

Hao Ting Lien 連顯庭
(Y9)



The association between ovarian reserve and organophosphate flame retardants
in women of childbearing age

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Objective: To evaluate the association between organophosphate flame retardants (OPFRs) exposure and ovarian reserve.

Materials and Methods: In this prospective cohort study, total of 99 participants were recruited from August 2021 to October 2022 at the outpatient department of Obstetrics and Gynecology in Chang Gung Memorial Hospital, Kaohsiung Medical Center in Taiwan. The inclusion criteria were as follows: adult women of childbearing age were eligible to participate. Old age (>50 years old), patients using antidepressants and antipsychotics for over months were excluded. The urinary concentrations of 10 OPFR compounds were measured to evaluate the exposure patterns. Clinical and urinary OPFR profiles were compared among subgroups to identify whether the OPFR compounds were independently correlated with AMH, FSH and LH level. Additionally, lifestyle factors were compared among subgroups stratified by median concentrations of urinary OPFR compounds associated with AMH level.

Results: After adjusting for covariates, the urinary concentration of BDCPP was identified as an independent predictor of lower AMH level (low vs. high AMH (cut-off value: 1.5ng/mL), odds ratio (OR) (95% confidence interval (CI)), 5.714 (1.435– 22.727), $p = 0.007$). Moreover, less urination per day was positively correlated with urinary BDCPP concentration (high vs. low BDCPP (cut-off value: 2.3 μ g/g Cr), OR (95% CI), 6.750 (1.569– 29.032), $p = 0.018$). FSH and LH were not significantly associated with 10 OPFR compounds in our study.

Conclusions: Increasing exposure to OPFRs (especially bis(1,3-dichloro-2-propyl) phosphate (BDCPP)) have been associated with lower AMH level.

Yu-Li Chuang 莊羽豐
(Y10)



**Aberrant miRNA Expression in Repeat Post-receptivity Endometrium in
miRNA-based Endometrial Receptivity analysis (MIRA) Predict Recurrent
Implantation Failure: Case Series**

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Objective: Those recurrent implantation failure patients with shifting window of implantation and post-receptivity endometrium at 120hrs examination under miRNA-based Endometrial Receptivity analysis (MIRA) may consider reassessing at 96hrs post progesterone exposure. However, the result of repeat post-receptivity endometrium is rarely found and confuses the physician about suitable embryo transferring timing. Three cases had repeated implantation failures after adjusting the transferring time based on the results of the initial MIRA examination, whom received MIRA reassessment and found repeat post-receptivity endometrium at 96hrs. The aim of the study elucidates the clinical meaning of similar aberrant miRNA expression in these cases.

Materials and Methods: These patients had MIRA at 120hrs after progesterone use and at 96hrs after progesterone use again. All the patients' endometrial specimens were collected by endometrial aspiration sampling. All these specimens received total RNA extraction and quantified. Isolated RNA was reverse-transcribed to cDNA, and consequently, qPCR was performed utilizing NextAmp Analysis System and MIRA PanelChip with preprinted microRNA-specific primers. The result of miRNA expression was quantified, and obtained the Cq level. Specific miRNAs which are Cq value difference greater than 1.5 were collected and received MicroRNA enrichment analysis with the miRDB database (<https://mirdb.org/>) and analyzed microRNA target interaction (MTI) in miRTarBase (<https://miRTarBase.cuhk.edu.cn/>).

Result: After analyzing these patients' endometrial specimens, those upregulated miRNAs include miR-1972, miR-1973, and miR-663a. Downregulated miRNAs include miR-484, miR-193a-3p, miR-19b-3p, and miR-335-5p. These miRNAs are analyzed and found most target genes are related to endometrial receptivity, including ERB2 and mTOR. Similarly, pathway analysis with the KEGG database reveals the miRNAs involved MAPK, ErB, PI3K-Akt, FoxO, and TGF- β 1 pathways. These signaling pathways regulate cell proliferation, apoptosis, cellular senescence, adherent junction, and epithelium-to-mesenchymal transition, so that modify the endometrial receptivity.

Conclusion: In our study, three cases with implantation failure history had rarely repeat post-receptivity endometrium results under MIRA examination. These patients' endometrial sampling revealed similar aberrant expression miRNAs, which may predict poor endometrial receptivity. Therefore, these seven miRNAs have potential strength in clinical interpretation about personalized embryo transfer protocol.

Wei-Ting Lee 李瑋婷
(Y11)



Do ectopic pregnancy only has negative impact on subsequent pregnancy outcome: A Nationwide Population-Based Retrospective Cohort Study in Taiwan

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Objective: To evaluate subsequent pregnancy outcomes in Asian women following ectopic pregnancy.

Materials and Methods: Using the Taiwan National Health Insurance database, we designed a retrospective study that included 12 to 50-year-old women who had experienced ectopic pregnancy between 2000 to 2013. We selected a 1:3 age-matched control group of non-ectopic-pregnant women. The endpoint was any episode of recurrent ectopic pregnancy or normal pregnancy; otherwise, the patients were tracked until 31 December 2013. With the use of a multivariate Cox proportional hazard regression analysis, we calculated the hazard ratio (HR) with a 95% CI and compared it with that of the control group. The difference in re-ectopic pregnant rate and the incidence of pregnancy between the two groups was estimated by using the Kaplan-Meier method along with the log-rank test. The results were considered statistically significant if two-tailed p values were less than 0.05.

Results: During the follow-up period, women with ectopic pregnant history were more likely to have recurrent ectopic pregnancy (0.074% V.S. 0.015%; $P < 0.001$). Multivariate Cox regression analysis demonstrated that the case group had a 5.496-fold increased risk of recurrent ectopic pregnancy (HR = 5.496; 95% CI = 4.655 – 6.488; $P < 0.001$). On the other hand, our study revealed women with previous ectopic pregnancy had higher normal pregnant rate compared to the control group (0.41 % V.S. 0.37%; $P < 0.001$).

Conclusion: Our study provided evidence of an increased risk of recurrent ectopic pregnancy. But, interestingly, our study showed that subsequent pregnant rate increased.

Chih-Wei Lin 林智偉
(Y12)



Quality of life among infertile women undergoing in vitro fertilization-embryo transfer in Taiwan

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Objectives: to assess the quality of life among Taiwanese infertile women undergoing in vitro fertilization-embryo transfer.

Materials and Methods: The study enrolled infertile women who sought treatment at the Assisted Reproductive Technology Center of National Cheng Kung University Hospital. The clinical characteristics, laboratory exams, and pregnancy outcomes of these women were reviewed. We utilized the internationally validated FertiQoL tool to assess the quality of life of women undergoing infertility treatment and to analyze the correlation between clinical variables and pregnancy outcomes.

Result: This study found that there was a significant association between the FertiQoL scores and pregnancy outcomes. For every unit increase in the emotional domain score, the probability of ongoing pregnancy and live birth significantly increased by 2.4% and 2.6%, respectively. Patients affected by endometriosis had significantly lower FertiQoL scores compared to women without endometriosis.

Conclusion: The FertiQoL tool is associated with pregnancy outcomes of infertile women undergoing in vitro fertilization-embryo transfer. High-risk patients, such as those with endometriosis, may present with lower FertiQoL scores. FertiQoL can be a useful measure to assess the quality of life of women undergoing infertility treatment, and can potentially be used to identify patients who may require additional support or interventions to improve their treatment outcomes.

I-Le Hsu 徐以樂
(Y13)



Assessment of female cryopreservation of oocyte in KMHU

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Objective: To assess the assisted reproductive outcome in females underwent cryopreservation of oocyte.

Materials and methods: Females with or without malignancy underwent controlled ovarian hyperstimulation, oocyte retrieval, and cryopreservation of the oocytes in our hospital were included. Baseline characteristics, ovarian stimulation protocol, and assisted reproductive results were collected and analyzed.

Result: There were 89 females underwent cryopreservation of oocyte in KMHU. Among 28 cancer patients, breast cancer account for 75%. Nineteen of 28 (67.86%) were aged 35 or younger while oocyte retrieval. Sixty-one females underwent social freezing since 2015, 35 of them (57.37%) were older than 35 while oocyte retrieval. There was older age while oocyte retrieval, higher baseline FSH, and decreased number of cryopreserved oocytes in social group. However, there was no difference among number of cryopreserve oocyte between onco- or social group while divided into different age subgroup. Two females in social group returned for embryo transfer. One breast cancer patient returned for embryo transfer after cancer treatment. Another breast cancer patient transferred frozen oocyte to another institution with live birth delivery.

Conclusion: There was significant younger age distribution among cancer patients. Age while oocyte retrieval remains strong predictor of further reproductive outcome.

Kuan Sheng Lee 李冠昇
(Y14)



The Live Birth Rate of Vitrified Oocyte Accumulation for Managing Diminished Ovarian Reserve: A retrospective cohort study

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Objective: Vitrified M-II oocyte accumulation for later simultaneous insemination has been used for managing POR. Our study aimed to determine whether vitrified oocyte accumulation strategy improves live birth rate (LBR) for managing diminished ovarian reserve (DOR).

Materials and Methods: A retrospective study included 440 women with DOR fulfilling Poseidon classification groups 3 and 4 from January 1, 2014, to December 31, 2019, in a single department. Patients underwent accumulation of vitrified oocytes (DOR-Accu) and embryo transfer (ET) or controlled ovarian stimulation (COS) using fresh oocytes (DOR-fresh) and ET. Primary outcomes were LBR per ET and cumulative LBR (CLBR) per intention to treat (ITT). Secondary outcomes were clinical pregnancy rate (CPR) and miscarriage rate (MR).

Result: Two hundred eleven patients underwent simultaneous insemination of vitrified oocyte accumulation and ET in the DOR-Accu group (maternal age: 39.29 ± 4.23 y, AMH: 0.54 ± 0.35 ng/ml), and 229 patients underwent COS and ET in the DOR-fresh group (maternal age: 38.07 ± 3.77 y, AMH: 0.72 ± 0.32 ng/ml). CPR in the DOR-Accu group was similar in the DOR-fresh group (27.5% vs. 31.0%, $p = 0.418$). However, MR was statistically higher (41.4% vs. 14.1%, $p = 0.001$), while LBR per ET was statistically lower (15.2% vs. 26.2%, $p < 0.001$) in the DOR-Accu group. There is no difference in CLBR per ITT between groups (20.4% vs. 27.5%, $p = 0.081$). The secondary analysis categorized clinical outcomes into four groups regarding patients' age. CPR, LBR per ET, and CLBR did not improve in the DOR-Accu group. In the group of 31 patients, accumulated vitrified metaphase II (M-II) oocytes reached a total number of ≥ 15 , and CPR improved among the DOR-Accu group (48.4% vs. 31.0%, $p = 0.054$); however, higher MR (40.0% vs. 14.1%, $p = 0.03$) resulted in similar LBR per ET (29.0% vs. 26.2%, $p = 0.738$).

Conclusion: Vitrified oocyte accumulation for managing DOR did not improve LBR. Higher MR resulted in lower LBR in the DOR-Accu group. Therefore, the vitrified oocyte accumulation strategy for managing DOR is not clinically practical.

Chi-Huan Tsai 蔡奇桓
(Y15)



Comparing cumulative ongoing pregnancy rate between the progestin-primed ovarian stimulation protocol and GnRH-antagonist protocol in hyper-responder attending IVF/ICSI cycles

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Objective: The study focused on comparing pregnancy outcomes between the progestin-primed ovarian stimulation (PPOS) and conventional antagonist protocol in hyper-responder.

Materials and Methods: 314 women attending in vitro fertilization (IVF) cycles which stimulated ovary with PPOS protocol and antagonist protocol (age-matching was made to average effect of age) and further implantation was included in the study, which pregnancy outcomes were assessed. Several groups of people were excluded including non-hyper responder (retrieved oocyte < 16), oocyte donor, social freezing patient and patient without implantation course. We chose cumulative ongoing pregnancy rate as primary outcome and also comparing secondary outcomes including fertilization rate, biochemical pregnancy rate... etc between both groups.

Result: The preliminary data about primary outcome of the study showed similar cumulative pregnancy rate between two groups (82% (88/107)) in PPOS group, 81.3% (87/107) in antagonist group)

Conclusion: The cumulative ongoing pregnancy rate (primary outcome) between PPOS and conventional antagonist protocol in hyper-responder does not show statistical significance.

Chi-Ting Lai 賴新廷
(Y16)



Does low progesterone level on trigger day influence the reproductive outcomes of fresh embryo transfer in poor responder?

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Objective: To assess the influence of low progesterone level on trigger day on the reproductive outcomes of fresh embryo transfer in poor responder.

Materials and Methods: Three hundred and fifteen women classified as poor responder by Bologna criteria had underwent fresh embryo transfer after standard controlled ovarian stimulation at our hospital from 2018/1 to 2021/12. The included patients were separated into two groups (low progesterone: $P4 \leq 0.5$ ng/dL, normal progesterone: $0.5 < P4 < 1.5$ ng/dL) according to the progesterone level on trigger day by the cut-off value reported in previous literatures. A retrospective chart review was conducted to compare the demographic characteristics and the reproductive outcomes between the low progesterone level and normal progesterone level groups.

Result: Total 137 and 178 women were identified in the low progesterone level and normal progesterone level groups respectively. The average number of oocytes retrieved per person was higher in the normal progesterone level group (4.23 vs. 5.25), but the maturation rate and fertilization rate (82.2% vs. 81.4%), as well as clinical pregnancy rate (14.6% vs. 18%) all showed no significant difference between the two groups.

Conclusion: In poor responders, low progesterone level on trigger day does not negatively impact the reproductive outcomes of fresh embryo transfer.