

MATERIALS AND METHODS: UCMSCs were isolated and characterized. UCMSC-exos were extracted by differential ultracentrifugation and identified by western blots, transmission electron microscopy, and nanoparticle tracking analysis. A thin endometrium rat model was established by infusing ethanol into the uterine cavity of Sprague-Dawley rats. In all, 24 rats with thin endometrium and 12 normal rats were divided into 3 groups: (1) normal group, (2) experimental group transplanted with UCMSC-exos into uterine cavity, and (3) control group transplanted with saline into the uterine cavity. Three rats were killed at time 0 h, 7 d, 14 d and 28 d and bilateral uterus were obtained at each time points for the subseqent experiments. Morphological changes were determined by hematoxylin-eosin staining or Masson staining.The amount of fibrosis, vascularisation, inflammation and immunohistochemical staining with vascular endothelial growth factor (VEGF), Bcl-2 and Caspase-3 level were evaluated in the endometrial tissues.

RESULTS: The isolated UCMSC-exos had a typical cup-shaped morphology with a monolayer membrane, expressed the specific exosomal markers Alix, CD63, and TSG101 and were approximately 60 to 200 nm in diameter. The rats in group2 had a significantly thicker endometrial lining and exhibited higher expression of cytokeratin, vimentin than that of group3 ($P < .05$), which were similer with group 1. The amount of fibrosis, VEGF were similar between group1 and 2. In group2, comparing to group3, show less fibrosis but upregulated VEGF staining and Bcl-2 level was observed, while Caspase-3 level was downregulated($P < .05$).

CONCLUSIONS: UCMSC-Exos improved the proliferation of endometrium. UCMSC-Exos upregulated VEGF, Bcl-2 level as well as downregulated Cleaved Caspase-3 level and activated the PTEN/AKT signaling pathway to regulate the proliferation and antiapoptosis. Thus, UCMSC-Exos could be used as a potential treatment to promote endometrial repair.

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P-939 3:30 PM Wednesday, October 21, 2020

COVID-19 PANDEMIC EFFECT ON EARLY PREGNANCY – ARE MISCARRIAGE RATES ALTERED, IN ASYMPTOMATIC WOMEN?.

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OBJECTIVE: To evaluate the effect of the COVID-19 pandemic state on early, 1st trimester pregnancies, in light of a link described between war-induced stress and adverse pregnancy outcomes.

DESIGN: Retrospective cohort study conducted in a University fertility center.

MATERIALS AND METHODS: All 1ST trimester viability scans done since the COVID-19 shut down, March13-May 6, 2020 (Study group), and between March 1-May 17, 2019 (pre-pandemic Control), were reviewed. Early 1st trimester pregnancy outcomes (Viable pregnancy, Arrested pregnancy including biochemical pregnancy loss and miscarriage, and ectopic pregnancy (EP)) were measured. A multivariate analysis was performed to control for significant confounders. Power analysis revealed that a sample size of 58 patients per group has a 90% power with a 15% difference in outcomes and α=5%. The study group denied symptoms of COVID-19.

RESULTS: 113 women were scanned in the study, and 172 in the control periods (5-11 weeks gestational age). The groups had similar demographics, gestational history, fertility diagnosis and treatment characteristics (Table). No significant differences were noted in the rate of recurrent pregnancy loss (RPL). Viable clinical pregnancy rates were not different between the groups (76.1% vs. 80.2% in the pandemic and pre-pandemic groups p= 0.41). No significant difference was seen in number of 1st trimester miscarriage (14.2% vs 12.8% p=0.76), biochemical pregnancies (3.5% vs 1.7% p=0.34), or in total miscarriage rate (22.1% vs 16.9% p=0.32), nor in EP rates (0.9% vs 2.3% p=0.36)

Mean serum TSH levels were higher in the control but fell in the normal range for both groups. Use of donor sperm was higher in the control and may have favored lower miscarriage rates in that group.

CONCLUSIONS: The COVID-19 pandemic environment does not seem to affect early first-trimester miscarriage rates in asymptomatic patients.

Characteristic	Study(n=113)	Pre-pandemic Control (n=172)	*P*-value
Female Age, Years, mean±SD	36.5 ± 4.5	37.2 ± 5.4	0.28
RPL History, N(%)	15 (13.3)	15 (8.7)	0.22
Fertility diagnosis, N(%)			
Unexplained	24 (21.4)	32 (19.6)	0.21
Male Factor	36 (32.1)	58 (35.6)	
Tubal factor	5 (4.5)	11 (6.8)	
Polycystic ovarian syndrome	21 (18.8)	25 (15.3)	
Decreased ovarian reserve	23 (20.5)	20 (12.3)	
Endometriosis	1 (0.9)	4 (2.5)	
Base line testing, median(IQR)			
AMH ng/ml	2.5 (1.0 – 4.4)	2.5 (1.2 – 5.4)	0.75
TSH mIU/L	1.3 (0.9 – 1.8)	1.7 (1.2 – 2.3)	0.001
Antral follicular count (AFC)	16 (9 – 29)	14 (9 – 25)	0.27
Total motile sperm count, median(IQR)	18 (6 – 43)	12 (5 – 47)	0.23
Sperm donation, N (%)	2 (1.8)	17 (9.9)	0.01
Pregnancy, N (%)			
Spontaneous	34 (30.1)	54 (31.4)	0.97
IUI	34 (30.1)	51 (29.7)	
IVF	45 (39.8)	67 (38.9)	
ICSI (percentage of IVF patients)	31 (79.5)	52 (77.6)	0.82
Blastocyst transferred	39 (86.7)	56 (83.6)	0.65

P-940 3:30 PM Wednesday, October 21, 2020

QUANTITATIVE DETECTION OF BIOLOGICALLY RELEVANT ANTI-MULLERIAN HORMONE (AMH) AND PROGESTERONE IN HUMAN HAIR SAMPLES. Alice K. Crisci, BS,[1] Brian Ring, PhD,[1] Sarthak Sawarkar, MS,[2] Yolanda Cabello, PhD,[3] Laura Garcia-Calvo, PhD,[2] Maria Hebles Duvison, PhD,[4] Carmen Ochoa Marieta, MD,[5] Maria Jose Figueroa-Garcia, Embryologist,[6] Laura García De Miguel, Gynecologist,[7] Santiago Munne, PhD,[1] Manuel Alvarez-Rodríguez, PhD,[2] Manel Lopez-Bejar, PhD.[8] [1]MedAnswers, San Pedro, CA; [2]Universitat Autònoma de Barcelona, Barcelona, Spain; [3]Hospital Ruber Juan Bravo, Madrid, Spain; [4]Ginemed Sevilla, Sevilla, Spain; [5]CER Santander, Santa Cruz de Bezana, Spain; [6]HC Marbella International Hospital, Marbella, Spain; [7]Clinica Tambre, Madrid, Spain; [8]Western University of Health Sciences, Pomona, CA.

OBJECTIVE: Anti-Mullerian Hormone (AMH) and progesterone are used as biomarkers in assessing fertility and readiness for assisted reproductive procedures, usually measured in blood samples. The objective of this study was to determine if biologically relevant quantities of AMH and progesterone in human hair samples could be assessed.

DESIGN: The study design was prospective in nature. A total of (n=152) human female participants between the ages of 18-65 years were included in the study over a period of 10 months (recruitment ongoing).

MATERIALS AND METHODS: Sample collection was performed in a clinical setting, with blood and hair samples collected from patients. Hair follicles were not required, with a minimum of 100mg of hair cut from the participants. A doctor or a clinical technician measured the antral follicle count (AFC) by ultrasound. Biologically active AMH and progesterone was extracted from hair using a proprietary method. Hormone presence in hair extract was confirmed in a set of samples using Western Blotting. Hormones were measured in plasma and hair extract by ELISA.

RESULTS: AMH was detected via ELISA (n=95 in hair, 42 in plasma), and confirmed on a set of samples via western blots on denatured gel with bands at 70kDa. An average level of 9.37 pg/ml (95%CI 6.77-12) was detected in hair and 3.68 ng/ml (95%CI 2.79-4.56) in plasma in age-group <25 yrs. This is in contrast to the age group >39 years, within which a mean of 3.02 pg/ml (95%CI 2.19-3.85) AMH detected in hair and 0.92 ng/ml (95%CI 0.43-1.41) in plasma samples. AMH in hair did not significantly associate with measurements in plasma (effect size 0.19, p value 0.0852). AMH measured in hair correlated with age more strongly than plasma AMH (p-value =1.26 x10-5 (hair), p-value 0.088 (plasma)). AMH levels in hair were also strongly associated with AFC when corrected for hair weight, with an effect size of 3.75 (95% CI: 1.7; 5.8), and P value of 0.0168. Progesterone was measured via ELISA (n=76 in hair, n=91 in plasma) via ELISA. The association between progesterone in plasma and hair was significant (p value of 0.0298, p value of 0.013 when adjusted for hair weight).

CONCLUSIONS: We found that progesterone and AMH could be detected in human hair samples, and levels of AMH in hair were positively associated with maternal age and antral follicle count. The stronger association of AMH in hair versus plasma with age and AFC suggests that, though AMH is relatively stable during the monthly cycle, acute measurements of AMH may have variability that may make measurement via hair samples of greater utility for assessing reproductive health. Hair is a medium that can accumulate biomarkers over several weeks, while serum is an acute matrix that can represent only current levels. Detection of steroid hormones in hair has been used in neuroendocrinological studies in human and animals. However AMH measurements in hair are not currently employed for clinical purposes. In addition to this benefit, assessing reproductive hormone via a non-invasive method may allow an increased adoption of the use of these hormones in addressing reproductive health.

P-941 3:30 PM Wednesday, October 21, 2020

FOLLICULAR-PHASE SINGLE-DOSE GNRH AGONIST PROTOCOL VS GNRH ANTAGONIST PROTOCOL IN PATIENTS WITH REPEATED IVF FAILURE. Rui Huang, MD, PhD, Xing Yang, Ph.D., Qian Li, Master. The Sixth Affiliated Hospital of Sun Yat-sen University, Guangzhou, China.

OBJECTIVE: To compare the clinical outcomes between follicular-phase single-dose gonadotropin-releasing hormone (GnRH) agonist protocol and GnRH antagonist protocol in patients with repeated IVF failure.

DESIGN: Retrospective analysis.

MATERIALS AND METHODS: The IVF cycles conducted on 764 patients with repeated IVF failure (No. of previous failed IVF cycle>=2) and normal ovarian reserve (AMH >1.1ng/ml) from Jun. 2017 to Dec. 2019 were included in this retrospective cohort study. The follicular-phase single-dose GnRH agonist protocol, in which 3.75 mg Triptorelin was administrated on cycle day 2 and exogenous gonadotropin (Gn) was initiated 4 weeks later, was applied in 303 patients and GnRH antagonist protocol utilized in the remaining 461 patients. The clinical outcomes, including stimulation duration, total dose of exogenous Gn, No. of oocytes retrieved, No. of transferrable embryos, clinical pregnancy rate and miscarriage rate between the two groups were compared respectively. P<0.05 was considered as statistical significance.

RESULTS: No significant difference was observed in basic characteristics between two groups. Comparing with the antagonist group, both the stimulation duration and the total Gn dose were significantly longer and higher in the agonist group. More oocytes and transferrable embryos were obtained, and the clinical pregnancy rate per fresh embryo transfer cycle was significantly higher in the agonist group. The basic and cycle characteristics were listed in the following table.

CONCLUSIONS: In patients with repeated IVF failure, follicular-phase single-dose GnRH agonist protocol resulted in a significantly higher clinical pregnancy rate than antagonist treatment, implying that single-dose GnRH agonist treatment may offer additional benefits for this specific group of patients.

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