Obstetrics & Gynaecology Research Day
April 25, 2008

0815-0830 Coffee/Muffins - Parker Reception Room

0830 **Welcome** - Dr. B. A. Armson
Professor & Head, Department of Obstetrics & Gynaecology

0900 Dr. Robert Bortolussi, Clinician Investigator Program
"Is there a future for the Clinician Scientist in Canada"

Session I Moderator - Dr. Joan Wenning

0930 Dr. Alon Altman, PGY4
Incidence of Gestational Trophoblastic Disease in Nova Scotia
Alon D. Altman, Bettina Bentley, Shawn Murray, James R. Bentley

0945 Dr. Leanne McCarthy, PGY3
Does Colposcopy Improve Detection rates of Cervical Dysplasia in Women with External Genital Warts?
Leanne McCarthy, James Bentley

1000-1030 Nutrition Break - Classrooms B&C

1030 K. S. Joseph, PhD
A scoring system for estimating the risk of pulmonary embolism among pregnant women
Joseph KS, Liu S, Rouleau J, Sauve S, Liston M, Young D, Kramer MS, for the Maternal Health Study Group of the Canadian Perinatal Surveillance System

1045 Dr. Rahma Al-Haddabi, PGY5
Screening for Gestational Diabetes: Does a false positive glucose challenge test predict adverse pregnancy outcome?
Rahma Al-Haddabi, Heather Scott, Colleen O'Connell, Krista Jangaard, B. Anthony Armson.

1100 Dr. James Bentley
HPV Genotyping in Cervical Dysplasia: Preliminary results from the TPAPT study
James Bentley

1115 Dr. Allison Ball, PGY2
Outcomes associated with laparoscopy versus laparotomy in the surgical management of endometrial cancer
Allison Ball, James Bentley, Katharina Kieser

1130 Dr. Alon Altman, PGY4
Luteinizing Thecoma with Sclerosing Peritonitis (LTSP) Syndrome: Case reports and review of literature
Alon D. Altman, Paula Rittenberg, Shawn Murray, James R. Bentley, Katharina Kieser, and Robert Grimshaw

1145-1300 Lunch - Classrooms B&C

Session II Moderator - Dr. Victoria Allen

1300 Michael Wilkinson, PhD
Fat tissue as an endocrine organ in polycystic ovary syndrome.
Michael Wilkinson, PhD

1315 Dr. Heather Cockwell, REI Fellow
KiSS-1 gene expression in adipose tissue –a novel link in the metabolic control of the menstrual cycle?
Heather Cockwell, Gillian Graves, Renda Bouzayen, Linda Hamilton, Syed A. Imran, Diane A. Wilkinson, Michael Wilkinson

1330 Dr. B. Anthony Armson
DiGest: The Diagnosis of Gestational Diabetes Study
B Anthony Armson, Linda Dodds, Anne Spencer, Kent Dooley, Lois Ferguson, Judy Mahar, Alexander Allen, Allan Schlossberg

1345 Dr. Jillian Carpenter, Visiting Resident, Memorial University
Povidone-iodine vs Chlorhexidine Glouconate - a comparison of surgical preparations and the associated wound infection rates for elective caesarean sections
J. Carpenter, A. Gill, J. Crane, D. Hutchens, M. Steele-Rodway

1400 Linda Dodds, PhD
Obstetrical and neonatal factors and risk of autism
Linda Dodds, Deshayne B. Fell, Sarah Shea, Alexander Allen, B. Anthony Armson, Susan E. Bryson

1415 Break

1430 Dr. Anne Berndl, PGY3
Fetal Movement Monitoring: How Are We Doing as Educators?
Berndl A, O'Connell C, McLeod L

1445 **Guest Speaker: Sara Kirk, PhD**
Canada Research Chair in Health Services Research,
Applied Research Collaborations for Health (ARCH)
School of Health Services Administration

"Weighty matters in obstetrics and gynaecology"

Incidence of Gestational Trophoblastic Disease in Nova Scotia:

Alon D. Altman, Bettina Bentley, Shawn Murray, James R. Bentley

Objective:

The objective of this study is to determine the incidence of Gestational Trophoblastic Disease (GTD) in Nova Scotia and to examine secondary objectives including how the rates of GTD have changed over time and the rate effects of age.

Methods:

Information on women with GTD was retrospectively collected from the Nova Scotia Gestational Trophoblastic Disease Registry between 1990-2005. The total number of deliveries and pregnancies were determined from the Atlee Perinatal Database and Statistics Canada.

Results:

428 women were identified with GTD. The incidence of PHM was found to be 1/671 pregnancies and 1/581 live births; incidence of CHM was found to be 1/1408 pregnancies and 1/1063 live births. The overall incidence of Hydatidiform Moles (HM) was 1/454 pregnancies and 1/376 live births. The overall rates of HM were higher in both younger (<20 y.o.; $p=0.022$) and older age groups ($\geq$30 y.o.; $p=0.01$). The rates of PHM compared to CHM was significantly ($p<0.05$) higher in women >20 y.o. The χ^2 for linear trend in PHM shows a significant increase in PHM with increased age ($p<0.001$) and a reverse trend for CHM ($p<0.001$).

Conclusion:

The rates of HM in Nova Scotia appear to be higher than previously reported in Canada. HM is more common at the boundaries of reproductive age. The rates of PHM are higher than the rates of CHM in women greater than 20 years of age. The risk of PHM increases with increasing age, whereas the risk of CHM decreases with increasing age.

Does Colposcopy Improve Detection rates of Cervical Dysplasia in Women with External Genital Warts?

Leanne McCarthy, Jim Bentley (work in progress)

Background: External genital warts are not considered an indication for colposcopy. However, previous studies looking at the role of colposcopy in women with external genital warts make conflicting recommendations. They also involved small numbers of patients and did not follow the patients over time.

Objective: To evaluate the value of colposcopy in detecting high grade dysplasia in women with external genital warts that would be missed by conventional pap smear. Additionally, the study will evaluate whether these women are at higher risk of developing high grade dysplasia within 2 years of initial colposcopy.

Methods: Retrospective database review. Using the Provincial Cytology/Colposcopy Registry, data from pap smears and colposcopy was obtained for women referred to colposcopy for external genital warts between 1990- 2000. Women with an indication for colposcopy referral were excluded from the study. This included those with pap smears reported as HSIL or 2 or more LSIL/ASCUS paps in the 2 years prior to referral. Outcomes of interest included biopsy proven CINII/III on initial colposcopy in those with referral paps that were negative or consistent with low grade changes. In addition, in those with negative initial colposcopy, the development of high grade cervical dysplasia in the 2 year follow up period was evaluated.

Results: A total of 671 women were referred to colposcopy for external genital warts in the study period. Of these (X) were excluded for having an indication for colposcopy. The mean age of the study group was 25.1 +/- 7.5. The rates of women with ASUS, LSIL, and HSIL on initial pap will be reported as a percentage. The number of women with a negative referral pap that had CINII/III on initial colposcopy will be reported as a percentage. In addition, the sensitivity and specificity of pap smears for detecting high grade lesions defined as CINII/III on biopsy will be calculated. Finally, of those patients with initial colposcopy < CINII/III, the percentage who develop high grade lesions in the 2 year follow up period will be calculated. In the follow up period, high grade lesions will be defined as a pap reported as HSIL, or 2 or more LSIL/ASCUS paps or CINII/III on a subsequent colposcopy.

A scoring system for estimating the risk of pulmonary embolism among pregnant women

Joseph KS, Liu S, Rouleau J, Sauve S, Liston M, Young D, Kramer MS, for the Maternal Health Study Group of the Canadian Perinatal Surveillance System

Abstract

Background: Pulmonary embolism remains one of the leading direct causes of maternal mortality in industrialized countries. Although previous studies have identified several risk factors for pulmonary embolism in pregnancy and various preventive interventions (e.g., stockings, mobilization, anticoagulants) are available, there is no systematic method for estimating the risk of pulmonary embolism in clinical practice.

Methods: We used data from the Canadian Institute for Health Information's Discharge Abstract Database to identify all cases of pulmonary embolism among deliveries to pregnant women in Canada (excluding Quebec and Manitoba) between 1991 and 2006. Important risk factors for pulmonary embolism were identified and their effects quantified using logistic regression. These results were used to develop a scoring system to estimate the risk of pulmonary embolism. The scoring system was also recreated after excluding women with a diagnosis of deep vein thrombosis (since the risk/management for such cases is established).

Results: The study included deliveries to 3,852,569 women; 768 of these had a diagnosis of pulmonary embolism and 700 had a diagnosis of pulmonary embolism without a simultaneous diagnosis of deep vein thrombosis. Factors used to create in the scoring system included a history of thrombosis, obesity, hypertension, thrombophilia, antiphospholipid syndrome, systemic lupus erythematosus, heart disease, cesarean delivery, preterm delivery, major puerperal infection, anemia and blood transfusion. Scores ranged from 0 to >=35 and the probability of pulmonary embolism varied from 0.1 per 1,000 deliveries (score 0-2) to 62.9 per 1,000 deliveries (score >=35). Approximately 95% of deliveries had a score <7, while 48% of those with pulmonary embolism had scores >=7.

Conclusion: This scoring system can help to quantify the risk of pulmonary embolism among pregnant women so that appropriate preventive interventions may be offered to those at higher risk.

Screening for Gestational Diabetes: Does a false positive glucose challenge test predict adverse pregnancy outcome?

Rahma Al-Haddabi, Heather Scott, Colleen O'Connell, Krista Jangaard, B. Anthony Armson.

Objective: To determine if women with a positive glucose challenge test (GCT) and negative oral glucose challenge test (OGTT) are at increased risk for adverse pregnancy outcome compared to women with a negative GCT.

Methods: A retrospective cohort of all pregnant women who underwent a GCT from 1998 to 2005 at the IWK Health Centre was divided into four groups: 1) negative GCT (control); 2) positive GCT, negative OGTT (false positive GCT); 3) impaired glucose tolerance (IGT); 4) gestational diabetes (GDM). Women with known diabetes mellitus (DM), multiple gestation and those not screened or who had a positive GCT but no OGTT were excluded. The primary outcome was neonatal macrosomia. Demographic and pregnancy outcome information was obtained from the Nova Scotia Atlee Perinatal Database. SPSS statistical software was used for univariate and regression analysis.

Results: Among the cohort of 23,801 parturients, 89.2% were GCT negative, 6.3% had a false positive GCT, 2% had IGT and 2.5% had GDM. Women with a false positive GCT were more likely to be older, nulliparous, obese and have a past history of GDM than controls. The risk of neonatal macrosomia $\geq$ 4500g, was increased in women with false positive GCT compared to controls (OR1.43 95% CI 1.08 – 1.88) as was the risk of neonatal hypoglycemia, hyperbilirubinemia, NICU admission, preterm birth, gestational hypertension, cesarean delivery and shoulder dystocia. Only neonatal hypoglycemia, hyperbilirubinemia and preterm birth remained significant when other risk factors for adverse pregnancy outcome, such as maternal obesity, were controlled for.

Conclusion: Women with a false positive GCT are at risk for adverse pregnancy outcomes commonly associated with GDM. The magnitude of this risk is mitigated by other independent risk factors, particularly maternal obesity.

HPV Genotyping in Cervical Dysplasia; Preliminary results from the TPAPT study.

Bentley J

The TPAPT study is an observational study looking at HPV genotype and other oncogenes in women with abnormal pap tests. Preliminary results analysing the HPV genotypes will be presented.

Outcomes associated with laparoscopy versus laparotomy in the surgical management of endometrial cancer

Work in Progress

Allison Ball, James Bentley, Katharina Kieser

BACKGROUND: Endometrial cancer remains the leading cause of gynecologic cancer in North America. It is the fourth most common cancer diagnosis in women. The current standard of care in the treatment of endometrial cancer involves surgery (for staging and treatment) with possible radiation and chemotherapy. In recent years, significant interest has developed in the use of laparoscopic surgery as an alternative to traditional laparotomy. By examining our recent experience in the use of laparoscopy in the surgical management of endometrial cancer, our hope is to raise awareness to these barriers. This may assist in eliminating them in order to provide optimal, safe, and effective care for our patients.

OBJECTIVE: This study aims to identify the barriers that exist at our centre to offering laparoscopic surgery to endometrial cancer patients. Specifically, it will characterize the surgical management and associated outcomes of endometrial cancer between 2005 and 2007 in Halifax, NS using the Tupper Database.

STUDY DESIGN: This is a retrospective cohort study which will review all women with histologically confirmed endometrial cancer from 2005 to 2007. The primary outcome measure in this study will be the rate of laparoscopy in the surgical management of endometrial cancer. Secondary outcome measures include: conversion to laparotomy, operating room time, estimated blood loss, length of hospital stay, and post-operative complications (i.e. DVT, wound infection). Factors which may affect the surgical approach will also be studied, including: age, BMI, and comorbidities. Categorical variables will be analyzed using chi-squared, and continuous variables will be analyzed using student t-test. Logistic regression will be used to account for confounding variables. Statistical analyses will be performed using SPSS. Research ethics board approval at the QEII Health Sciences Centre is pending.

Luteinizing Thecoma with Sclerosing Peritonitis (LTSP) Syndrome: Case reports and review of literature:

Alon D. Altman, Paula Rittenberg, Shawn Murray,
James R. Bentley, Katharina Kieser and Robert Grimshaw

Objectives:

Luteinizing Thecoma with Sclerosing Peritonitis (LTSP) syndrome is a rare disorder. Patients manifest with sudden onset of peritoneal fibrosis and bowel obstruction. The objective of this study is to review the literature for common presentations of LTSP syndrome.

Study Methods:

We present two case reports of LTSP syndrome. A Pubmed/Medline search was undertaken using the keywords: "luteinizing thecoma", "sclerosing peritonitis", "ovarian thecoma AND ascites" and "peritoneal fibrosis". All identified papers were reviewed, along with their references. Immunohistochemistry was performed on all specimens.

Results:

Our patients were a 26 year old and 46 year old women who presented with abdominal distension, pain, nausea, anorexia, ascites and bilateral pelvic masses. Surgery consisted of bilateral salpingo-oophorectomy, multiple peritoneal biopsies and drainage of 3.5/7.0 L of ascites. The patients recovered initially, but returned with bowel obstructions. They were successfully managed over the next several months with TPN, nasogastric tube, high dose steroids, Faslodex, Prevacid, Tamoxifen and Maxeran.

Literature review identified 9 studies with 14 confirmed cases of LTSP syndrome. The average age of presentation was 32.6 years. Patients presented with: Ascites (94%), pain (63%), bowel obstruction (63%) and abdominal swelling (75%). Bilateral masses were identified in 56% of cases. Immunohistochemistry identified sclerosis as a proliferation of submesothelial fibroblasts.

Conclusions:

LTSP syndrome is a rare condition of proliferating submesothelial fibroblasts, appearing unique from other disorders. The common clinical correlations include: Ascites, abdominal swelling/pain/pelvic mass, young age, bilateral ovarian involvement, bowel obstruction, idiopathic sclerosing peritonitis and benign luteinizing thecoma.

Fat tissue as an endocrine organ in polycystic ovary syndrome.

Michael Wilkinson, PhD.

Polycystic ovary syndrome (PCOS) is the most common cause of female infertility and affects 5-10% of women of the reproductive age group. Approximately 40-50% of women with PCOS are obese. Obesity, in association with insulin-resistance, increases the severity of the clinical features of PCOS, and such patients are at increased risk for hypertension and cardiovascular disease. The annual economic impact of PCOS in Canada is unknown, but figures from the US ($4.3 billion) suggest that the cost in Canada could be as high as $460 million. Further, the rising trend of obesity among adolescents suggests that the incidence of PCOS will also increase. The occurrence of obesity in young Nova Scotian women is currently over 40% - the highest in Canada. An understanding of the underlying pathophysiologic abnormalities in PCOS is therefore a critical goal in efforts to avoid the long-term clinical and economic consequences.

By definition hypothalamic, ovarian and pituitary function is abnormal in PCOS, but the role of fat tissue in the etiology of the syndrome has received little attention, even though in some patients there is a dramatic reversal of PCOS symptoms following aggressive weight reduction or after bariatric surgery. Adipose tissue is now known to function as a complex endocrine organ. Our extensive work on the role of fat hormones (*adipokines*) in brain and pituitary led us to hypothesize the existence of a new adipokine that could link adipose tissue function with infertility such as that seen in PCOS. Such a factor is encoded by the *KiSS-1* gene, originally identified in brain and now attracting worldwide attention. For example hypothalamic *KiSS-1* expression is critical for normal human puberty and is regulated by sex hormones and food intake. This sensitivity provides a plausible link between energy balance and reproductive function. *We hypothesised that adipose tissue would also express KiSS-1,* and we made the novel finding that, indeed, rat *KiSS-1* is expressed in fat as well as in pituitary gland. In addition we demonstrated that *KiSS-1* expression in these sites is: (a) regulated by sex hormones; (b) regulated by food restriction and (c) severely depressed in a new animal model of PCOS.

In conclusion, *KiSS-1* expression is differentially regulated by sex hormones, food intake and obesity in fat, hypothalamus and pituitary gland. The product of this gene, kisspeptin, may act as an adipokine or as a local regulator of adipocyte function. An important question is whether *KiSS-1* expression is demonstrable in human female adipose tissue.

This research is supported by the Atlee Endowment, IWK Health Centre, NSHRF and UIMRF/Capital Health. I am indebted to R.Brown, A.Imran, and D.Wilkinson for their invaluable contributions to these studies.

KiSS-1 gene expression in adipose tissue –a novel link in the metabolic control of the menstrual cycle?

Principal Investigator: Heather Cockwell, MD, FRCSC
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Co-investigators:

Gillian Graves, MD, FRCSC Department of Obstetrics and Gynaecology, IWK
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ABSTRACT:

Background:
The regulation of the menstrual cycle and fertility is critically dependent on body weight, although the exact mechanism remains obscure. The kisspeptins, a new family of structurally related peptides encoded by the KiSS-1 gene, have been proposed as a crucial component of the hypothalamic control of fertility in both animals and humans. The absence of KiSS-1 gene expression is associated with hypogonadotrophic hypogonadism. Our recent animal studies indicated that KiSS-1 is also expressed in fat tissue and is regulated by sex hormones and body weight. This pilot project sought to determine whether KiSS-1 gene expression was detectable in human fat tissue.

Methods:
Women undergoing open abdominal surgery were approached and consented. Two small samples of fat (roughly 1 cm^3 each) were taken, one from subcutaneous tissue, and one from the omentum. Demographic information was collected from each subject, including height, weight, ethnicity, current age, age of menarche, menstrual cycle information, past medical history, current medications, the type of surgery planned, and the reason for surgery. KiSS-1 expression was quantified in triplicate with real time RT-PCR, using known probes for human KiSS-1 mRNA. Leptin mRNA was also determined as a positive control.

Results:
Our preliminary results are very exciting. KiSS-1 mRNA was found in all of the samples, in varying amounts. We are currently attempting to correlate mRNA levels with the demographic details, in order to find potential trends. We are also investigating doing further sampling, including trying to obtain tissue from men.

DiGest: The Diagnosis of Gestational Diabetes Study

B Anthony Armson[1], Linda Dodds[2], Anne Spencer[2], Kent Dooley[3], Lois Ferguson[4], Judy Mahar[4], Alexander Allen[5], Allan Schlossberg[6]

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[6] Division of Endocrinology, Department of Medicine, Dalhousie University

Objectives: To determine the incidence of gestational diabetes (GDM) and perinatal outcomes associated with the 75g oral glucose tolerance test (OGTT) compared to the 100g OGTT.

Study Method: A masked randomized controlled trial design was used to determine the GDM detection rate and perinatal outcome rates associated with the 75g OGTT compared to the 100g OGTT in two tertiary and six secondary hospitals in Nova Scotia from December 2001 to January 2005. Eligible women with singleton pregnancies and a positive but non-diagnostic 50g glucose challenge test were randomly allocated to either the 75g or 100g OGTT. Canadian Diabetes Association criteria were used for the diagnosis of GDM. The primary outcome for the trial was neonatal macrosomia (>90th, >95th percentile).

Results: Among 1124 study participants (75g OGTT 574; 100g OGTT 550), GDM was diagnosed in 65 (13.9%) of women who underwent the 75g OGTT and 106 (24.2%) assigned to the 100g OGTT (RR 0.58; 95% CI 0.43 – 0.77). Macrosomia rates were similar in the two groups (29.0% vs 26.2%). Pregnancy induced hypertension and forceps delivery rates were significantly increased in the 75g OGTT group compared to the 100g OGTT group, however (p = .007; p = 0.005 respectively).

Conclusions: The 75g OGTT may underestimate the true incidence of GDM which may result in higher rates of adverse perinatal outcomes and obstetric interventions than with the 100g OGTT.

Scientific Abstract

Povidone-iodine vs. Chlorhexidine Gluconate – a Comparison of Surgical Preparations and the associated Wound Infection Rates for Elective Cesarean Sections

Investigators:

Jillian Carpenter, MD (resident), Atam Gill, MD, FRCSC; Dr. Joan Crane, MD, MSC, FRCSC; Donna Hutchens, RN BN; Merlee Steele-Rodway, Infectious Disease BN

Background:

Wound infection is a globally recognized potential complication of any surgical procedure. Strides have been made to decrease this problem since the beginning days of surgery. Recent literature has looked at the current surgical solutions used for topical skin disinfectant. The most recent literature has shown that Chlorhexidine appears to have longer bacteriocidal capabilities compared to Povidone-iodine.

Objectives:

(i) Primary Outcome: to determine the rate of wound infection using two standard wound preparations: Povidone-Iodine and Chlorhexidine Gluconate.

(ii) Secondary outcomes: (1) readmission to hospital, (2) extended length of admission, (3) need for intravenous antibiotics, (4) need for repeat procedure such as drainage, (5) increased outpatient surveillance.

Methods:

Eligible consenting women undergoing elective cesarean section will be randomized to either the chlorhexidine gluconate solution or the povidone-iodine solution; to be used to clean the abdomen, and vulva preoperatively. Computer generated randomization will be used. Sequentially numbered opaque sealed envelopes will be used to determine group randomization. Women will be evaluated during the course of their hospital stay for any evidence of wound infection or endometritis. The following criteria will be evaluated: fever > 38.5 ^{0}C, CBC for leukocytosis, erythema and/or tenderness of the incision site and signs of endometritis (uterine tenderness and foul smelling lochia).

Sample size based on detecting a 50% reduction in wound infection rates (from 18% to 9%), based on data from our centre and a survey of a clinically important reduction by physicians. With α=0.05 and β=0.20; the number needed to treat will require 494 patients; 247 per group. An interim analysis will be completed at 248 patients; 124 per trial group.

The information extracted from this study will have the potential to decrease morbidity associated with wound infection, decrease length of hospital stay for the patient, and possibly change current patient care and management.

Results: Pending

Conclusions: Pending

Obstetrical and neonatal factors and risk of autism

Linda Dodds, Deshayne B. Fell, Sarah Shea, Alexander Allen, B. Anthony Armson, Susan E. Bryson

Background: It remains unresolved whether obstetric or neonatal complications are independent factors in autism etiology, contribute via gene-environment interactions or reflect an epiphenomenon, (i.e., familial factors predispose to obstetric complications and to autism).

Objectives: Our objective was to identify obstetric/neonatal factors associated with the subsequent development of autism and assess whether these contribute to its etiology.
Methods: Women who gave birth between 1988 and 2002 were identified from a population-based perinatal database in Nova Scotia, Canada. Diagnoses of autism among children of women in this cohort were identified from anonymous linkages to administrative databases with relevant diagnostic information from 1992 to 2005. Information on maternal conditions, prenatal factors, obstetrical and neonatal conditions was evaluated. Cox proportional hazards regression models were used to estimate adjusted relative risks and 95% confidence intervals. Analyses controlled for factors suggestive of a strong genetic etiology (e.g., having an affected sibling or maternal psychiatric/neurologic conditions).

Results: Among 129733 children born between 1988 and 2002, there were 924 children with an autism diagnosis between 1992 and 2005. After controlling for factors suggestive of a strong genetic etiology, the following obstetric/neonatal factors were significant: pre-pregnancy weight $\geq$ 90 kg (RR=1.6, 95% CI 1.2-2.0), $\geq$ 18-kilogram pregnancy weight gain (RR=1.2, 95% CI 1.0-1.4), <18-month inter-pregnancy interval (RR=1.5, 95% CI, 1.1-2.0), maternal prescription drug use during pregnancy (RR=1.7, 95%CI 1.0-2.8), induced labour (RR=1.2, 95% CI 1.0-1.5) or no labour (RR=1.3, 95% CI 1.0-1.7) (versus spontaneous labour), male infant sex (RR=4.3, 95% CI 3.5-5.2), 5-minute Apgar score $\leq$ 3 (RR=3.6, 95% CI 1.2-11.3), and presence of a major congenital anomaly (RR=7.2, 95% CI 3.6-14.5).

Conclusions: Some obstetrical and neonatal factors appear to have an independent role in autism etiology. The association between pre-pregnancy obesity and excessive weight gain during pregnancy and increased autism risk are novel findings that require further investigation.

Fetal Movement Monitoring: How Are We Doing as Educators?

Berndl A, O'Connell C, McLeod L

Objective/Background:

Stillbirth is a tragic outcome to a pregnancy, occurring in about 1/200 Canadian births. Insufficient placental perfusion and fetal hypoxia, which can lead to a variety of poor pregnancy outcomes including stillbirth, are associated with a decrease in perceivable fetal movement.

A woman's ability to keep track of and respond to her fetus's movement is the first line of defense against stillbirth and perinatal hypoxic events. Self-monitoring of fetal movement in low-risk women has been found to decrease the still birth rate by 26-34%. However, its been found that over half of women with an unexplained intrauterine death waited over 24 hours without any perceivable fetal movement before contacting a health care professional, and one third waited more than 48 hours.

When a pregnant woman perceives a decrease or cessation of fetal movement, it is up to her to decide if and when to seek out help from a health care provider. Therefore, effective education to all pregnant women in regards to fetal movement awareness is an essential part of preventing stillbirth and poor neonatal outcomes.

This study will evaluate pregnant women's awareness of and understanding of fetal movement. It will provide information about what populations may be at risk of not understanding or not being properly educated about fetal movement.

Study Methods:

300 pregnant women over 26 weeks gestational age will be recruited to fill out a survey at the IWK Perinatal Centre (PNC) and Fetal Assessment and Treatment Centre (FATC) over a two month period. There are two parts to this survey. The first asks for relevant demographic information such as age, gestational age, number of pregnancies, etc. The second part evaluates awareness and understanding of fetal movement monitoring, and from where women have received their information.

Data analysis will include both descriptive and inferential statistics. Demographic information such as age, education, parity, BMI, smoking and pregnancy risk status will be presented as ranges and means or medians , as appropriate. These variables will serve as predictors in regression analyses where the relationships among maternal characteristics and level of knowledge about fetal movements are examined.

The knowledge gained from this research will be used to improve education efforts that may reduce stillbirth and other poor pregnancy outcomes.