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UBC OBSTETRICS AND GYNAECOLOGY
17th ANNUAL ACADEMIC DAY

Tuesday March 7, 2017
And
Wednesday March 8, 2017

Abstract Booklet

For Scientific Presentations

Tuesday March 7, 2017	
Poster Presentations	
1430—1445	*Jennet Baltayeva*
1445—1500	*Fahad Alotaibi*
1500—1515	*Jennifer Hilton*
1515—1530	*Kayleigh Campbell*
1530—1545	*Long Bai*
1545—1600	**AFTERNOON BREAK**
1600—1615	*Shaina (Joohyun) Lee*
1615—1630	*Lindsay Richter*
1630—1645	*Hongjin Zhao*
1645—1700	*Clara Van Ommen*
1700—1715	*Sarah Coad*

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RISKS AND CONSEQUENCES OF PUERPERAL UTERINE INVERSION IN THE UNITED STATES, 2004-2013

(POSTER)

Coad, Sarah; Dahlgren, Leanne; Hutcheon, Jennifer A.

BACKGROUND

Puerperal uterine inversion is a rare, potentially life-threatening obstetrical emergency. The current literature consists of small case series and a single nationwide study from Europe with only 15 cases. We aimed to define the incidence, temporal trends risk factors and outcomes in women with uterine inversion using a nationally representative United States cohort.

METHODS

We used the Nationwide Inpatient Sample to identify all deliveries from 2004 to 2013. ICD-9 codes were used to identify cases of uterine inversion, risk factors and associated adverse outcomes. The incidence of uterine inversion overall and for each year of the study period was calculated. The case fatality and incidence of other adverse outcomes among women with a uterine inversion were estimated.

RESULTS

Among 8,294,279 deliveries in 2004-2013, there were 2427 cases of uterine inversion, corresponding to an incidence of 2.9 per 10,000 deliveries (95% CI:2.8-3.0). There was one maternal death (4.1 per 10,000 events). No change in the incidence of uterine inversion over the study period was detected. Abnormal placentation was the strongest identified risk factor (aOR 13.6 [95%CI:11.5-16.1]). Among women with the condition, 37.7% (95% CI:35.8%-39.6%) had an associated postpartum hemorrhage, 22.4% (95% CI:20.7%-24.0%) received a blood transfusion and 6.0% (95% CI:5.1%-7.0%) required surgical management. Only 2.8% (95% CI:2.1%-3.5%) underwent a hysterectomy.

CONCLUSIONS

The present study provides the largest population-based results on puerperal uterine inversion to date and highlights the high likelihood of adverse maternal outcomes. The results inform the optimization of clinical management in the rare event of uterine inversion.

Wednesday March 8, 2017	
	Paper Presentations
0800—0830	**Registration**
0830—0845	**Welcome by Dr. Geoffrey Cundiff**
0845—0945	**Guest speaker: Dr Sarah McDonald**
0945—1000	*Angel Shan*
1000—1015	*Annick Pina*
1015—1045	**MORNING BREAK**
1045—1100	*Elisabeth McClymont*
1100—1115	*Ji-Hyun Jang*
1115—1130	*May Sanaee*
1130—1145	*Marianne Vidler*
1145—1200	*Ji-Hyun Jang*
1200—1300	**LUNCH**
1300—1315	*Chelsea Elwood*
1315—1330	*Jianfang Zhao*
1330—1345	*Shaina (Joohyun) Lee*
1345—1400	*Tuba Aksoy*
1400—1415	*Mahmoud Iews*
1415—1445	**AFTERNOON BREAK**
1445—1500	*Amy Dawson*
1500—1515	*Giuliu Muraca*
1515—1530	*Kristy Cho*
1530—1545	*Amr Ahmad*
1545	**Closing Remarks**
1700	**Awards Presentation**
1600–1800	**Catered Reception**

COMPARING CLINICAL OUTCOMES OF MINIMAL STIMULATION IVF AND CONVENTIONAL STIMULATION IVF IN WOMEN WITH POOR OVARIAN RESPONSE

Shan, Angel; Nakhuda, Gary

BACKGROUND

IVF involves ovarian stimulation to recruit multiple follicles for oocyte retrieval (1). One factor that limits oocyte yield is poor ovarian response (POR). There is no consensus on the most optimal stimulation protocol for women with POR. Recently, minimal ovarian stimulation IVF protocols which use lower doses of gonadotropins, were found in some studies to be comparable with higher-dose conventional stimulation protocols in ongoing pregnancy rate, with the added advantage of easier regimens and fewer side effects (2-4).

METHODS

Electronic charts of patients who had POR, defined as fewer than or equal to 3 oocytes retrieved, following IVF treatment between May 2014 to August 2016 at Olive Fertility Centre were reviewed retrospectively. The ongoing pregnancy rate, number of embryos for transfer, implantation and miscarriage rates for patients who underwent low dose minimal stimulation IVF protocols were compared to patients who underwent conventional high dose stimulation IVF treatments.

RESULTS

A total of 97 patients and 137 cycles were identified. 60 patients with 65 cycles in the high dose group and 41 patients with 72 cycles in the low dose group were compared. Baseline FSH was higher in the low dose group (p=0.005). Fewer oocytes were retrieved in the low dose group (p=0.0002). The number of embryos to transfer, implantation, miscarriage, and ongoing pregnancy rates were same (p>0.05).

CONCLUSIONS

Our study found no difference in clinical outcomes between high and low dose protocols despite fewer oocytes retrieved in the low dose group. Minimal stimulation protocols may be a comparable option for patients with POR.

FERTILITY AND REPRODUCTIVE OUTCOMES OF HIV+ AND HIV- WOMEN IN THE CARMA COHORT STUDY

(POSTER)

Clara E. Van Ommen, Arianne Y. Albert, Ariel Nesbitt, Shanlea Gordon, Evelyn J. Maan, Helene C. Cote, Neora Pick, Deborah M. Money, Melanie C.M. Murray and the CIHR team on Cellular Aging and HIV Comorbidities in Women and Children

BACKGROUND

Prior research has shown that HIV+ women have reduced fertility. However, most studies originated before combination antiretroviral therapy (cART), and few have examined the impact of universally available cART on birth rates. We sought to determine the birth rates in the cART era among HIV-infected and sociodemographically similar uninfected women enrolled in the CARMA cohort.

METHODS

Lifetime self-reported obstetric history was collected from 269 HIV+ and 215 HIV- women enrolled in the CARMA cohort. Total pregnancy and live birth rates were analyzed using negative binomial regressions to calculate unadjusted and adjusted incident rate ratios (IRR).

RESULTS

HIV+ women were younger, (38.3y vs. 42.2y p=0.007), more likely to be of Black ethnicity (19.7% vs. 3.3% p<0.0001), without a high school diploma (31.2% vs. 24.7%, p<0.0001) and to have a history of substance use (37.9% vs. 32.6% p=0.005) compared with HIV- controls. HIV+ women had a greater number of pregnancies [median(IQR) 3(1-4) vs. 2(0-3) p<0.0001] and live births [2(1-3) vs. 1(0-2) p=0.003] compared to controls. In a model adjusted for significant factors above, HIV+ women still had a higher rate of pregnancies (IRR=1.63 p<0.0001) and live births (IRR=1.54 p<0.0001) compared to controls.

CONCLUSIONS

Our data demonstrate pregnancy and live birth rates among HIV+ women in the CARMA cohort 1.5 and 1.6 times greater than HIV- controls, respectively. This suggests that in the post cART era, HIV+ women with good access to HIV care can experience similar fecundity rates to their HIV- peers.

BONE MORPHOGENETIC PROTEIN 2 (BMP2) PROMOTES HUMAN TROPHOBLAST CELL INVASION BY UP-REGULATING N-CADHERIN

(POSTER)

Hongjin Zhao, Christian Klausen, Yan Li, Hua Zhu, Peter C.K. Leung

BACKGROUND

The expression of BMP2 is spatiotemporally correlated with embryo implantation in mice. Studies have shown that BMP2 can increase gastric cancer cell invasion via the mesenchymal adhesion molecule N-cadherin, and N-cadherin is also involved in placental trophoblast invasion. However, whether BMP2 can promote trophoblast cell invasion during placentation remains unknown.

METHODS

We used primary and immortalized (HTR8/SVneo) cultures of human extravillous trophoblast (EVT) cells to investigate the effects of BMP2 on human trophoblast cell invasion and the involvement of N-cadherin in these effects. Matrigel-coated transwell assays were used to examine cell invasiveness.

RESULTS

Primary human EVT cells displayed high levels of BMP2 mRNA. Treatment with BMP2 increased HTR8/SVneo cell invasion as well as N-cadherin mRNA and protein levels, but had no significant effect on cell proliferation. Likewise, BMP2 treatment enhanced cell invasion and N-cadherin expression in primary human EVT cells. Importantly, basal and BMP2-induced invasion were attenuated by siRNA-mediated down-regulation of N-cadherin in both HTR8/SVneo and primary EVT cells. Intriguingly, BMP2 induced the phosphorylation/activation of both canonical SMAD1/5/8 and noncanonical SMAD2/3 signaling in HTR8/SVneo and primary EVT cells. Knockdown of SMAD2/3 or common SMAD4 totally abolished the effects of BMP2 on N-cadherin up-regulation in HTR/SVneo cells. As well, the activation of SMAD2/3 and up-regulation of N-cadherin were totally abolished by the type I receptor activin receptor-like kinases 2/3 (ALK2/3) inhibitor DMH1 and partially attenuated by the ALK4/5/7 inhibitor SB431542 in HTR8/SVneo cells.

CONCLUSIONS

BMP2 promotes trophoblast cell invasion by up-regulating N-cadherin in a SMAD2/3-dependent fashion.

ENDOMETRIAL CANCER PRESENTATION AND OUTCOMES BASED ON MISMATCH REPAIR PROTEIN EXPRESSION FROM A POPULATION-BASED STUDY

Annick Pina, Robert Wolber, Jessica McAlpine, Blake Gilks, Janice Kwon

BACKGROUND

There is uncertainty about the prognostic significance of mismatch repair deficiency (MMR) in endometrial cancer. The objective was to evaluate clinical characteristics and outcomes of endometrial cancers based on MMR status within a population-based study.

METHODS

This was a retrospective cohort study of all endometrial cancer cases from the Vancouver Coastal Health Authority region that were evaluated for MMR proteins (MLH1, MSH2, MSH6, PMS2) using immunohistochemistry between April 2009 and July 2015. Patients were classified as MMR deficient (MMRd) if any MMR protein was absent, or MMR proficient (MMRp). MMRd and MMRp patients were compared with respect to demographics, tumour characteristics, recurrence and survival rates.

RESULTS

There were 766 eligible patients, with 555 MMRp (72.5%) and 211 MMRd tumours. There was no difference between these MMR groups with respect to age, BMI, and diabetes. The MMRd group had a higher proportion of endometrioid tumours (89.4% vs 73.9%, p=0.002) but fewer were Grade 1 (32.5% vs. 42.9, p=0.002). MMMd tumours were more likely to have LVSI (41.5% vs. 30.8%, p=0.002), and dedifferentation (5.9% vs. 1.1%, p<0.001). Median progression-free and overall survival have not been reached. After a median follow-up of 22 months, there was no difference in recurrence rates between MMRp and MMRd tumours (1.5% vs 1.9%; p=0.86).

CONCLUSIONS

In this population-based study, there were significant differences between MMR proficient and deficient endometrial cancers with respect to histotype, grade, LVSI, and dedifferentation. Although follow-up has been short, there is no difference in recurrence or survival outcomes.

TWO-YEAR EFFICACY OF THE QUADRIVALENT HPV VACCINE IN A COHORT OF HIV-POSITIVE FEMALES

McClymont, Elisabeth; Lee, Marette; Moses, Erin; Blitz, Sandra; Coutlée, François; Walmsley, Sharon; Money, Deborah & the CTN 236 HPV in HIV Study Team

BACKGROUND

HIV-positive women experience higher rates of HPV infection and cervical cancer than HIV-negative women. HPV vaccination is efficacious in HIV-negative women but efficacy is unknown in HIV-positives.

METHODS

HIV-positive females received three doses of qHPV vaccine in a multicentre study. Participants provided health data as well as cervical cytology by Bethesda criteria and HPV DNA samples tested by Linear array. Persistent cases of qHPV = new HPV 6, 11, 16, or 18 in samples from ≥2 consecutive visits or as qHPV present in the last sample. Data up to 2.5 years was considered.

RESULTS

267 females were eligible for the intention-to-treat population (≥1 dose of vaccine, ≥1 follow-up visit). At first vaccination, median age was 39 years (IQR: 34-45), median CD4 count was 494/mm^3 (IQR: 375-680), median CD4 nadir was 229/mm^3 (IQR: 111-330), and 70% had a suppressed HIV viral load (<50 copies/mL). Median follow-up time was 2 years. In the per-protocol efficacy (PPE) population (3 doses of vaccine within 1 year, ≥1 follow-up visit post month 7), the incidences were: new persistent qHPV = 1.3 per 100 person-years (95% CI: 0.4-3.0), genital warts =1.0 per 100 person-years (95% CI: 0.3-2.6). No cases of CIN2+ were observed.

CONCLUSIONS

Utilizing a composite endpoint of persistent qHPV, external genital disease and cervical disease associated with qHPV types, incidence within our HIV-positive PPE population was significantly greater than an HIV-negative comparator. This suggests that although overall rates of vaccine failure were low, HIV-positive women appear to be at higher risk of acquiring qHPV-related disease despite vaccination.

TRENDS IN NEONATAL MORTALITY AND MORBIDITY FOLLOWING SPONTANEOUS AND IATROGENIC PRETERM DELIVERY

(POSTER)

Richter, Lindsay; Ting, Joseph; Synnes, Ann; Lim, Ken; Lisonkova, Sarka

BACKGROUND

After a decade of increase, preterm birth rate in the US has declined, with the largest decline at late preterm gestation (34-36 weeks). Concomitant changes in adverse neonatal outcomes are unknown.

OBJECTIVE

To examine temporal trends in neonatal mortality and severe morbidity among infants born preterm following i) preterm premature rupture of membranes (PPROM), ii) spontaneous labour, or iii) iatrogenic delivery.

METHODS

We included all singleton live births in Washington State, USA, 2004-2013 (n=737,711). Types of preterm delivery included birth following PPROM, spontaneous labour, and iatrogenic delivery. Adverse outcome included neonatal death or severe morbidity consisting of: bronchopulmonary dysplasia, intraventricular haemorrhage grade ≥3, or periventricular leukomalacia. Cochran-Armitage test was used to assess temporal trends. Rates were contrasted between 2004-06 vs. 2011-13. Logistic regression was used to adjust for temporal changes in other risk factors.

RESULTS

The overall preterm birth rate declined (7.3%-7.0%). Preterm birth declined following PPROM (1.3%-1.1%), and following spontaneous labour (3.2%-3.0%), while iatrogenic preterm birth increased (2.7%-2.9%; all p<0.01). The overall rate of adverse outcome remained unchanged (3.5%). The rate of adverse outcome declined significantly following PPROM (5.4%-4.0%; p<0.01); and remained unchanged in iatrogenic (4.4%) and spontaneous (2.2%) preterm delivery. Late preterm birth rates declined significantly in all delivery categories (all p-values <0.05), yet adverse outcome rates remained unchanged.

CONCLUSIONS

The recent data on declining rates of preterm birth and improving rates of serious newborn adverse health outcomes following PPROM provide important information for health care providers and administrators on population needs for specialized neonatal care.

DOES FERTILITY PRESERVATION IN BREAST CANCER PATIENTS AFFECT CANCER RECURRENCE RATES?

(POSTER)

Ying Wang, ***Shaina Lee,*** Pierre Camateros, Kirstin Perdrizet, Daniel Yokom, Ellen Warner, Jeffery Roberts, Caroline Lohrisch

BACKGROUND

Chemotherapy and hormone therapy results in potential ovarian toxicity and delay in child-bearing among women of reproductive age with breast cancer. Whether short term ovarian stimulation is safe is not well studied. We examined the effects of short-term ovarian stimulation on patients' breast cancer recurrence rates

METHODS

Women diagnosed with localized breast cancer between 2005 and 2011 at any one of five cancer centres and referred to a reproductive endocrinologist in British Columbia were identified from a central database. Clinical, pathological, treatment, and outcome characteristics were compared for patients who did and did not undergo ovarian stimulation prior to systemic cancer treatment.

RESULTS

Seventy-seven patients were included. Thirty-four (44%) women underwent ovarian stimulation: they were more likely to receive chemotherapy than patients who declined ovarian stimulation ($p = 0.001$). Age, number of existing children, radiation, and hormonal treatments were not significantly associated with decision to undergo ovarian stimulation ($p > 0.05$). After a median follow-up of 3.7 years, 7 (21%) patients who pursued ovarian stimulation and 9 (21%) patients who did not experienced disease recurrence. There was no association between ovarian stimulation and rate of local or distant breast cancer recurrence ($p = 0.658$).

CONCLUSIONS

We did not find a harmful effect of short term ovarian stimulation on breast cancer recurrence rates. Patients who received chemotherapy were more likely to pursue ovarian stimulation, suggesting that patients were well informed about the negative impact on fertility of chemotherapy and of the importance of fertility preservation prior to potentially gonadotoxic treatments.

DOES THE FALLOPIAN TUBE INFLUENCE THE METASTATIC POTENTIAL OF UTERINE SEROUS AND CLEAR CELL CARCINOMA?

Jang, Ji-Hyun; Kwon, Janice

BACKGROUND

Uterine serous carcinoma (USC) and clear cell carcinoma (CCC) are aggressive forms of endometrial cancer with poor outcome. Previous studies have shown that the fallopian tube can be an important route for metastasis. The purpose of this study is to determine whether women diagnosed with USC and CCC who have had tubal ligation are more likely to be diagnosed at an earlier stage, compared to those who have not had tubal ligation

METHODS

This is a population-based retrospective cohort of women with pathology-confirmed USC and CCC from 2000-2015 identified through the British Columbia Cancer Registry. Chart reviews were completed to obtain demographic, clinical, pathological, and outcome data. Descriptive, Chi-square, and multivariate logistic regression were completed for statistical analyses.

RESULTS

283, 73, and 157 women with USC, CCC, and mixed histology, respectively were included. 51 (18%), 7 (10%), and 30 (19%) women with USC, CCC, and mixed histology had previous tubal ligation, respectively. A significantly higher proportion of those with tubal ligation had Stage I & II disease (78%) compared to those without (63%) ($c^2=7.53$, $p=0.0061$). Subgroup analyses with the USC group showed similar results ($c^2=4.91$, $p=0.03$). We were underpowered to detect significant findings in the CCC and mixed groups. Tubal sterilization was significantly associated with decreased likelihood of Stage III & IV disease, even after multivariate adjustment (OR=0.37, 95% CI: 0.18,0.79).

CONCLUSIONS

Our study provides compelling evidence that tubal ligation may prevent extrauterine metastasis of USC and CCC, further suggesting that opportunistic prophylactic salpingectomy can provide effective cancer prophylaxis.

CANADIAN OBSTETRICS AND GYNECOLOGY RESIDENTS: ARE THEY READY FOR INDEPENDENT PRACTICE?

Sanaee MS, Sobel M, Arendas K, Leyland N

BACKGROUND

There is a recent trend toward laparoscopic skill development in residency training. We hypothesize that with this large shift in focus, final-year Canadian OBGYN graduates will report the most comfort with performing a total laparoscopic hysterectomy compared to other modalities.

METHODS

A web-based survey was distributed to final-year residents in 2014, 2015 and 2016. They were asked details regarding their training as well as their plan for practice/fellowship. They then ranked their comfort level for 31 procedural/operative skills spanning general Obstetrics and Gynecology and all subspecialties.

A parallel survey was distributed to program directors questioning the level of comfort they believe their residents reported.

RESULTS

Results show a response rate of 55.8% from the resident and 75% from the program director group.

Of the residents, 77.8% are either comfortable or very comfortable with performing an abdominal hysterectomy independently versus 68.5% performing a vaginal hysterectomy and 53.5.4% performing a laparoscopic hysterectomy. Program director response was 90.9%, 100% and 72.7%, respectively.

CONCLUSIONS

OBGYN training across Canada appears to be equivalent based on comfort levels across various procedures. That said, program directors appear to have higher confidence in their graduates' comfort when compared to the graduating residents themselves. These conclusions and other findings will be presented at the 17th Annual UBC Obstetrics and Gynecology Academic Day.

SMAD1/5 MEDIATES BONE MORPHOGENETIC PROTEIN 2-INDUCED UP-REGULATION OF BAMBI EXPRESSION IN HUMAN GRANULOSA-LUTEIN CELLS

(POSTER)

Long Bai, Hsun-Ming Chang, Jung-Chien Cheng, Christian Klausen, Guiyan Chu, Peter C.K. Leung and Gongshe Yang

BACKGROUND

Bone morphogenetic protein and activin membrane-bound inhibitor (BAMBI) is a transforming growth factor-β (TGF-β) type I receptor antagonist that negatively regulates TGF-β and bone morphogenetic protein (BMP) signaling. The aim of this study was to investigate the effect of BMP2 on the regulation of BAMBI expression in human granulosa-lutein cells and the underlying mechanisms.

METHODS

Primary and immortalized (SVOG cells) human granulosa-lutein cells were used as research models. Changes in BAMBI mRNA as well as protein levels of phosphorylated SMAD1/5/8 and SMAD2/3 were evaluated after exposure to recombinant human BMP2 or TGF-β. Real-time quantitative PCR and Western blot analysis were used to examine mRNA and protein levels, respectively. BMP/TGF-β type I receptor inhibitors (dorsomorphin, DMH-1 and SB431542) and targeted depletion with small interfering RNAs (SMAD1, SMAD5, SMAD8 and SMAD4) were used to investigate the underlying molecular mechanisms.

RESULTS

Treatment with BMP2 up-regulated the expression of BAMBI and increased the levels of phosphorylated SMAD1/5/8, and these effects were abolished by pre-treatment with the BMP type I receptor inhibitors dorsomorphin and DMH-1, but not the TGF-β type I receptor inhibitor SB431542. Individual or combined knockdown of SMAD1 and SMAD5, but not SMAD8, attenuated the BMP2-induced increases in phosphorylated SMAD1/5/8 and BAMBI expression. Knockdown of SMAD4 completely abolished the up-regulation of BAMBI by BMP2. Pre-treatment with BMP2 suppressed TGF-β1-induced phosphorylation of SMAD2/3, and this effect was reversed by knockdown of endogenous BAMBI.

CONCLUSIONS

BAMBI is a BMP2-responsive gene and participates in the negative feedback regulation of TGF-β signaling in the human ovary.

IN UTERO SSRI ANTIDEPRESSANT EXPOSURE PREDICTS CALLOSAL MICROSTRUCTURE IN TERM-BORN NEONATES

(POSTER)

Campbell, Kayleigh; Williams, Lynne; Kim, Daniel; Brain, Ursula; Bjornson, Bruce; Grunau, Ruth; Rurak, Dan; Miller, Steven; Oberlander, Tim

BACKGROUND

Antenatal maternal mood disturbances and use of selective serotonin reuptake inhibitor (SSRI) antidepressants alter neonatal behavior. SSRIs are diffusible across the placenta, raising key questions about their influence on fetal neurodevelopment. Cerebral white matter (WM) undergoes rapid and complex maturation in the third-trimester, and the neurotransmitter serotonin (5-HT) has critical roles in neuronal proliferation, synaptogenesis, and myelination in the developing brain. Given that these maturational processes may be sensitive to altered 5-HT signaling secondary to prenatal SSRI exposure, we hypothesized that WM microstructure would be altered in term-born neonates following *in utero* SSRI antidepressant exposure.

METHODS

MR imaging was undertaken on 6-day-old SSRI-exposed (n=18) and non-exposed (n=32) term-born neonates. Cerebral WM was examined with diffusion tensor imaging (DTI), which yields measures of fractional anisotropy (FA) as an index of WM microstructural maturity. A region-of-interest (ROI) approach was used to investigate the effects of SSRI exposure on FA in the corpus callosum (CC). ROIs were placed in the genu, body, and splenium of the CC, and mean FA was extracted. With multiple linear regression, FA was predicted using SSRI-exposure status, post-conceptional gestational age at the MRI (GA_{MRI}), CC region, and mean maternal mood measures obtained in the third-trimester with the Hamilton Rating Scales for Depression (HAM-D).

RESULTS

A significant interaction was observed between prenatal maternal depression (HAM-D score) and SSRI-exposure status (η^2=0.16, p<0.001). Further analysis (adjusted R^2=0.214; p<0.001) revealed a maternal mood-adjusted SSRI exposure effect on FA, accounting for CC region and GA_{MRI}. Post hoc analysis with Tukey's correction then examined the interaction between maternal depression-adjusted SSRI-exposure at each CC region. In neonates of prenatally depression mothers treated with an SSRI, significantly increased FA was observed in the genu (t=4.03, p<0.001) and splenium (t=11.92, p<0.001), but not in the CC body.

CONCLUSIONS

Fetal exposure to both SSRIs and maternal depression together may alter CC microstructure in the genu and splenium, suggesting a spatiotemporal sensitivity in the developing CC. Future investigations of WM development and relations between brain microstructure and neonatal neurobehaviour are required.

WOMEN'S PERCEPTIONS OF THE HYPERTENSIVE DISORDERS OF PREGNANCY IN NIGERIA, MOZAMBIQUE, PAKISTAN AND INDIA: QUALITATIVE EVIDENCE SYNTHESIS BY WAY OF PRIMARY DATA VERSUS PUBLISHED FINDINGS FROM THE COMMUNITY LEVEL INTERVENTIONS FOR PRE-ECLAMPSIA (CLIP) FEASIBILITY STUDY

Vidler, Marianne; De Silva, Dane A; Dharamsi, Shafik; Magee, Laura A; Qureshi, Rahat N; Bhutta, Zulfiqar; Sawchuck, Diane; Akeju, David; Bellad, Mrutynjaya; Munguambe, Khatia; von Dadeslzen, Peter

BACKGROUND

Perceptions of health and illness can impact behaviour and health outcomes, yet little is known regarding perceptions of pregnancy complications, particularly for the hypertensive disorders of pregnancy. This paper sought to determine women's perceptions of these conditions by qualitative evidence synthesis.

METHODS

Syntheses were conducted utilizing two methods: (1) from review of original transcripts from the Community Level Interventions for Pre-eclampsia (CLIP) study conducted in four culturally distinct jurisdictions, (2) from review of published findings from the same four studies. For the first synthesis focus groups transcripts obtained from pregnant women, women of reproductive age, and/or new mothers from Nigeria, Mozambique, Pakistan, and India were included. Both methods extracted qualitative data for thematic analysis using NVivo software.

RESULTS

Synthesis of the primary CLIP data resulted in four broad analytic themes: (1) the influence of personal experiences, (2) interpretations related to the natural environment, (3) interpretations related to socio-economic determinants, and (4) interpretations related to myths and the supernatural. The synthesis of published results led to three themes: (1) knowledge regarding hypertension or convulsions in pregnancy, (2) knowledge gaps regarding hypertension or convulsions in pregnancy, and (3) barriers to learning regarding the hypertensive disorders. There is some clear overlap of findings from both approaches, however, the depth of results varied significantly.

CONCLUSIONS

Culture has a strong influence on perceptions of the hypertensive disorders of pregnancy, and many misconceptions originate from traditional beliefs related to health and disease. Personal experiences can be used to address gaps in health-related knowledge among women of reproductive age.

INCISIONAL RECURRENCES OF ENDOMETRIAL CANCER

Jang, Ji-Hyun; Pon, Julia; Kwon, Janice; Gilks, Blake; McAlpine, Jessica

BACKGROUND

Incisional recurrences of endometrial cancer are rare, and therefore our understanding of the pathophysiology and risk factors are limited. To date, only a handful of case reports have been published. This study describes a case series of endometrial cancer incisional recurrences.

METHODS

A retrospective chart review of women with incisional or abdominal wall recurrence of low-intermediate risk endometrial cancer was completed using the British Columbia Cancer Agency Database from 2003 to 2015. Demographic and clinical data were collected. Molecular characterization of these tumours is currently underway.

RESULTS

6 of 1571 (0.38%) women had an incisional or abdominal wall recurrence. The median age at initial endometrial cancer diagnosis was 61. Stages at diagnosis were IA (n=4) and IB (n=2). All women underwent hysterectomy and bilateral salpingo-oophorectomy as primary treatment (5 laparotomy, 1 laparoscopy-assisted), with one woman undergoing lymph node dissection, and another woman receiving adjuvant radiation. Incisional recurrences occurred at 12-34 months after primary surgery. Four of six women had concurrent recurrences elsewhere and received systemic therapy, succumbing to their disease at a median of 10 months after treatment.

CONCLUSIONS

Over a 12-year period, 6 women with primary low-intermediate risk endometrial cancer were identified to have an incisional or abdominal wall recurrence. In contrast to previous reports, women in our study had concurrent recurrences and were treated by non-surgical means. To our knowledge, this is the largest case series to date. Molecular characterization of these tumors may provide insight into why these low-intermediate risk cancers recurred at such unusual sites.

TIME-LAPSE MORPHOKINETIC ANALYSIS OF EMBRYOS CULTURED IN COOK VERSUS GLOBAL MEDIA

(POSTER)

Jennifer Hilton, Jason Au, Arianne Albert, Jon Havelock

BACKGROUND

Selection of embryos for transfer after IVF is traditionally based on morphology. Algorithms using the morphokinetic parameters (MKP) from time-lapse image analysis have been proposed to identify embryos with greater implantation potential. The purpose of this study is to compare MKP of embryos cultured in 2 different media.

METHODS

Retrospective cohort study of prospectively collected MKP for embryos cultured in the EmbryoScope with Cook and Global media. *Hypothesis:* proportion of embryos with time to reach five cells (t5) <48 h is greater with Global compared to Cook media. *Primary Outcome:* proportion of embryos with t5 < 48 hours(h). *Secondary Outcomes:* MKP parameters, multinucleation and morphokinetic grades. Statistical analysis used a mixed effects model controlling for correlation of embryos.

RESULTS

70 patients had embryos cultured in the EmbryoScope (32 Cook; 367 embryos, 38 Global; 292 embryos). Patients in the Global group (35.1 years) were older compared to Cook (33.2 years; p=0.03). Proportion of embryos having t5<48h in the Cook media was 25% and this was not significantly different from 32% in the Global media (OR 1.59, 95% CI 0.93 – 2.71, p=0.24). Mean times for morphokinetic parameters (t2, t3, t4 and t5) were all significantly faster for embryos cultured in Global media. The proportion of embryos in each of the morphokinetic grades did not differ. Global embryos were more likely to have multinucleation than Cook embryos (36% vs. 12%; OR 4.41 (2.26 to 8.64), p=0.003).

CONCLUSIONS

Differences in MKP and multinucleation rate were observed between Cook and Global media which may suggest possible epigenetic differences in offspring.

PLASMINOEN ACTIVATOR INHIBITOR-1 IN ENDOMTRIOSIS

(POSTER)

Fahad Alotaibi, Bo Peng, Anna Lee, and Paul J. Yong

BACKGROUND

Our group has previously shown that deep dyspareunia in endometriosis is associated with an increase local nerve density in cul-de-sac. Increased PAI-1 expression and associated hypofibrinolysis have been reported promote nerve fiber formation and neuron survival. On the other hand, there is some evidence of the possible functions of PAI-1 in cell migration and invasion. It was also suggested PAI-1 functions in tumor biology.

METHODS

Immunohistochemical analysis using a validated PAI-1 antibody. In the first cohort, we examined PAI-1 expression in Stage I/II cul-de-sac endometriosis from women with or without deep dyspareunia. In the second cohort, we examined PAI-1 expression in deep infiltrating endometriosis and compared to endometrioma, superficial endometriosis, and eutopic endometrium.

RESULTS

In the first cohort, we found lower expression of PAI-1 in women with more severe deep dyspareunia ($r = -0.352$, $n = 35$, $p = 0.038$). In the second cohort, we found higher expression of PAI-1 in deep infiltrating endometriosis ($n = 10$) compared to superficial endometriosis ($n = 10$) ($p = 0.031$) and eutopic endometrium ($n = 10$) ($p = 0.002$).

CONCLUSIONS

We observed lower PAI-1 expression in Stage I/II cul-de-sac endometriosis associated with deep dyspareunia. In contrast, higher PAI-1 expression was found in deep infiltrating endometriosis. Further research is needed to clarify the complexities of PAI-1 expression in endometriosis.

VAGINAL EXPOSURES CONNECTED TO REGIONAL MICROBIOMES (VECTOR): UNDERSTANDING FOREIGN BODY REACTIONS TO MESH IMPLANTATION

Elwood C, Park E, Koenig N, Cundiff GW, Hill J, Geoffrion R, Money D and Lange D

BACKGROUND

Vaginal mesh exposure is a serious complication of surgery for pelvic organ prolapse and stress urinary incontinence occurring in 10-30% of women. The underlying etiology of erosion is unknown, but may be associated with a foreign body response (FBR) driven by chronic inflammation. Here we evaluated the FBR to mesh engraftment in a novel long-term vaginal mesh *in vivo* model to better understand the macrophage-specific response to implanted mesh.

METHODS

24 Sprague Dawley rats were used, 12 animals underwent mesh implantation in the anterior vaginal compartment, while 12 underwent sham surgery. Following recovery animals were monitored visually for signs of exposure. Three animals were sacrificed at 48h, 7d, 30d and 90d post-operatively and tissue containing the mesh removed for histological analysis. The expression of markers characteristic of FBRs, iNOS and Arginase 1, was analyzed via qPCR.

RESULTS

Mesh was implanted successfully. Histologic analysis demonstrated significantly more low level inflammation and giant cell formation in the rats with mesh. qPCR demonstrated no significant difference in iNOS and arginase 1 expression, indicating equal distribution of M1 and M2 type macrophages.

CONCLUSIONS

The normal FBR to implanted vaginal mesh material appears to be driven by a balance between M1 and M2-type macrophages, suggesting a mechanism that involves well-balanced inflammatory and wound-healing responses. Our model allows for future studies identifying factors that disrupt this balance leading to mesh exposure. Current efforts focus on translating these findings to clinical samples and evaluating a role for members of the vaginal microbiome in mediating mesh exposure.

BETACELLULIN PROMOTES OVARIAN CANCER CELL PROLIFERATION VIA MEK-ERK AND CCN1 SIGNALING

Jianfang Zhao, Christian Klausen, Peter C.K. Leung

BACKGROUND

Epithelial ovarian cancer is the fifth most common cause of cancer death in women and the most lethal of all gynecological malignancies. The epidermal growth factor (EGF) family member betacellulin has important functional effects in several human cancers. Our previous studies have demonstrated that betacellulin induces epithelial ovarian cancer cell migration, however its role in cell proliferation remains unclear. Cysteine-rich protein 61 (CYR61/CCN1) is an important matricellular protein which has been shown to promote cell proliferation and is associated with poor survival in ovarian cancer. In the current study, we tested the hypothesis that betacellulin induces ovarian cancer cell proliferation by up-regulating CCN1.

METHODS

OVCAR3 and SKOV3 ovarian cancer cell lines were treated alone or in combination with recombinant betacellulin, EGF receptor inhibitor AG1478, MEK inhibitor U0126, or small interfering RNA targeting CCN1. Protein and mRNA levels were measured by Western blot and RT-qPCR. Cell proliferation was evaluated by MTT assays.

RESULTS

Treatment with betacellulin significantly increased OVCAR3 and SKOV3 cell proliferation and CCN1 expression, and these effects were inhibited by pre-treatment with AG1478. Interestingly, pre-treatment with U0126 blocked betacellulin-induced cell proliferation in both cell line, whereas it did not reduce the up-regulation of CCN1 by betacellulin. Importantly, knockdown of endogenous CCN1 partially reversed betacellulin-induced SKOV3 cell proliferation.

CONCLUSIONS

This study shows that betacellulin promotes ovarian cancer cell proliferation via both MEK-ERK and CCN1 signaling. Thus, excessive betacellulin -EGF receptor signaling may promote both ovarian cancer cell proliferation and migration.

DIET-INDUCED OBESITY MAY ALTER UTERINE NATURAL KILLER CELL BIOLOGY AT MATERNAL-FETAL INTERFACE

(POSTER)

Jennet Baltayeva, Barbara Castellana, Eunice Chin, Julian K. Christians, Alexander G. Beristain

BACKGROUND

Maternal obesity is associated with multiple adverse reproductive outcomes, negatively affecting both maternal and fetal health. The mechanisms linking obesity to pregnancy complications remain unclear. Proper development of the placenta and establishment of utero-placental vasculature are essential for optimal fetal growth and survival. Uterine immune cells, particularly uterine natural killer cells (uNKs), play a fundamental role in promoting these events. This work aims to develop a mouse model of obesity in pregnancy to examine the effects of obesity on uterine uNK cell biology.

METHODS

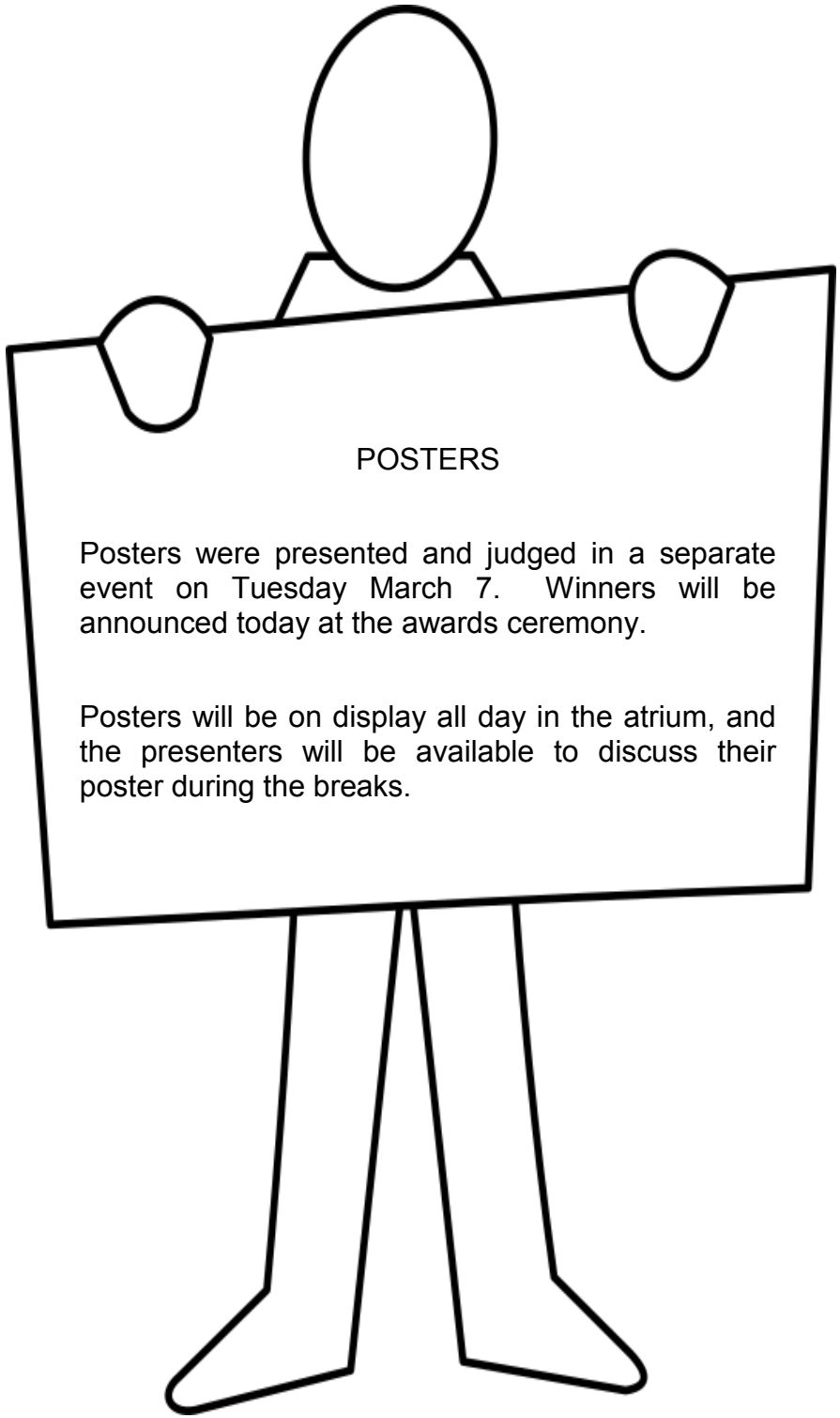
A diet-induced mouse model of obesity was established by subjecting 6-week old female C57B-6 mice to a high-fat diet (HFD) for 13 weeks; control mice were fed a low-fat diet for 13 weeks (LFD). Following the diet, mice were mated with C57B-6 male mice, and on day 10 of gestation (gd10) uterine horns were extracted and decidual mononuclear cells (DMCs) were isolated. Subpopulations of tissue-resident (tr) and conventional (c) uNK cells were quantified via multicolour flow-cytometry and characterized in their expression of the cytotoxicity receptor (NCR1).

RESULTS

Diet-induced obesity resulted in subtle alterations in sub-populations of uNK cells at GD10 in mice, characterized by increased proportions of tr-uNK cells and uNK cells expressing the NCR1.

CONCLUSIONS

As tr-uNK cells produce angiogenic factors in early pregnancy, the cellular alterations identified in this study suggest that maternal obesity may lead to alterations in neo-vascularization in the uterus. Further, an increase in the uNK cell NCR1 population suggests that maternal obesity may also result in alterations in uNK cell cytotoxicity/activity.



OUTCOME OF SINGLE VERSUS REPEAT DOSES OF MISOPROSTOL FOR TREATMENT OF MISSED ABORTION

Shaina Lee, Arianne Albert, Nicole Prestley, Stephanie Fisher

BACKGROUND

Spontaneous miscarriage affects 12-20% of pregnancies. Optimal regimen of misoprostol for medical management of miscarriage remains unclear. This study was conducted to evaluate the misoprostol protocol used at the early pregnancy assessment clinic at BC Women's hospital.

METHODS

Women with missed miscarriage who chose misoprostol as a primary treatment method between May 2013 and March 2015 were identified from the EPAC database. They were offered vaginal misoprostol 800 mcg, and a second dose was administered if no significant bleeding occurred. The primary outcome studied was percentage of patients who had resolution of miscarriage without D&C with either one or two doses. Time to completion of miscarriage, number of visits and ultrasounds prior to completion of miscarriage, and adverse events were also examined.

RESULTS

Among 152women treated with misoprostol, 64/79 women (81%, 95% CI = 70.3-88.6%) who took one dose of misoprostol had resolution of their miscarriage without needing D&C, compared to 43/73 women (59%, 95% CI = 46.8–70.1%) who took two doses. Women who required two doses had 2.98times higher odds of D&C. Overall success was 70%. As expected, women who received two doses took longer for resolution and had a greater number of clinic visits.

CONCLUSIONS

Overall success rate with the current protocol was 70%. Women who used a second dose of misoprostol had 2.98times higher odds of ending up with surgical intervention, with a rate of D&C of approximately 40%. These findings may be relevant in counseling women undergoing medical treatment for missed miscarriage.

SLIDING SIGN IN THE PREDICTION OF POSTERIOR CUL-DE-SAC OBLITERATION IN WOMEN WITH SUSPECTED ENDOMETRIOSIS

Aksoy, T, Allaire, C, Noga, H, Bedaiwy, M, Williams, C, Yong, P

BACKGROUND

To determine the sensitivity/specificity of the pre-operative transvaginal ultrasound sliding sign in predicting posterior cul-de-sac obliteration

METHODS

This study involved the analysis of data from a prospective patient registry at a tertiary care level pelvic pain clinic. All patients with suspected endometriosis who were scheduled for laparoscopy between August 2015 and July 2016 were pre-operatively assessed using the transvaginal ultrasound sliding sign technique. In this technique, the probe is used to visualize whether the uterus/cervix slides against the colon. A "positive" sliding sign indicates the uterus/cervix slides freely. A "negative" sliding sign indicates that the posterior cul-de-sac is obliterated. The outcome was the diagnosis of posterior cul-de-sac obliteration (partial or complete) at the time of laparoscopic surgery. The Chi-Square test was used for statistical analysis.

RESULTS

153 patients were included. 15% of patients had an obliterated posterior cul-de-sac at laparoscopy (23/153). A negative sliding sign was highly associated with cul-de-sac obliteration ($p<0.001$). For the negative sliding sign, sensitivity was 73.9% and specificity was 95.4%, with a positive predictive value of 73.9% and negative predictive value of 95.4%, for the outcome of cul-de-sac obliteration.

CONCLUSIONS

The sliding sign technique using transvaginal ultrasound is a reliable soft marker that can be used in predicting posterior cul-de-sac obliteration in women scheduled to have surgery for suspected endometriosis. Posterior cul-de-sac obliteration may require more advanced laparoscopic skills, prolonged operating time, and a multidisciplinary approach. Thus, knowing the status of the posterior cul-de-sac can be useful in the pre-operative planning process.

DIFFERENTIAL EXPRESSION OF KISSPEPTIN IN EUTOPIC AND ECTOPIC ENDOMETRIUM OF WOMEN WITH AND WITHOUT ENDOMETRIOSIS

Abdelkareem, Amr; Ait-Allah, Abdou; Allaire, Catherine; Peng, Bo; Yong, Paul; Bedaiwy, Mohamed

BACKGROUND

The neuropeptide Kisspeptin regulates gonadotrophin releasing hormone release from the hypothalamus and is expressed peripherally in the endometrium. It has antimetastatic effects in many types of cancer. Like cancer, endometriosis exhibits migration and invasiveness. Our objective was to evaluate the expression of Kisspeptin in different endometriotic lesions.

METHODS

In this case control study, we evaluated Kisspeptin expression in patients with (n=35) and without (n=14) endometriosis. Eutopic endometrium was obtained from patients with (EUO-E) and without (EUO-C) endometriosis. Additionally, tissues were collected from Superficial endometriotic implants (SUP), Deep infiltrating endometriosis (DIE), and Endometriomas (OMA).

Immuno-histochemistry staining was performed using an anti-kisspeptin antibody. Kisspeptin intensity and abundance were measured using Histo-score. Data were analyzed using Student-t and one way ANOVA tests where appropriate.

RESULTS

In eutopic endometrium, Kisspeptin expression was significantly lower in both glandular and stromal components of EUO-E compared to EUO-C ($p<0.001$). In endometriotic implants, Kisspeptin expression was significantly lower in both glandular and stromal components of DIE ($p<0.001$) and OMA ($p<0.01$) compared to SUP.

On comparing endometriotic implants to eutopic endometrium, Kisspeptin expression was significantly lower in the glandular and stromal components of DIE ($p<0.05$) and OMA ($p<0.001$) but not of SUP compared to EUO-C. However, compared to EUO-E Kisspeptin expression was significantly lower only in the stroma of DIE ($p<0.001$).

CONCLUSIONS

Kisspeptin has a differential expression in patients with endometriosis with a tendency towards lower expression in the more invasive phenotypes of endometriosis. Given its antimetastatic properties, lower Kisspeptin expression may play a role in the pathogenesis of endometriosis invasiveness.

CROWN RUMP LENGTH IN IVF PREGNANCY: PREDICTOR OF ADVERSE PERINATAL OUTCOMES?

Cho, Kristy; Dunne, Caitlin; Albert, Arianne; Havelock, Jon

BACKGROUND

The SOGC recommends that first trimester ultrasound be performed to establish an accurate due date (1). However, in vitro fertilization (IVF) pregnancies have an irrefutable gestational age (GA). In British Columbia, the ultrasound crown-rump length (CRL) reference is based on a 1998 study that used menstrual dating (2,3). We aimed to determine if an association exists between small CRL per local reference and adverse IVF pregnancy outcomes, and if an alternate CRL reference based on IVF pregnancies may be more accurate.

METHODS

A retrospective chart review of singleton pregnancies conceived by IVF between 2007 - 2014 was performed. Subjects were excluded if GA at ultrasound was outside of 7+0 to 8+6 weeks. CRL was classified as small by comparing to BC Provincial and IVF (Monash) reference charts (4).

RESULTS

Included were 940 clinical pregnancies. The overall and CRL-discrepant miscarriage rates were 12.7% (119/940) and 41% (84/204) respectively. CRL below the 10^{th} percentile of the provincial reference predicted miscarriage with a positive predictive value of 39% while the negative predictive value of a normal CRL was 95%. When CRL was small for GA, the age-adjusted odds of miscarriage were 13.8 times higher (95% CI 8.9-21.6, p< 0.0001). At age 30, small CRL was associated with a 30% risk of miscarriage versus 61% at age 45. There was no association between small CRL and preterm birth (p=0.93) or low birth weight (p=0.50).

CONCLUSIONS

In IVF pregnancies, small CRL is strongly associated with miscarriage. The Monash reference was not superior to the provincial reference at predicting miscarriage.

LOCALIZATION OF FRAGMENTATION IN CLEAVAGE-STAGE AND BLASTOCYST DEVELOPED UNDER DIFFERENT OXYGEN TENSIONS OF MOUSE EMBRYOS

Iews, Mahmoud; Abdelkarim, Amr; Hashim, Ahmad; Abdelhafez, Faten; Fawzy, Mohamed; Peng, Bo; Bedaiwy, Mohamed

BACKGROUND

High oxygen tension used in embryo culture associated with formation of reactive oxygen species, which affect embryo viability inducing fragmentation and apoptosis in the growing embryos and affect subsequent implantation potential.

METHODS

377 two cells stage embryos were harvested from inbred (C57 BL/6J) after ovarian stimulation followed by timed natural mating. The embryo were randomly assigned to 4 different groups group (A) 3 % O2 (n=95), group (B)5% O2(n=90), (C) 8% O2(n=105) and (D) 20% O_2(n=87). The embryos were checked on day 3 for fragmentation and day 5 for blastocyst formation and hatching from time of natural mating. TUNEL assay was formed for Blastocyst from three groups A, B and C. Data was analyzed using Chi-squared test and Kruskall–Wallis non parametric test. P value less than 0.05 was considered significant.

RESULTS

Fragmentation was higher in embryo developed under 3% and 20% (p<0.001) than embryos developed in 5% and 8%. Blastocyst formation rate was significantly higher in group C (82.9%) compared to groups A (45.3%) and D (65.5%) p< 0.001, but not to group B (77.8%). On the other hand, hatching rate per blastocyst formed in each group was significantly higher in Group B (81.4%) compared to other groups (9.3%, 19.5% and 19.3% respectively). The apoptosis index was higher in Blastocysts developed under 20% (P<0.001) than 3% and 5%.

CONCLUSIONS

The embryos developed under 5% oxygen tension associated with less fragmentation in cleavage–stage and less apoptosis in Blastocyst stage in comparison to other oxygen tension.

PROTEOMIC BIOMARKERS OF MEK INHIBITOR RESPONSE IN LGSC CELL LINES

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BACKGROUND

Recent results from a clinical trial of the MEK inhibitor (MEKi) ARRY-142886 showed a 15% response among LGSC patients. To improve therapeutic successes it is essential to identify patients who are likely to respond to these inhibitors.

METHODS

Nine LGSC cell lines (2 MEKi sensitive, 7 MEKi resistant) were treated with vehicle or one of four MEKi (1μM ARRY-142886, ARRY-438162, RDEA-119; or 0.1μM JTP-74057) for 24 hours, in triplicate. Protein lysates were analyzed by reverse-phase protein array (RPPA), identifying levels of 90 proteins involved in common cancer-signaling pathways. Global quantitative mass spectrometry (MS) of 1 sensitive and 2 resistant LGSC cell lines treated with vehicle or 0.1μM JTP-74057 after 24 and 48 hours was also performed, in triplicate. SPSS was used for data analysis and differentially expressed proteins were compared by a Mann-Whitney U Test ($P < 0.05$ level of significance). Validation of protein candidates was confirmed by immunoblotting.

RESULTS

Analysis of the 24 hour RPPA samples showed 12 statistically significant, differentially expressed proteins between untreated MEKi sensitive and resistant LGSC cell lines. Five of these protein candidates were cross-validated in the 48 hour MS samples. Immunoblotting has confirmed expression differences of two promising proteomic candidates.

CONCLUSIONS

Using RPPA and MS data we have identified statistically significant baseline differences in protein expression between previously characterized MEKi sensitive/resistant LGSC cell lines. Elucidation of markers associated with MEKi response in these cells is an important first step which may help select patients with LGSC who will benefit from MEKi therapy.

EVALUATING DELIVERY OPTIONS IN THE SECOND STAGE OF LABOUR: OPERATIVE VAGINAL VERSUS CESAREAN DELIVERY

Muraca GM, Skoll A, Lisonkova S, Sabr Y, Brant R, Cundiff GW, Joseph KS

BACKGROUND

There is limited comparative information regarding perinatal and maternal outcomes between operative vaginal and cesarean delivery. Our objective was to quantify severe perinatal and maternal morbidity/mortality associated with attempted midpelvic operative vaginal delivery compared with cesarean delivery.

METHODS

We conducted a cohort study of all term singleton operative vaginal and cesarean deliveries in the second stage of labour in British Columbia from 2004 to 2014. The primary outcomes were severe perinatal morbidity/mortality (neonatal convulsions, assisted ventilation, severe birth trauma, 5–minute Apgar <4, and perinatal death) and severe maternal morbidity (including severe postpartum haemorrhage, shock, sepsis, and cardiac complications). Logistic regression was used to estimate adjusted odds ratios (AOR) and 95% confidence intervals (CI) after stratifying by indication (dystocia/fetal distress).

RESULTS

The study included 10,901 deliveries. Among deliveries with dystocia, attempted midpelvic operative vaginal delivery was associated with higher rates of severe perinatal morbidity/mortality compared with cesarean delivery (forceps AOR 2.29, 95% CI 1.28–4.11, NNT 93; vacuum AOR 2.92, 95% CI 1.46–5.83, NNT 63). Among deliveries with fetal distress, there was a significant increase in severe maternal morbidity in the attempted midpelvic forceps group (AOR 2.32, 95% CI 1.23–4.37, NNT 115). Severe perineal lacerations rates were high among all midpelvic operative vaginal deliveries, ranging from 8.5% to 23.0%.

CONCLUSIONS

Attempted midpelvic operative vaginal delivery is associated with higher rates of severe perinatal and maternal morbidity/mortality, though these associations vary by indication and instrument. Birth and obstetric trauma rates are increased following attempted midpelvic operative vaginal delivery.