Yi-Ting Hsu 許伊婷
(Y25)

Preliminary results of COVID-19 vaccination among Taiwanese pregnant women: A single-center, prospective, case– control study

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Objective: To evaluate the impacts of messenger RNA coronavirus disease 2019 (COVID-19) vaccines in Taiwanese pregnant women in terms of obstetrical and neonatal outcomes.

Methods: The authors prospectively followed up 450 pregnant women receiving vaccination at a single center. Patients recorded prespecified adverse reactions via a mobile application up to 30 days after the first and second doses. Obstetrical and neonatal outcomes were compared with those of pregnant women, during the same period, who did not undergo vaccination.

Results: Among the 387 women who received the first dose and were followed up for 30 days, injection site pain, fatigue, injection site swelling, muscle ache, and headache were the most prevalent side effects. There were 4.7-,5.7-, 7.1-, and 9.3-fold increases in fatigue, injection site swelling, muscle ache, and headache, respectively, among the 231 women who received the second dose. Most of the side effects resolved by 14 days and all resolved by 30 days after each dose. There were no significant differences ($P > 0.05$) in obstetrical and neonatal morbidity or mortality between the vaccinated and unvaccinated cohorts.

Conclusion: No serious adverse reactions were noted among pregnant women receiving messenger RNA vaccinations with comparable obstetrical and neonatal outcomes to unvaccinated pregnant women.

Ting-Yi Chu 朱庭儀
(Y26)

Serologic features and dynamics of serum antibodies in Taiwanese pregnant women and infants after COVID-19 vaccination: a longitudinal observational study

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Objective: To establish a prospective cohort of pregnant women receiving COVID-19 vaccination to evaluate immunogenicity in different vaccine platforms, duration of antibody waning, efficacy in fetal-maternal antibody transfer, and safety profile in Taiwanese women.

Materials and Methods: We prospectively collected mother-infant pairs who received at least one dose of any COVID-19 vaccine during pregnancy. Pregnant women without any COVID-19 vaccination or with natural infection were enrolled as the negative and positive controls. Maternal sera were collected before delivery, two and six months postpartum, respectively. Blood samples from umbilical vein after clamping the cord and from neonatal peripheral venous circulation at six months old were obtained. Breast milk was collected in breastfeeding mothers. Anti-spike protein antibody was measured by ELISA and neutralization test. T-cell responses were assessed by ex vivo stimulating peripheral blood mononuclear cells with the Human IFN-gamma ELISpot Kit.

Result: A total of 88 mother-infant pairs (74 vaccinated, 14 unvaccinated, two infected) and 29 women of reproductive age (18 vaccinated, 11 vaccinated followed by infection) were included. Most mothers received the Moderna COVID-19 vaccine during pregnancy, and no severe adverse event was recorded. Anti-spike protein IgG level in sera remained detectable in vaccinated mothers two months after delivery, and antibody titer could be boosted after receiving the 3rd dose. Sera from umbilical vein in infants of vaccinated mothers generally showed a high level of anti-spike protein IgG, indicating effective placental transportation. However, neonatal anti-spike protein IgG level declined significantly over time. T-cell responses at birth and six months old showed no reactive INF-gamma secreting T cells after stimulation with the whole S protein of SARS-CoV-2.

Conclusion: Our results indicate that COVID-19 vaccine, mostly Moderna vaccine, induced a robust humoral response in pregnant women with the efficient placental transportation. However, neonatal anti-S protein IgG levels waned gradually after birth and remained low at six months old. Therefore, a vaccination strategy for neonates after six months warrants attention to achieve effective protection against COVID-19 infection.

Yu-Hao Chen 陳昱豪
(Y27)

First-trimester cervical elastography, cervical length and endocervical canal width of pregnant women with cervical insufficiency

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Objective: To investigate changes in first trimester cervical elastography, cervical length and endocervical canal width in pregnant women with a history of cervical insufficiency, and further discuss the possibility of using these markers as predictors of cervical insufficiency in early pregnancy.

Materials and Methods: This was an observational ultrasound study of first trimester cervical changes in singleton pregnancies between January 2016 and June 2018. Cervical elastography, cervical length and endocervical canal width were measured during the first trimester. Strain elastography was used to estimate the softness of anterior and posterior cervical lips and was expressed as percentages (strain rate).

Result: Of the 339 pregnant women enrolled, 24 had a history of cervical insufficiency. The anterior cervical lip was significantly softer in the cervical insufficiency group (strain rate: 0.19% ± 0.05% vs 0.11% ± 0.04%; P < .001). Cervical length was significantly shorter in the cervical insufficiency group (36.3 ± 4.8 mm vs 38.3 ± 3.8 mm; P = .014). Endocervical canal width was significantly wider in the cervical insufficiency group (5.7 ± 1.1 mm vs 5.2 ± 0.7 mm; P = .001). Receiver operating characteristic curve analyses revealed that the optimal cut-off values of anterior cervical lip, cervical length and endocervical canal width to confirm the diagnosis of cervical insufficiency were 0.15%, 35.5 mm and 5.75 mm, respectively. In multivariate logistic regression analysis, significant differences were still observed in anterior cervical strain rate (adjusted odds ratio [OR] 53.78, 95% [confidence interval [CI] 11-270; P < .001) and endocervical canal width (adjusted OR, 5.41, 95% CI,1.2-24.7; P = .029).

Conclusion: First trimester cervical elastography is a valuable tool in the assessment of women with a history of cervical insufficiency. The anterior cervical lip was significantly softer in women with a history of cervical insufficiency, and the sensitivity and specificity of anterior cervical lip strain were better than that of cervical length and endocervical canal width.

Meng-Syuan Lin 林孟萱
(Y28)

A 20-years retrospective study of postnatal surgery for open vs closed spinal dysraphism and introduction the first clinical trial of fetoscopic repair in Taiwan

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Objective: To find out the clinical outcome of open spinal dysraphism (open SD) including myelomeningocele (MMC) and closed spinal dysraphism (closed SD) including meningocele, lipomyelomeningocele, intradural lipoma and filum terminale lipomas after postnatal surgery in the last 20 years. Also, the clinical trial of fetoscopic repair for MMC will be introduced.

Material and methods: From 2000 to 2020, all the surgical methods for neural tube defects were searched and analyzed in Chang Gung Memorial Hospital. Maternal and neonatal outcome were recorded after surgery. Clinical outcome including central neural system, urinary tract, bowel function and motor function were demonstrated between open vs closed SD groups.

Results: A total 358 cases for relative neural surgeries were selected initially, and 296 cases were excluded due to trauma, tumor, bleeding and other diseases. Furthermore, 4 cases of encephalocele and 6 VACTERL association were also excluded. Postnatal outcome of open versus closed SD were compared (12 versus 40 cases). The average follow-up period was 4.6 years (2 months to 20 years). In open SD group, they had lower birth weight, shorter body length, smaller head size. The timing of surgery for open vs closed SD was 1.5 vs 130 day-old, and 2.7 vs 6.4kg, respectively. In all aspects of neurological, motor function, urological and bowel outcome between two groups, closed SD had better prognosis. The earlier timing for open SD surgery also showed the better parameters then later surgery. Our first prenatal fetoscopic repair for open SD is 2 year-old without developmental delay.

Conclusion: We encouraged closed SD to receive postnatal repair due to favor clinical outcome instead of termination the pregnancy. In the open SD group, earlier timing for surgical approach was suggested. For those cases fit into fetoscopic repair criteria, prenatal surgery would have better results compared to postnatal surgery.

Yu-Ju Hsiao 蕭郁儒
(Y29)

The impact of hysterectomy for benign non-prolapse uterine tumors on subsequent ovarian reserve, lower urinary tract symptoms and sexual function: a multi-directional prospective analysis

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Objective: To assess the impact of hysterectomy for benign non-prolapse uterine tumors on subsequent ovarian reserve, sexual function and lower urinary tract symptoms.

Materials and Methods: This study was a prospective longitudinal analysis that recruited patients younger than 45 years old who underwent simple hysterectomy without oophorectomy for symptomatic benign uterine tumors without pelvic prolapse from 2015 to 2019. Anti-müllerian hormone (AMH) and serum sex hormone profile including FSH, LH, E_2, progesterone, total testosterone were obtained for measurements at four time points: preoperative (baseline), 3 , 6 and 12 months postoperatively. Questionnaires including the Urinary Distress Inventory (UDI-6), the Incontinence Impact Questionnaire (IIQ-7), the short form of the Pelvic Organ Prolapse/Urinary Incontinence, and Sexual Function Questionnaire (PISQ-12) were completed preoperatively and during each postoperative follow-up to investigate lower urinary tract symptoms and sexual function. This study was approved by the Institutional Review Board of Chang Gung Memorial Hospital (IRB No. 104-5640B).

Result: A total of 36 patients completed the study. Hysterectomy was performed through laparoscope in 31 and laparotomy in 5 patients The mean of age was 40.8 (rage 31-45). Serum AMH level declined significantly in 3, 6, 12 months after hysterectomy compared with preoperative level ($P<0.01$), but there was no significant regain or further decreasing from 3 month to 12 month after the surgery. The UDI-6 and IIQ-7 both showed significantly decreased at 3, 6, and 12 months after hysterectomy compared to preoperative status ($P<0.01$). Although serum AMH, UDI-6 score, IIQ-7 score showed obvious declining respectively, there were no significant correlations in between. There were no differences in serum FSH, LH, E_2, Progesterone and testosterone concentrations between preoperative and 3, 6, 12 months respectively after hysterectomy ($P>0.05$). No significant differences were found in the short form of PISQ-12 at 3 time-points after hysterectomy ($P>0.05$).

Conclusion: In patient with benign non-prolapse uterine tumors, serum AMH level was significantly lower 3 months following hysterectomy compared with the pre-operative level, and the low level without further declining was observed in one year after the surgery. Lower urinary tract symptoms improved after hysterectomy. Hysterectomy did not appear to have an obvious impact on female sexual function.

Tzu-Tsen Shen 沈姿岑
(Y30)

Implementation of a machine learning model in acute coronary syndrome/acute stroke risk assessment for women with lower urinary tract symptoms

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Introduction: Previous studies have reported Lower urinary tract symptoms (LUTS) may be the predispose subjects to cardiovascular disease. This study aimed to identify the factors that potentially increase the risk of having acute coronary syndrome (ACS) and acute stroke, and build a machine learning-based artificial intelligence prediction models for women with LUTS.

Material and methods: We retrospectively collected the electronic medical records of 1799 patients with LUTS from Chi Mei Medical Center and its 2 branch hospitals in Tainan City, Taiwan. Data were randomly separated into training group for model building (70%) and testing group for model validation (30%). 19 features were identified and 8 features with case numbers > 10 were imported into 6 machine learning algorithms. Study outcomes include ACS and acute stroke.

Results: Age, systemic blood pressure, diastolic blood pressure, Creatinine, HbA1c, Hypertension, Diabetes Mellitus and Hyperlipidemia are the most relevant features that affect the outcome. Based on the AUC value, our optimal model was built by MLP (AUC =0.803) in prediction of ACS or Acute Stroke events within 3 years.

Conclusion: Our study successfully integrate important features with machine learning algorithms to build a good AI prediction model. It can not only used as a prediction model to achieve time-saving, highly specific, personalized risk evaluation, but also can be used to offer warning, enhance patient compliance, earlier intervention and better health care outcome.