Yi-Ting Chen **陳怡婷**
(Y16)

Reproductive outcomes of subclinical hypothyroidism women after in vitro fertilization and embryo transfer

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Objective: The aim of this study is to review the reproductive outcomes of women whose serum Thyroid Stimulating Hormone (TSH) concentration exceed 4mIU/L and between 2.5-4mIU/L.

Materials and methods: This is a retrospective study, women who received their first IVF cycle with newly diagnosed subclinical hypothyroidism (TSH≧ 4 mIU/L) and women whose TSH concentrations between 2.5-4mIU/L were included. Data were collected from both electronic and paper medical records between January 2018 and December 2020 at a single tertiary hospital. Reproductive outcomes such as clinical pregnancy rate, miscarriage rate, live birth rate, preterm birth and low birth weight were compared between two groups. The Chi-square test or Fisher exact test and Wilcoxon rank sum test were used to compare distributions of categorical and continuous variables between subjects with TSH level of 2.5 - 4 and ≥4. Logistic regression was conducted to estimate the odds ratio (OR) of TSH level and reproductive outcomes.

Result: Totally, 589 women were screened and 132 cases were identified.TSH concentrations between 2.5-4mIU/L was found in 93 women, TSH concentrations ≧ 4mIU/L with a normal free T4 value was found in 39 women. There were no significant differences in basic characteristics such as age, BMI, AMH between two groups. The clinical pregnancy rate, live birth rate, miscarriage rate and preterm birth were also comparable between two groups. (Clinical pregnancy rate: P value =0.2507; Live birth rate: P value =1.0000; Miscarriage rate: P value=1.0000). However, significant difference was found in newborn with small for gestational age (SGA) in women who were diagnosed with subclinical hypothyroidism.

Conclusion: The results of our study indicate that pregnant women with subclinical hypothyroidism had increased risks to give birth to a SGA baby. There was no increased risk in general obstetric and perinatal outcome in women with subclinical hypothyroidism.

Chia-Yun Lin **林佳昀**
(Y17)

Endometriosis does not affect fallopian tubal status as imagination. Evaluated fallopian tube condition in infertile women by hysterosalpingogram and laparoscopy

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Objective: This study is to determinate the effeteness of the endometriosis to the fallopian tube.
Materials, Settings and Methods: Retrospective study from 2010 to 2020. Total 308 infertile women with both received HSG and laparoscopy surgery selected from 4568 patients who received Laparoscopic adnexal surgery in single medical center (KCGMH).
First, to clarify the diagnostic value of HSG in tubal occlusion, hydrosalpinx and peri-tubal adhesion, HSG was performed first to rule out tubal pathologies. The laparoscopy surgery with chromotubation is performed subsequent to the HSG. The sensitivity, specificity, positive predict value and negative predict value of unilateral and bilateral fallopian tubes were calculated. Second, to evaluated the correlation between endometriosis and fallopian tube status, patients were divided into endometriosis group and non-endometriosis group. Both groups were evaluated with tubal condition, such as occlusion, peri-tubal adhesion and hydrosalpinx.
Result: HSG in detected bilateral tubal occlusion and bilateral peri-tubal adhesion has higher specificity (75% and 92% separately) than unilateral occlusion (41%) and unilateral peri-tubal adhesion (75%). The endometriosis group has significant lower effect ($p < 0.001$) on the tubal occlusion, fimbria phimosis and hydrosalpinx than the non-endometriosis group. When analyzed the correlation of tubal pathologies and the endometriosis stage, there is no significant difference between stage I,II,III,IV in tubal occlusion, fimbria phimosis and hydrosalpinx. Only peri-tubal adhesion has significant difference when compared minimal and mild groups to moderate group and severe group. There is also a linear association between peri-tubal adhesion and endometriosis stages. Post-operative 12 months cumulative pregnancy rate (nature or clomid/letrozole) revealed no significance difference between endometriosis (37.5%) and non-endometriosis group (25.4%).
Conclusion: Endometriosis has no significance worse effect in tubal occlusion, fimbria phimosis or hydrosalpinx but may cause peri-tubal adhesion. Also, the severity of endometriosis does not affect tubal pathologies except peri-tubal adhesion.

Siew-Yen Lai 賴秀燕
(Y18)

Effect of post-thawed culture duration on morphological changes and clinical outcomes of vitrified blastocysts

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Study Question: What are the clinical outcomes and morphological indicator of different post-thawed culture duration in blastocyst frozen-thawed embryo transfer (FET) cycles?

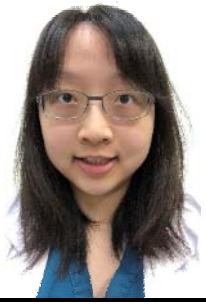
Study Design, Size, Duration: This prospective study was performed at Changhua Christian Hospital from June 2018 till July 2020. In total, 121 FET cycles were studied.

Materials, Setting, Methods: The FET cycles were divided into two groups according to their post-thawed culture period: short culture period (2– 5 hours) and long culture period (16– 20 hours) groups. Treatment cycles with patients aged <38 years at the day of ovum retrieval, first IVF attempt had embryos freezing all on day 5 without fresh embryo transfer and underwent first time FET, artificial hormonally-controlled FET (AC-FET) cycle, and transfer of two day-5 embryos were included in this study. At the day of embryo transfer, the patient who had embryo encountered degeneration which cause less than two embryos to transfer were also excluded. The clinical outcomes of the two groups were compared. Also, spent culture media of both groups were also collected for analyzing the changes of 8 essential amino acids.

Main Results: There were no significant difference in miscarriage rate per biochemical pregnancy or miscarriage rate per clinical pregnancy between two groups. About morphological parameters, more embryos resumed the ability of expansion and reached better expansion status of grade 5 or 6 (96.7% v.s. 47.5 %) at FET day in long culture group compared to short 124 culture group. In the spent culture media during the period of after thawing and before transfer represented that tryptophan was more depleted in long culture group compared to short culture group.

Conclusion: This study indicated that prolonged post-thawed culture period of 16-20 hours before FET resulting in better blastocysts morphological status and higher live birth rate.

Tzu-Ching Kao 高子晴
(Y19)



Progestin-primed ovarian stimulation versus GnRH antagonist protocol in preventing premature LH surge for poor ovarian responders

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Objective: The study aims to compare progestin and GnRH antagonist in the prevention of premature LH surge (LH >10 mIU/mL) for poor ovarian responders (PORs).

Materials and Methods: This is a single-center retrospective study, which enrolled the PORs undergoing ovarian stimulation with PPOS or flexible GnRH antagonist protocol during January 2018 to December 2020. The primary outcomes were incidence of premature LH surge (LH >10 mIU/mL during ovarian stimulation) and stratification of the pattern of LH elevation. The secondary outcomes were number of oocytes retrieved and metaphase two (MII) rates.

Result: A total of 316 women were recruited, with 49 in the PPOS group and 267 in the GnRH antagonist group. There were no significant differences between the two groups regarding the incidence of premature LH surge, the number of oocytes retrieved, and the MII rates.

Conclusion: There is no sufficient evidence indicating that PPOS has better control of preventing premature LH surge, compared with GnRH antagonist protocol, for the PORs.

Angel Hsin-Yu Pai 白欣玉
(Y20)

Reduced Endometrial Expression of ILK and ITGB3 in Patients with Adenomyosis During Window of Implantation

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Objective: To investigate the expression of integrin-linked kinase (ILK) and integrins (ITG) in the endometrium (EM) of patients with adenomyosis patients during window of implantation (WOI).

Materials and Method: Biopsies of eutopic EM from adenomyotic and control groups were obtained from surgical specimens across menstrual cycle, as well as first-trimester decidua of normal pregnancies from voluntary terminations. RT-PCR was performed using specific primer set for ILK, ITGB3, and GAPDH. Two-micrometer formalin-fixed paraffin-embedded sections were immunohistochemically (IHC) stained using specific monoclonal antibody against ILK and followed by biotinylated secondary antibody. Diaminobenzidine (DAB) was used as chromogen and assessed with computer-generated HSCORE, ranging between 0 - 100.

Results: Significantly higher expression of ILK was observed in EM of control during secretory than proliferative phase ($p < 0.001$) while markedly reduced endometrial expression of ILK was detected in adenomyosis during secretory phase ($p < 0.001$). Interestingly, ITGB-3 demonstrated the same pattern of reduced expression in adenomyosis compared to control during WOI. In addition, EM stromal cells (ESC) from adenomyotic samples did not vary significantly in morphology for only scanty amount of ILK were present. With the actin fibers more parallelly aligned, these ESCs resembled the morphology of un-decidualized cells. On the other hand, IHC staining of ESC from control had prominent immune-intensity of ILK, and the cells were more expanded in size and polygonal in appearance.

Conclusion: ILK, as well as ITGB-3, expressions are significantly reduced in the EM of patients with adenomyosis during WOI when compared to control. ILK has the ability to reorganize actin fibers and regulate signal transduction essential for decidualization while ITGs are important molecular markers for endometrial development. Hampered morphologic transformation of the cells can negatively affect endometrial decidualization. ILK and ITGB may be potential markers for decidualization.

Yu-Chieh Fang **方郁婕**
(Y21)

Improvement of Endometrial Receptivity by Guizhi Fuling Wan(GFW) in endometriosis

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Objective: To assess the effects of GFW on receptivity in the eutopic endometrium from mouse with endometriosis.
Materials and Methods: Nine-week-old female C57B/6 mice were treated with 0.6 gm/kg body weight of GFW. The treatments were started a week before generating endometriosis and ended at 28 days. Briefly, mice were anesthetized with Zoteil by intraperitoneal injection. The uterus was ligated at the cervix followed by removal of uterus with both ovaries spared. The uterine horns were opened longitudinally. Four pieces of identical uterine tissues were obtained using a disposable 2-mm dermal biopsy punch. Two pieces were sutured to each side of the peritoneal wall. At 28 days, the mice were mated with 8-week-old C57B/6 male mice. The morning of sighting a vaginal plug was denoted as gestation day 0.5. The pregnancy outcomes, including: 1) implantation number (live delivery number at birth + miscarriage counting after sacrificing dams following weaning); 2) fecundity rate; 3) rate of dams with live birth; 4) live delivery number; 5) pup survival number, survival and mortality rate at 1 week-old were recorded. All of the uteri were harvested at GD4 for the evaluation of endometrial receptivity by examining endometrial HOXA10, HOXA11, LIF expression, pERK, pSTAT3, PCNA, and E-cadherin by immunohistochemistry, Western blot and quantitative reverse transcription-polymerase chain reaction.
Results: The size of ovarian cysts and grade of adhesion were significantly decreased. The expression of HOXA10, HOXA11, LIF, and pSTAT in eutopic endometrium of endometriotic mice was increased by GFW in qRT-PCR and IHC. Pregnancy outcome including 1) fecundity rate; 2) rate of dams with miscarriage; 3) rate of dams with live birth; 4) live birth/dam; 5) pup weight; 6) pup survival rate were all improved by GFW.
Conclusion: GFW improves endometrial receptivity in endometriosis.

Wei-Kuang Ju **朱偉光**
(Y22)

Male factor infertility and its impact on early embryonic morphokinetic parameters observed under time-lapse imaging incubator

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Objective: Whether there is an effect of male factor infertility (MFI) on early morphokinetic parameters obtained during embryonic culture in a time-lapse imaging (TLI) incubator.
Study Design, Size and Duration: This is a single center, retrospective cohort study conducted between April 2019 to May 2021. A total of 373 embryos were analyzed, including 157 embryos derived from couples (n=48) with a diagnosis of MFI, and 216 embryos from couples with other, non-MFI diagnosis of infertility (n=39).
Materials and Methods: Data from 373 embryos cultured to the 8-cell stage in a TLI-monitored incubator were retrospectively reviewed. Embryos derived from the sperm of men with MFI were compared with those derived from patients with other, non-MFI diagnosis of infertility. Markers of early embryo development included P1: pronuclei fading time (tPNf) to first cytokinesis (t2), P2: time from 2– 3 cells (t2-t3), P3: 3– 4 cells (t4-t3), (P4) 4– 5 cells (t5-t4), (P5) 5-8 cells (t8-t5), and tPNf to 8 cell embryo stage (t8-tPNf).
Results: Antral follicle counts (AFCs), anti-Müllerian hormone (AMH) levels, and ages of both the men and women in MFI couples were comparable to that of couples with other, non-MFI diagnosis of infertility. ICSI was utilized in all embryos of couples with MFI, and 25% of embryos in couples with non-MFI infertility (non-MFI ICSI group). 75% of embryos of non-MFI couples underwent IVF (non-MFI IVF group). When all embryos of MFI and non-MFI groups were compared, a shorter time for 3 to 4 cell division of 0.54 hours (p=0.02) was seen in the MFI group, but the overall time from tPNf to 8-cell stage embryo development was comparable (t8-tPNf difference: -0.82 hours, p=0.41). Similarly, when only embryos fertilized via ICSI were analyzed, a shorter 3 to 4 cell division time by 1.36 hours was seen (p=0.02) in those with MFI, but no significant difference was seen in the overall t8-tPNf times (t8-tPNf difference: -2.13 hours, p=0.21). When the MFI group was compared to the non-MFI IVF group, or when comparing different fertilization (ICSI vs. IVF) in the non-MFI group, no significant difference in any parameter of early embryo development was demonstrated.
Conclusion: Our findings show that MFI had no impact on overall parameter of early embryogenesis, despite a shorter 3 to 4 cell division time of early embryogenesis in embryos of couples with MFI compared to non-MFI, and non-MFI ICSI groups. Furthermore, a comparison between different fertilization methods within the non-MFI groups showed that whilst no significant differences was seen in times of early embryogenesis between non-MFI ICSI vs. IVF, a trend towards delayed embryo development was seen when ICSI was utilized.