TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™
at the Permian Basin

Twenty-Third Annual Research Day

Permian Basin Campus

May 16, 2014

Oral Presentations

8:00 *Coffee and Pastries*

8:15 *Welcome*
Gary Ventolini, M.D.
V. Daniel Castracane, Ph.D.

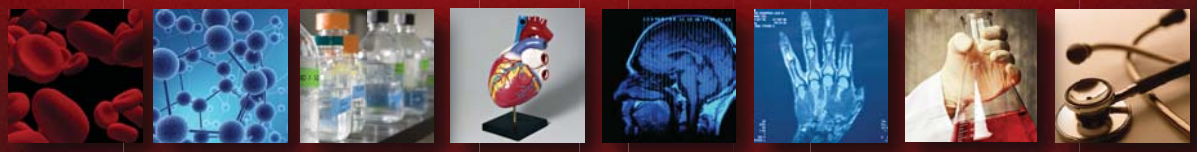
Proposed and Partially Completed Projects

8:30 *"Depression and Diabetes in the Elderly: Is there an association?"*
Bhavana Mocherla, M.D., PGY I, Khalid Ghazy, M.D., PGY II, Alfredo Medina, M.D., PGY I, Department of Family & Community Medicine

8:45 *"A Descriptive Evaluation of the Diabetes Management Practices of Family Medicine Residents after Implementation of the AAFP METRIC Diabetes Module"*
Domingo Caparas, M.D., PGY III, Karla Frazzini, M.D., PGY II, Wang Li, M.D., Ph.D., PGY II, Department of Family & Community Medicine
(Completed/Partially Completed project presenting early because of Night Float)

9:00 *'"Pattern of Management of Hepatitis C in a Family Medicine Residency Clinic"*
Khalid Ghazy, M.D., PGY II, Rosario Salarzon, M.D., PGY II, Bhavana Mocherla, M.D., PGY I, Domingo Caparas, M.D., PGY III; Department of Family & Community Medicine

9:15 *"Evaluation of Fetal Liver, Lung, Spleen, and Kidney Density by Ultrasound Examination"*
Curtis J. Boyd, II, M.D., PGY II, Department of Obstetrics & Gynecology



9:30 *"Immunotherapy Combination Utilizing the Synthetic Parasite-derived Peptide GK1 and the Anti-PD-L1 Antibody Therapy, to Induce Rejection of Primary Subcutaneous and Metastatic Melanoma in Mice"*
Diego Beltran-Melgarejo, M.D., PGY I, Cynthia Villanueva-Ramos, M.D., PGY I, Jesus Vera-Aguilera, M.D., PGY I, Department of Internal Medicine and Family & Community Medicine

9:45 *"Outpatient Medical Reconciliation Quality Improvement Project in the Geriatric Population"*
Debbie Villarreal-Smith, D.O., PGY IV, Domingo Caparas, M.D., PGY III, Anna Francisco, M.D., PGY IV, Jorge Alamo, M.D., PGY I, Bhavana Mocherla, M.D., PGY I, Blanca Salarzon, M.D., PGY II, Department of Family & Community Medicine

10:00 *"A Randomized Comparison of Different Mediums in the Administration of Vaginal Misoprostol in Term Inductions of Labor"*
Madeline Meurer, D.O., MBA, PGY I, Department of Obstetrics & Gynecology

10:15 **BREAK**

10:30 *"Is Elevated HgbA1c Predictive of Gestational Diabetes Mellitus?"*
Jonathan Lugo, M.D., PGY I, Department of Obstetrics & Gynecology

10:45 *"The Effect of No Prenatal Care on Maternal and Perinatal Outcome in West Texas"*
Peter Hsu, M.D., PGY III, Department of Obstetrics & Gynecology

11:00 *"Integrated Out-patient Diabetes Care Program: Impact on Diabetes Care and Management in a Family Medicine Residency Training Clinic"*
Karla Toledo-Frazzini, M.D., PGY II, Domingo Caparas, Jr. M.D., PGY III, Wang Li, M.D., Ph.D., PGY II, Department of Family & Community Medicine

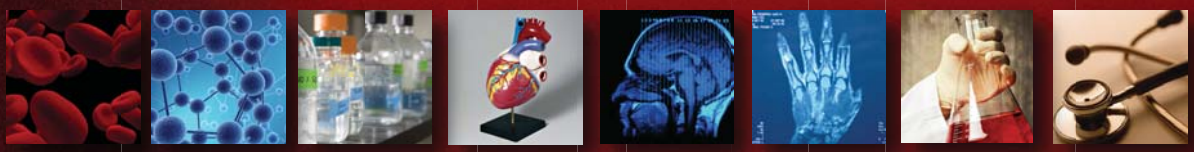
11:15 *"A Case Series Study to Evaluate Average Time for Onset of Labor in Healthy Primagravidas with Varied Activity Levels"*
Kaysi Benefield, D.O., PGY III, Department of Obstetrics & Gynecology

11:30 *"The Use of Sonogram to Determine Normal Value for Post Void Residual Volume at First Micturition Following a Vaginal Delivery"*
Holly Bracy, D.O., PGY IV, Department of Obstetrics & Gynecology

12:00 Keynote Speaker – *"A Novel Therapeutic Approach UN-folding "*
P. Michael Conn, Ph.D.
Senior Vice President for Research and Associate Provost and Professor of Internal Medicine and Cell Biology
Texas Tech University Health Sciences Center, Lubbock

Lunch will be provided

1:30 *"Exteriorization vs. In Situ Repair of Hysterotomy in Obese Population"*
Sarah Burke, M.D., PGY I, Department of Obstetrics & Gynecology



1:45 *"The Relationship of Metabolic Changes in Pregnancy to the Incidence of Non-Alcoholic Fatty Liver in Reproductive Aged Women"*
Kathryn Hutton, D.O., PGY II, Department of Obstetrics & Gynecology

2:00 *"Investigation of Non-alcoholic Fatty Liver Disease (NAFLD) in Neonates"*
Leela Sharath Pillarisetty, M.D., PGY II, Department of Obstetrics & Gynecology

2:15 *"The Relationship of Placental Number (Mass) to the Maternal Serum Levels of Leptin, Adiponectin, and Resistin"*
Savitha Singh, M.D., PGY IV, Department of Obstetrics & Gynecology

Completed Projects

2:30 *"Mechanisms of Glucose Lowering with the DPP-4 Inhibitor Sitagliptin Used Alone or with Metformin in T2DM: A Double-Tracer Study"*
Carolina Solis-Herrera, PGY I, Department of Internal Medicine

2:45 *"Investigation of Incidence Rate, Demographics, Clinical Manifestations, and Outcomes of Coccidioidomycosis in Medical Center Hospital, a West Texas Community Hospital, in the Past 9 Years"*
Wang Li, M.D., Ph.D., PGY II, Enrique Tobias, M.D., PGY II, Rosario Salarzon, M.D., PGY II, Alaaedin Alhomosh, M.D., PGY III, Department of Family & Community Medicine

3:00 *"Prevention of Radio-Contrast Mediated Acute Renal Injury with Intravenous Sodium Bicarbonate"*
Juan Carlos Cardenas, M.D., PGY II, Department of Internal Medicine

3:15 *"Subnormal Testosterone Concentrations in Men with Type 2 Diabetes and Renal Insufficiency"*
Sayeeda Bilkis, M.D., PGY IV, Department of Internal Medicine, Endocrinology

3:30 *"Gestational Weight Gain: Relationship between Maternal Adiposity and Effects on Maternal/Fetal Outcomes"*
Lauren Hermann, D.O., PGY IV, Department of Obstetrics & Gynecology

3:45 *"Hematological Effects of the Synthetic Parasite Derived GK1 ina Melanoma Mice Model"*
Diego Beltran-Melgarejo, M.D., PGY I, Jesus Vera-Aguilera, M.D., PGY I, & Cynthia Villanueva-Ramos, M.D., PGY I, Departments of Internal and Family & Community Medicine

4:00 **BREAK**

4:15 ***Presentation of Awards***

Adjudicators

David M. Baldwin, M.D.

Baldwin received his Ph.D. from the University of California at Davis in 1972 and has been involved in research at several academic institutions. He joined Texas Tech University Health Sciences Center (TTUHSC) at the Permian Basin in 1991 as a professor in obstetrics and gynecology. After five years at TTUHSC at the Permian Basin, he left to join the University of Nebraska. He returned to TTUHSC at the Permian Basin in 1999 and retired in 2012. He served as assistant academic dean of research and director of clinical research. He advised virtually every resident program on the campus for many years and was invaluable in his contribution to education and research at TTUHSC at the Permian Basin.

P. Michael Conn, Ph.D.

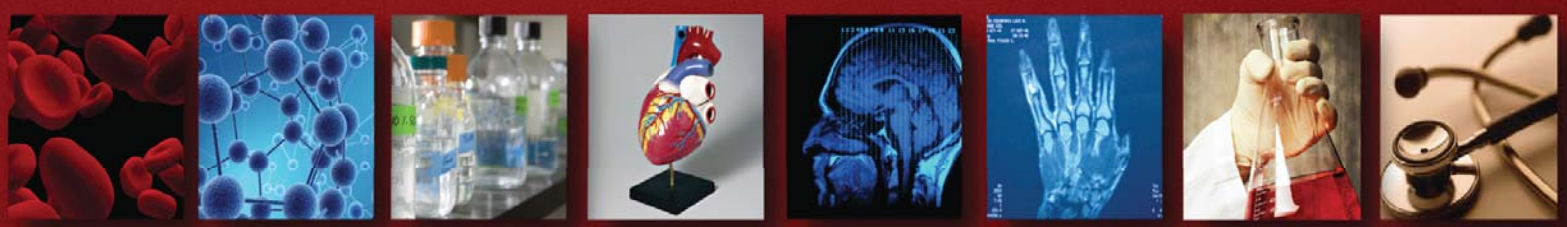
Conn received his Ph.D. from Baylor College of Medicine and continued his postdoctoral education at the National Institute of Child Health and Human Development. He has been an editor on various journals and served on the National Institute of Health Study Sections. He has a remarkable publication record, most often in his major area of interest on GnRH actions. He has been the editor-in-chief on multiple books. He continues to be a productive research scientist. His list of accomplishments and productivity is too long to describe here. Conn came to the Texas Tech University Health Sciences Center (TTUHSC) after many years in leadership positions at the Oregon National Primate Research Center. Conn is the Senior Vice President for Research and Associate Provost and a Professor of Internal Medicine and of Cell Biology and Biochemistry at TTUHSC.

Michael M. Makii, M.D.

Makii received his medical degree from the University of Hawaii in 1975 and completed his residency in obstetrics & gynecology at University of Chicago Hospital in 1979. He completed several surgical fellowships and has been faculty at several academic centers. He has been active in research and teaching over the years.

He comes to TTUHSC at the Permian Basin from Mercer University School of Medicine in Macon, GA. He is the residency program director in the Department of Obstetrics and Gynecology at TTUHSC at the Permian Basin.

Proposed and Partially Completed Projects



Depression and Diabetes in the Elderly: Is there an Association?

Bhavana Mocherla. M.D.,Khaild Ghazy M.D., Alfredo Medina M.D.,

TTUHSC at the Permian Basin Department of Family and Community Medicine

Faculty Advisors: Nimat Alam M.D., Jamal Islam M.D., M.S.

Background

Diabetes mellitus (DM) is a common chronic metabolic disorder, which is often concomitant with other physical or psychological diseases. Depression is one of the severe psychological co-morbidities of DM. Depression not only decreases the adherence to medical management, but also it increases the mortality among juvenile and young adult diabetic population. However, the relationship between these two in the geriatric population is not well studied. Thus, determining the association between depression and diabetes severity will give us quality improvement initiatives that can potentially improve diabetes outcome.

Objective/Hypothesis

To determine if the presence of depression is associated with higher glycosylated hemoglobin (HgbA1c) levels in geriatric patients with diabetes.

Methods

We will use a cross sectional study design. Subjects to be included are a convenient sample of diabetic geriatric patients 150 with diagnosis of depression and 150 without diagnosis of depression who are followed in TTUHSC at the Permian Basin Family Medicine clinic for at least a year. Standardized data collection form will be used to abstract pertinent demographic data, HgbA1c levels, important laboratory values medications used and referrals to behavioral therapist or psychiatrist. Descriptive analyses will be done to characterize the population. A t-test and Chi square test will be done to compare continuous and categorical variables defining the two groups. Bivariate analysis will be done to determine association between depression and HgbA1c levels using t-test.

Expected Results

We expect that geriatric patients with depression will have a higher HgbA1c levels compared to those without depression.

Conclusion / Significance

If we find depression associated with higher levels of HgbA1c interventions such as routine screening and treating aggressively all geriatric patients with diabetic will be recommended. We will also identify other variables that can inform quality improvement initiatives for depression screening and diabetes in the out-patient setting such as screening tools used and referrals to behavioral therapist or psychiatrist those having resistant depression

A Descriptive Evaluation of the Diabetes Management Practices of Family Medicine Residents After Implementation of the AAFP METRIC Diabetes Module

Domingo Caparas, Jr. M.D., Karla Frazzini M.D., Wang Li M.D., Ph.D.,

TTUHSC at the Permian Basin Department of Family and Community Medicine

Faculty Advisor: Jamal Islam, M.D., M.S.

Context

The American Academy of Family Physicians (AAFP) METRIC Diabetes Module has supplied health care providers the opportunity to evaluate their current quality of care and compare it with their peers. METRIC gave the Department of Family Medicine residents the chance to build on critical skills in practice-based learning and improvement and implement action plans to improve diabetes care. The effect of implementation of METRIC in the practice of the residents is still undetermined.

Objective

To determine the effect of exposure to AAFP METRIC Diabetes Module on the out-patient diabetes management practices of TTUHSC at the Permian Basin Department of Family Medicine residents.

Methods

Descriptive cross-sectional study where residents were requested to input diabetic patient management data to METRIC. Residents were given three months to implement a plan of action to improve their diabetes management strategies. Diabetes management data before and after implementation of the AAFP METRIC Diabetes Module were collected, including monitoring HbA1c, blood pressure, lipid profile, urine microalbumin, eye exam, foot exam, aspirin intake, flu vaccination and smoking cessation. Individual and national data were gathered and then compared the percentage change in diabetes management in terms of monitoring HbA1c, BP, lipid profile (LDL, TC, TG), urine microalbumin, eye exam, foot exam, aspirin, flu vaccination in all of the providers who participated in the AAFP METRIC module.

Results

This study showed that there was improvement in management in terms of monitoring the HbA1c, BP, lipid panel, urine microalbumin and performing foot exams among the residents compared to the nationwide data from all providers who participated in the module. However, management in terms of eye exam, flu vaccination, aspirin therapy recommendation and smoking cessation in our practice were either equal or inferior to the national data.

Conclusion

Exposure to the AAFP METRIC Diabetes Module improved some aspects of the residents' out-patient diabetes management compared to the national data.

Pattern of Management of Hepatitis C in a Family Medicine Residency Clinic

Khalid Ghazy M.D., Rosario Salarzon M.D., Bhavana Mocherla M.D.,

Domingo Caparas, Jr., M.D.

TTUHSC at the Permian Basin Department of Family and Community Medicine

Faculty Advisor: Jamal Islam, M.D,. M.S.

Background

National Health and Nutrition Examination Surveys (NHANES) data from 2003 to 2010, found that individuals born between 1945 and 1965 accounted for 81 percent of the total estimated population with chronic Hepatitis C Virus (HCV) infection and the prevalence of those that are HCV Ribonucleic Acid (RNA) positive is at 3.25 percent. Due to this, several organizations, including the United States Preventative Services Task Force (USPSTF), have endorsed the screening of Hepatitis C status in this group of people.

Basic care of these patients consists of an anti-HCV test for screening. Current active infection should be confirmed by an HCV RNA test. Quantitative HCV RNA testing is recommended prior to initiation of therapy and document the baseline viremia. Testing for HCV genotype is recommended to guide selection of the most appropriate antiviral regimen. Previous research showed that screening of Hepatitis C in primary practice is not optimized and once found to have Hepatitis C, patients are not evaluated further for optimal treatment.

There is a need to determine the management practices of the primary care providers, and in the process, describe the level of care received by patients with Hepatitis C infection in our clinics.

Objective/Hypothesis

To determine the practices and pattern of management of Hepatitis C infection in a Family Medicine residency clinic.

Study Methods

This is a descriptive cross-sectional study involving 300 patients with Hepatitis C infection from 2008 to 2013 at the TTUHSC at the Permian Basin Family Medicine Clinic. Retrospective data collection utilizing standardized abstraction forms to capture laboratory information such as anti-HCV, HCV RNA, HCV genotype, quantitative RNA, AST, ALT, liver imaging, and other important demographic data.

Results

Descriptive statistics will be done to describe the population. Rates of screening, obtaining other tests will be obtained as well.

Conclusion/Significance

This study will be significant in increasing awareness and of how we currently manage patients with Hepatitis C infection and improve our level of care accordingly.

Evaluation of Fetal Liver, Lung, Spleen and Kidney Density by Ultrasound Examination

C.J. Boyd, III

TTUHSC at the Permian Basin Department of Obstetrics and Gynecology

Faculty Advisor: J.A. Maher, M.D. & V. Daniel Castracane, Ph.D.

Background

Non-alcoholic fatty liver disease (NAFLD) is the most common cause of liver dysfunction in the United States. It has a strong association with obesity and diabetes. The associated inability to metabolize lipids and glucose leads to central adiposity. The accumulation of fat in the liver leads to inflammation and fibrosis. These changes are often associated with inflammatory markers. The resulting metabolic changes are associated with insulin resistance. In a population of primates, it was discovered that a high-fat diet in one pregnant population, led to NAFLD in the high-fat diet population as well as in their offspring. NAFLD in the fetus has not been previously investigated. Ultrasound is the most frequently used non invasive imaging modality for the evaluation of liver steatosis. It is not known if ultrasound is sensitive enough to detect steatosis in utero. The goal of this study is to assess the ultrasound characteristics of liver and other reference organs in utero and establish a protocol for the subsequent detection of NAFLD in the fetus through ultrasound evaluation.

There is no study published demonstrating a consistent or repeatable way to study the fetal liver in utero. This study is the preliminary study to determine the ultrasound characteristic of fetal liver and other fetal organs which may be used as acoustic "reference organs."

Objective

We seek to study ultrasound echogenicity of fetal organs and evaluate its efficacy and accuracy in studying the fetal liver. It is our intent to develop a data set of normal patient values, which can then be compared to the findings of babies felt to be at risk for steatosis in utero to determine if antepartum ultrasound will be useful in detecting these changes prior to birth.

Methods

Thirty gravid females will be selected from the TTUHSC at the Permian Basin OB-GYN clinic in Odessa, Texas. The inclusion criteria include singleton gestation, third trimester during ultrasound scan, less than 35 years of age, absence of obesity, excess weight gain, hypertension, diabetes, liver disease or substance use. They will be offered an opportunity to take part in the study with an incentive of seeing their baby on ultrasound. Multiple organ echogenicities will be evaluated within the liver, lung, kidney and spleen. Using the Tissue Histogram Utility in the ultrasound software package, the liver will be imaged so the image also shows a reference organ in the same picture as the liver. The organs will be repetitively sampled with the ROI box and the average tissue pixel intensity will be calculated for the liver and the reference organ. We will strive to avoid acoustic artifact in the placement of the ROI box. This is will be performed to identify the most statistically significant and consistent ratio.

Results

We plan to establish a "best" normal ratio to evaluate NAFLD. We also anticipate a "best" organ with which to create this ratio.

Discussion

This study will evaluate the fetal liver and its comparative ratio to the lung, spleen, kidney and adrenal in non obese patients using the Tissue Histogram Utility. We hope to develop an understanding of the average tissue echogenicity of the liver and various potential reference organs so that we can develop a protocol for the evaluation of the fetal liver on antepartum ultrasound. We hope to be able to use this data to answer the question "Can ultrasound detect steatosis changes in utero?" If so, we may be able to identify a group of babies in need of postnatal follow-up for early intervention to prevent the subsequent health problems associated with pediatric NAFLD.

Immunotherapy Combination Utilizing the Synthetic Parasite-derived Peptide GK1 and the Anti-PD-L1 Antibody Therapy, to Induce Rejection of Primary Subcutaneous and Metastatic Melanoma in Mice

Diego Beltran-Melgarejo M.D., Jesus Vera-Aguilera M.D., Cynthia Villanueva-Ramos M.D.*

TTUHSC at the Permian Basin Department of Internal Medicine & Family Medicine*

Faculty Advisors: Gary Ventolini M.D., Raul Martinez-Zaguilan, Ph.D.

Background

Melanoma is the most malignant form of skin cancer. The frequency of melanoma is rising rapidly, especially in the Caucasian population. Despite extensive research and numerous innovations there has been no major improvement in the treatment of advanced melanoma for many years. Recent studies in mice led to the discovery of the PD-1 and anti PD-L1 pathway, has emerged as a promising target for cancer therapy in humans by mediation of immune responses against T-cell responses in melanoma. The synthetic parasite-derived peptide, GK1, has been recently evaluated in a mouse melanoma model with an increase in Overall Survival of 42.58 percent and by significantly increase INF-ɣ intratumorally when compared to control.

Objective

To evaluate the potential synergism between a synthetic parasite-derived peptide, GK1 and the Anti-PD-L1 antibody therapy by measurements of overall survival, proinflammatory cytokine profiles, invivo tumor progression by bioluminescence and histopathological analysis of primary and metastatic melanoma.

Methods

C57BL/6 male mice will be injected subcutaneously in the flank with 2•105 B16-F10-luc2 (Bioware Ultra cell line) murine melanoma cells. When the tumors reach 20 mm^3, mice will be separated into four different groups of eight mice each; GK1-treated with peritumoral injections every five days (10 mg/100 ml of sterile saline) until sacrifice; anti–PD-L1 treated intraperitoneally (IP) (200 mg in PBS), every three days for four doses, a combined immunotherapy group and a control group with peritumoral injection of 100 ml of sterile saline solution. All mice will be monitored daily for clinical appearance, tumor size and metastases will be analyzed every three days by bioluminescence methods, and survival; blood samples will be collected every seven days to obtain a proinflammatory cytokine profile.

Results

Based on previous results, a synergic effect is expected with the simultaneous use of GK1 peptide and anti-PD-L1 by tumor regression and increase in overall survival. The mechanism of action of GK1 by mounting a constant innate response and the Anti PD-L1 antibody, deriving this response to specific CD8+ and the increase of INF-ɣ intratumorally by both molecules separately support this hypothesis.

Discussion

GK1 exerts its effects in a dose-dependent manner, and it is rapidly cleared from the body. Therefore, it is expected an additive or synergic effect with the use of the Anti PD-L1 antibody. The potential of GK1 to be used as a primary or adjuvant component of immunotherapy cocktails to treat experimental and human cancers will be evaluated.

Outpatient Medical Reconciliation Quality Improvement Project in the Geriatric Population

Debbie Villarreal Smith, D.O., Domingo Caparas, Jr., M.D., Anna Francisco, M.D., Jorge Alamo, M.D., Bhavana Mocherla, M.D., Blanca Salarzon, M.D.

TTUHSC at the Permian Basin Department of Family and Community Medicine

Faculty Advisors: Liliana Andrade, M.D., Chau Le, M.D., Timothy Benton, M.D., Jamal Islam, M.D.

Background

The geriatric population is unique in terms of its higher prevalence of multimorbidity, and hence, predisposition to polypharmacy. All of these factors contribute to the occurrence of adverse drug events (ADEs) which is a public health concern because of its cost and the mortality associated with unintentional medication discrepancies.

Appropriate medication use and management in the geriatric population is one of the most important healthcare interventions when transforming into a patient-centered medical home. Medication reconciliation in the ambulatory or in-patient setting is a complex process. Since about 30 percent of ADE occur in the out-patient setting, we felt the need to improve patient safety by improving communication, increasing patient involvement, simplifying and standardizing the medication reconciliation process to improve patient satisfaction and prevent ADE in the out-patient setting.

Objective

To determine the effects of a mentored medical reconciliation quality improvement project on patient satisfaction.

Methods

A prospective cohort study that will include 150 patients older than 55 years old on more than 3 medications at the Texas Tech Physicians of the Permian Basin Family Medicine and Geriatric Clinics. A streamlined process consolidating the best practice recommendations for medication reconciliation will be adopted at the clinics. This process will then be implemented to eligible subjects. Pre and post implementation survey questionnaires, derived from AHRQ grant survey, relating to satisfaction and medications will be collected at zero and six months and demographic information will also be gathered. Levels of patient satisfaction will be determined.

Results

Study in progress. Levels of patient satisfaction pre and post implementation of the project will be obtained.

Conclusions/Significance

We expect that a properly evaluated, mentored and more standardized process of medical reconciliation will be more efficient in lessening unintentional medication errors and translate to improved patient satisfaction and encourage patient adherence.

A Randomized Comparison of Different Mediums in the Administration of Vaginal Misoprostol in Term Inductions of Labor

Madeline Meurer, D.O., MBA Resident PGY I

TTUHSC at the Permian Basin Department of Obstetrics and Gynecology

Faculty Advisor: Martin Caliendo, M.D.

Brief background

Misoprostol is a synthetic progstaglandin E1 originally intended for treatment of peptic ulcers. However, one of the drug's other properties is causing cervical change and contractions in pregnant women. Misoprostol, or Cytotec, is now commonly utilized worldwide as a cervical ripening agent, among its other uses. Currently, there is variation of how the drug is placed in the posterior vaginal fornix in dosages, schedule and mediums. Misoprostol tablets are produced in 100 microgram tablets and are broken into halves or quarters for administration of 50 micrograms or 25 micrograms, respectively. Because of the small size of the tablets, different methods have been theorized for optimal absorption. During the labor process, the progression of cervical dilation and effacement is monitored by physicians by a sterile vaginal exam. Sterile hydroxyethyl gel (K-Y jelly) is used because of patient discomfort of the exam. Since K-Y jelly is readily available in a labor and delivery unit, it is common place for physicians to use this medium for placement of the misoprostol tablet. Also, it has been previously proven that misoprostol tablets liquefy better in acetic mediums.

Hypothesis

The purpose of this study is to compare the efficacy and safety of placing vaginal misoprostol as an intact tablet alone (or "dry"), in sterile K-Y jelly or sterile vinegar and hypothesize no statistically significant difference in the outcome measures.

Methods

Study population: Women in labor and delivery of Medical Center Hospital, seen by TTUHSC at the Permian Basin clinicians. Women who will be included are singleton pregnancies at term who require cervical ripening for an induction of labor. Indications include, but are not limited to: postdates, pre-eclampsia, diabetes mellitus, pregnancy induced hypertension or oligohydramnios. Exclusion criteria include patients attempting a trial of labor after cesarean delivery, premature rupture of membranes, spontaneous rupture of membranes or vaginal bleeding.

Study design: Patients will be counseled and evaluated for suitability for cervical ripening and informed consent obtained. The women will be randomly assigned to three groups 1) dry misoprostol tablet 2) misoprostol placed in K-Y jelly 3) misoprostol soaked with vinegar. The physician who administered the treatment will not be blinded. Cytotec 25 microgram tablets will be used and placed every four hours. In each of the arms the Cytotec tablet will not be crushed or broken into smaller pieces, with the intent to keep the tablet intact. The Cytotec tablet will be placed in the posterior vaginal fornix.

Expected Results

Data to be collected will be age, parity, gestational age, indication for delivery, Bishop score before treatment and Bishop score after each dose completed. Outcome measures will be vaginal delivery being achieved within 18 hours, need for oxytocin, cesarean delivery, uterine hyperstimulation with fetal heart rate changes and time from induction to delivery. A statistical analysis will be performed afterwards.

Significance

The study will determine if a difference exists of efficacy or safety between different methods of cytotec placement.

Is elevated HgbA1c Predictive of Gestational Diabetes Mellitus

Jonathan Lugo, M.D.

TTUHSC at the Permian Basin Department: Obstetrics and Gynecology

Faculty Advisors: Daniel Castracane, Ph.D.

Background

Gestation Diabetes Mellitus (GDM) has become a growing issue with an increasing incidence in our country. Though it has been well established that the diagnosis of this disease can be made with two main modalities of testing, there is a limited utility of HgbA1c in pregnancy. HgbA1c is established as a standardized method to diagnose and monitor pre-diabetics as well as diabetic non-pregnant individuals. Mean serum glucose has been suggested to be a superior predictor of diabetic control when compared to post-prandial and daily variability; If used early enough, it would be useful in intervening for at risk mothers to prevent the development of GDM and its complications.

Objective

To examine the relationship between an elevated hemoglobin A1C measurement between 5.7 and 6.4 within the first trimester pregnancy and the likelihood of acquiring GDM and its associated complications.

Methods

Patients ages 18 to 35 who present to TTUHSC at the Permian Basin OB-GYN Clinic will be recruited and consented to have an HgbA1c level drawn. Non-pregnant women with a BMI of 25 to 30 and no PMH of Diabetes Mellitus will be consented for the study to set a baseline hgbA1c for the Permian Basin population. We will screen women of any BMI and present for their initial OB visit with a gestation less than 20 weeks. A collection of blood will be drawn in the prenatal set of labs. Exclusion criteria will be women with hemoglobin below 10 ml/dl or any chronic disease.

A second sample of blood will be taken during the 24 to 28 week screening. The hgbA1c's will be compared among the non-pregnant and pregnant women. We will use a multivariate regression model or NOVA to compare the HgbA1c's of the women, along with their initial BMI, GDM screening BMI, parity, delivery BMI, fetal APGARS, neonatal complications, neonatal weight, age and race.

Expected Results

The first sample is meant to establish the predictive HgbA1c of pregnant individuals with resistant levels, which will be confirmed with the confirmatory screening oral glucose challenge test.

Together, with both hgbA1c samples, we expect to find a correlation between elevated HgbA1c and GDM. The second aim is assess the other parameters and their effect on the GDM with elevated HgbA1c's.

Significance

The results will provide information to obstetricians and aid in the implementation of possible interventions with the hope of potentially preventing GDM in non-diabetic pregnant patients.

The Effect of No Prenatal Care on Maternal and Perinatal Outcome in West Texas

Peter Hsu, M.D.

TTUHSC at the Permian Basin Department of Obstetrics and Gynecology

Faculty Advisor: Raymond M. Hampton, M.D., FACOG

Background

Prenatal care came into being in the early 1900's as a way to combat the high maternal mortality rates. There has been dramatic decrease in maternal mortality rates from 690 per 100,000 births in 1920 to 50 per 100,000 by 1955 to the present maternal mortality rate of 8 per 100,000. Most believe it is mainly because of the implementation of prenatal care. There are many studies that show the benefits of prenatal care and its ability to mitigate maternal and fetal morbidity and mortality. One such study is a population-based study done by Harper that showed a fivefold decrease in pregnancy-related maternal death in those who receives prenatal care. Other studies have demonstrated a higher pre-term birth and stillbirth rate in those who has not received adequate prenatal care.

We have noticed an increasing number of individuals with no prenatal care delivering at our institution, but have not seen the expected increase in maternal and perinatal morbidity and mortality as would be predicted by what the previous studies have shown. Therefore, we would like to evaluate the effect of no prenatal care in our own population in West Texas.

Objective

To compare individuals with prenatal care and individuals without prenatal care and see if there has been any effect on maternal and perinatal outcomes in our patient population.

Methods

A cross-section of the study population will be selected from deliveries performed by the TTUHSC at the Permian Basin Department of Obstetrics and Gynecology at Medical Center Hospital from 2010 to 2012 by a review of the medical charts. We expect up to 3,600 maternal/infant records to be reviewed. Medical records will be reviewed and data collected, key measurements includes: rate of cesarean delivery, rate of NICU admission, rate of preterm premature rupture of membrane, rate of hypertensive disorder , rate of preterm delivery, maternal anemia, rate of stillbirths, AGPAR score and birth weight. A descriptive analysis will be performed afterward.

Results

Either maternal or perinatal morbidity increases in accordance to previous studies or no appreciable difference between the maternal and perinatal morbidity is seen in our patient population with no prenatal care when compared to patients with prenatal care.

Conclusion/significance

To explain whether the effect of no prenatal is as significant in our patient population as it has been previously described in other studies and national data.

Integrated Out-patient Diabetes Care Program:
Impact on Diabetes Care and Management in a Family Medicine Residency Training Clinic

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Background

Owing to the complex medical and social nature of diabetes, physicians and patients often fail to take care of necessary outcome measures. In September 2013, the TTUHSC at the Permian Basin Department of Family Medicine integrated a Diabetes Care Program within its outpatient family health center utilizing a team of family physicians, residents and dedicated nurses. We would like to hypothesize that the implementation of this integrated Diabetes Care Program will improve health outcome measures that are vital in the care of the diabetic patient.

Objective

To determine the effect of the integrated Diabetes Care Program on glycosylated hemoglobin, blood pressure and LDL-cholesterol levels.

Methods

Prospective cohort study that will involve 500 adult patients with Type 2 diabetes seen at the Texas Tech Physicians of the Permian Basin Family Medicine Clinic before and at least three to six months after the implementation of the Diabetes Care Program. Primary endpoint data, including HbA1c, BP levels and LDL-C levels pre- and post-implementation will be gathered via standardized abstraction forms. Secondary endpoint data, which include change in BMI and completion of health maintenance behaviors such as pneumococcal and influenza vaccination, foot and retinal exams and urine microalbumin, will also be collected.

Results

We expect an improvement in the patients' HbA1C, blood pressure and LDL-C levels after three to six months of implementation of the program.

Significance

This study shall be significant in determining the impact of meeting core measures for diabetes, emphasizing the necessary multi-disciplinary approach in the care of diabetics and possibly to identify barriers to adherence and treatment failures.

A Case Series Study to Evaluate Average Time for Onset of Labor in Healthy Primagravidas with Varied Activity Levels

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Background

The mean gestational age of pregnancy in the world is 40 weeks. The perinatal mortality rate is lowest for infants who are delivered at 39 to 40 weeks gestation. Perinatal mortality begins to rise at 41 weeks gestation. There have been many studies of the effects of aerobic exercise in pregnancy and its influence on pregnancy outcomes, but there has never been a study on extra walking during the last four weeks of pregnancy and gestational age at onset of labor. There is also a question of whether obesity versus non-obesity has any relationship to the onset of labor.

Objective

This is a preliminary study in which data is gathered on primigravida women to determine the gestational age when they go into labor.

Methods

Case series study of primagravida patients seen at TTUHSC at the Permian Basin Obstetrics and Gynecology clinic in Odessa, Texas between January 1, 2011 and July 31, 2012. The medical records reviewed were determined by reviewing the Medical Center Hospital Labor and Delivery Unit records to identify the specific patients meeting the study delivery criteria, time frame and TTUHSC faculty as their physician. This master list was used to collect the data needed for the newborn and to identify the associated maternal medical records in the TTUHSC at the Permian Basin OB-GYN clinic to be screened for study inclusion. The mean duration and standard deviation of gestational age will be reported for the sample, along with the mean and standard deviation of the obese (BMI >30) and non-obese (BMI<30) groups as categorized at the beginning of pregnancy. A p-value will then be reported for the corresponding 2-sample T-test, in the event that there is any significant difference to be detected in this secondary point of interest.

Results

The mean gestational age at which primagravida TTUHSC patients deliver was 39 weeks 2.83 days. A secondary result is the difference between gestational ages of obese versus non-obese patients. The mean gestational age for obese women was 39 weeks 2.5 days and for non-obese women it was 39 weeks and 2.88 days. A total of 90 patients met all inclusion criteria. There were 12 women in the obese category and 78 in the non-obese category.

Conclusion/Significance

This data will establish a historical control for a prospective study. The prospective study will then evaluate whether a formal walking program, in addition to other normal daily activities, will help primagravida pregnant patients go into labor earlier compared to the historical controls whose activity levels are unknown, but can include any and all activity levels during pregnancy and during the last four weeks of pregnancy.

The Use of Sonogram to Determine Normal Value for Post Void Residual Volume at First Micturition Following a Vaginal Delivery

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Background

Postpartum urinary retention (PPUR) is a complication during the immediate postpartum period. There are two forms of PPUR: Overt (symptomatic/acute) and covert (silent).

Acute PPUR has been defined as painful, palpable or perusable bladder in the patient who is unable to void six hours after vaginal birth or six hours after removal of an indwelling catheter. Covert retention occurs when a woman has an elevated post void residual (PVR) urine volume of more than 150 ml with no symptoms of urinary retention.

Trauma of the birth process or epidural anesthesia may result in incomplete emptying of the bladder secondary to inhibition of bladder sensation and/or contractility. Over filling may cause bladder damage.

The problems with establishing the diagnosis of covert PPUR are there are no normative values for PVR in obstetrical patients and there is a lack of consensus on the diagnostic criteria for an elevated PVR in obstetrical literature.

Therefore, the objective of our study is to establish normal values for PVR at first micturition following a vaginal delivery. By doing this, we hope at some point to make recommendations for routine postpartum bladder care. Ultimately, this may mitigate long-term complications in women.

Significance

Once normal values are established, standards for routine postpartum bladder care can be established.

Objective

To use sonogram to determine normal values for PVR volume at first micturition following a vaginal delivery.

Specific Aim

To demonstrate that the "normal" value for PVR established by this study is greater than the value for covert PPUR described in the literature, our historical control.

Methods

This will be a pilot study, consisting of 200 consecutive vaginal deliveries. Inclusion criteria: 1) term single intrauterine pregnancies 2) cephalic presentation 3) spontaneous, augmented or induced labor.

Exclusion criteria: 1) operative vaginal delivery 2) cesarean section 3) overt PPUR 4) current urinary tract infection or recurrent urinary tract infections 5) history of stress urinary incontinence (SUI) or pelvic organ prolapse 6) inability to micturate within six hours postpartum.

Technique: First micturition will be recorded as time from delivery. PVR scan must be obtained within thirty minutes of first void by taking the average of three scans. The PVR will be obtained by ultrasound by the obstetrical resident staff using standard techniques.

Statistics

Descriptive statistics will be used to analyze the data.

Results

In this ongoing study, 65 have been enrolled, 27 PVR's have been completed. Others were not completed because of the time constraints and difficulties in coordinating resources. Currently, we are in the process of collecting data to begin analyzing.

Exteriorization vs In Situ Repair of Hysterotomy in Obese Population

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Background

At the time of cesarean section, the hysterotomy can be closed one of two ways. The first is known as in situ repair, in which the hysterotomy is closed while the uterus remains in the abdominal cavity. The second way is known as exteriorization, in which the uterus is removed from the abdominal cavity for closure of the hysterotomy3. Proponents of exteriorization claim that exteriorization provides better visualization for closure, as well as decreased operating time 1,2,5,7, blood loss 2,6,8, febrile mortality and length of stay 2. Several studies have compared these two methods with differing conclusions. Several studies demonstrate decreased blood loss and operating time with exteriorization, however a recent Cochrane review concluded that there is not advantage to exteriorization compared with in situ repair 4. While these methods have been compared and studied multiple times, there has never been a study that looked at these methods in an obese population. The increased subcutaneous tissue can make exteriorization and subsequent replacement back into the abdominal cavity, technically difficult in obese patients. Given the increasing number of obese patients seen in most patient populations, this is data that would likely be relevant to most practicing physicians.

Aims

This study aims to compare in situ vs exteriorization of the uterus for hysterotomy repair in the obese population.

Study Design/Methods

Randomized-controlled trial. Plan to study pregnant patients with a BMI greater than 30 who undergo low-transverse cesarean section with phannenstiel skin incision. The patients will be randomized to in situ vs exteriorization of the uterus for hysterotomy repair. Variables to be studied include total operating time, time to close hysterotomy, number of additional sutures needed to achieve hemostasis, post-operative change in hemoglobin, post-operative analgesic requirements, post-operative nausea and vomiting and need for post-operative transfusion.

Hypothesis

We hypothesize that in patients with BMI greater than 35, in situ repair will lead to decreased hysterotomy repair time, decreased change in post-operative hemoglobin, decreased number of additional sutures need to achieve hemostasis, and decreased need for post-operative pain and nausea medication.

The Relationship of Metabolic Changes in Pregnancy to the Incidence of Non-Alcoholic Fatty Liver in Reproductive Aged Women

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Background

Non-alcoholic fatty liver disease (NAFLD) has become a leading cause of liver pathology in the US. There have been limited studies looking at the incidence of NAFLD in pregnant women. There has been one study recently done at TTUHSC showing there are pregnant women who show evidence of NAFLD, however there is no comparison between them and non-pregnant women. There have also been recent animal studies to show an association between pregnant women with NAFLD and fetal NAFLD as well as neonatal NAFLD. It is important to determine if there is a pregnancy specific chance that may be leading to this increase in fetal and neonatal NAFLD.

Objective

To determine if a greater incidence of non-alcoholic fatty liver disease is present in pregnant woman as opposed to non-pregnant reproductive age women.

Methods

Patients age 18 to 35 that present to TTUHSC at the Permian Basin OB-GYN clinic for early prenatal care with a BMI less than 25 or greater than 30 in the first trimester will be recruited and consented to have a third trimester ultrasound to evaluate for sonographic signs of NAFLD. Non-pregnant reproductive aged patients 18 to 35 years old not on hormonal contraception who present to the same clinic and have BMI less than 25 or greater than 30 will also be recruited and consented for an ultrasound to evaluate for sonographic signs of NAFLD. A blood sample from the two groups will be obtained as well to compare serum markers that have been shown to be important in the NAFLD literature. These findings will be compared not only between pregnant and non-pregnant patients, but also between the lean and obese populations. Statistical analysis will be performed.

Expected Results

We expect to find a higher incidence of NAFLD in the pregnant patients as opposed to the non-pregnant women in the same age range. We also expect to find a higher incidence of non-alcoholic fatty liver in the obese population as opposed to the lean population. We expect to further conclude that certain serum markers correlate with the incidence of NAFLD.

Significance

The results of this study will help us determine if there is a metabolic change in pregnancy that leads to a higher incidence of fatty liver that does not occur in the non-pregnant female. Also it will show us if there is a higher incidence of non-alcoholic fatty liver changes in obese pregnant patients which can aid us in counseling our patients on the further importance of maintaining or achieving appropriate weight prior to and during pregnancy.

Investigation of Nonalcoholic Fatty Liver Disease (NAFLD) in Neonates

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Introduction

Childhood obesity has increased significantly in the United States over the past several decades. According to the most recent National Health and Nutrition Examination Survey (NHANES) data, almost one-third of children between 6 and 19 years of age, and 12 percent of infants are overweight. Maternal obesity and high-fat diet consumption in pregnancy is thought to increase the neonates risk of juvenile obesity and metabolic diseases like Type 2 diabetes and nonalcoholic fatty liver disease (NAFLD).The prevalence of NAFLD is increasing in parallel with the prevalence of obesity; both processes are closely linked to insulin resistance. The worldwide epidemic of obesity and the prevalence of NAFLD are most certainly heavily influenced by, if not directly related to, the diet and relative lack of exercise of the Western lifestyle.

Objective

We expect to determine whether maternal obesity in pregnancy will increase the risk of neonate's juvenile obesity and metabolic diseases like NAFLD and insulin resistance. There is increasing interest in the hypothesis that exposure to maternal obesity during pregnancy, may have adverse lifelong consequences in the mother and neonate. There are no human studies in this field of interest. There is a non-human study on pregnant primates done at Oregon National Primate Research Center which demonstrates that chronic consumption of a high-fat diet provokes NAFLD and insulin resistance in pregnant primates and also impacts lipotoxicity in the fetal livers which may subsequently lead to early onset obesity, NAFLD and also metabolic diseases in the neonates.

Methods

Pregnant women at TTUHSC at the Permian Basin will be recruited in the third trimester. Subjects will be subdivided into lean and obese using BMI from their first-trimester records, and then both mother and neonates will be evaluated for the presence of NAFLD using abdominal ultrasound scans using accepted criteria. Infants will be scanned at the time of their first pediatric visit. Liver biopsies will not be performed since this invasive procedure would present undue risks in a neonatal population. Gestational diabetes is defined in third-trimester subjects using standard criteria developed by Carpenter and Coustan.

Results

Expected results will be the finding of NAFLD in some neonates examined and the relationship to the presence of NAFLD, maternal weight or weight gain in pregnancy and neonatal weight.

Conclusions/Significance

This study will be the first human study on NAFLD in pregnancy and its consequences in the neonate, the results of which may be used to prevent early onset obesity or metabolic diseases in children by educating pregnant women about nutrition in pregnancy.

The Relationship of Placental Number (Mass) to the Maternal Serum Levels of Leptin, Adiponectin and Resistin

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Background

After the discovery of leptin in 1994, the placenta was identified as the first extra adipose-tissues which expressed the leptin message. It was soon established that maternal serum levels were elevated in pregnancy. This led to the assumption that placenta contributes to the increase in maternal serum levels without any physiological evidence to prove such a conclusion. In earlier studies, we have compared maternal serum leptin levels in singleton and twin pregnancies to determine the source of leptin in the maternal circulation. These studies indicated no difference between singleton and twin levels of leptin and that in both cases, the correlation with BMI was virtually identical, suggesting that maternal adipose tissue was the major, if not exclusive, source of leptin in the maternal circulation. We have compared the levels of other adipokines like adiponectin and resistin and we found no difference between singleton and twin levels but a positive correlation with BMI was noted.

We wished to extend these studies to latter gestation to determine if the same relationship exists in late gestation as seen at 15 to 20 weeks GA. We also know from various studies that in gestational diabetic pregnancies,the levels of these adipokines are altered ,but there is no physiological evidence to confirm that placenta contributes to the maternal serum levels of these adipokines in late gestation .

Materials and Methods

Normal pregnant women (controls) (n= 32), twins (n= 11) and gestational diabetic (n= 17) were enrolled at 34 to 37 weeks GA and a single blood sample was obtained from each subject, centrifuged and serum was stored at –70C until assayed. Leptin, adiponectin and resistin levels were determined by ELISA assays (Millipore). Sample size is small and subject enrollment continues for this study. Data was examined by analysis of covariance with Bonferroni correction for pairwise comparisons.

Results

Leptin, adiponecti and resistin levels demonstrated a linear correlation with BMI in all groups ($p<0.001$), but no difference was found between the three groups ($p=0.10$). Pairwise comparison also yielded no significant difference among the three groups.

Conclusions

These preliminary results at 34 to 37 weeks GA indicate that the major source of maternal circulating leptin,adiponectin and resistin comes from maternal adipose tissue, as indicated by the correlation with BMI for all three pregnancies. These results are in agreement with our earlier study at 15 to 20 weeks GA. Patient recruitment continues to provide a better statistical base for these studies.

Completed Projects

Mechanisms of Glucose Lowering with the DPP-4 Inhibitor Sitagliptin Used Alone or with Metformin in T2DM: A Double-Tracer Study

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Background

In diet-treated patients with Type 2 diabetes Mellitus (T2DM) and HbA1c of; 8.0 percent, sitagliptin (S) reduces HbA1c by 0.6–0.7 percent over a six-month period. The mechanism of action of the DPP-4 inhibitors has been well studied and includes increased plasma glucagon-like peptide (GLP)-1 and gastrointestinal insulinotropic peptide (GIP) levels, resulting in increased insulin and reduced glucagon secretion. Therapy with S and M combined (M+S) exerts an additive effect to reduce HgA1c; the mechanism of action of this combination has yet to be examined. Several studies have demonstrated that M inhibits DPP-4 activity, thus increasing plasma active GLP-1 levels.

Objective

To assess glucose-lowering mechanisms of sitagliptin (S), metformin (M), and the two combined (M+S).

Research and Design Methods

We randomized 16 patients with T2DM to four six-week treatments with placebo (P), M, S, and M+S. After each period, subjects received a 6-h meal tolerance test (MTT) with [(14)C]glucose to calculate glucose kinetics. Fasting plasma glucose (FPG), fasting plasma insulin, C-peptide (insulin secretory rate [ISR]), fasting plasma glucagon and bioactive glucagon-like peptide (GLP-1) and gastrointestinal insulinotropic peptide (GIP) were measured.

Results

FPG decreased from P, 160 ± 4 to M, 150 ± 4; S, 154 ± 4; and M+S, 125 ± 3 mg/dL. Mean post-MTT plasma glucose decreased from P, 207 ± 5 to M, 191 ± 4; S, 195 ± 4; and M+S, 161 ± 3 mg/dL ($P < 0.01$). The increase in mean post-MTT plasma insulin and in ISR was similar in P, M, and S and slightly greater in M+S. Fasting plasma glucagon was equal (≈ 65-75 pg/mL) with all treatments, but there was a significant drop during the initial 120 min with S 24 percent and M+S 34 percent (both $P < 0.05$) vs. P 17 percent and M 16 percent. Fasting and mean post-MTT plasma bioactive GLP-1 were higher ($P < 0.01$) after S and M+S vs. M and P. Basal endogenous glucose production (EGP) fell from P 2.0 ± 0.1 to S 1.8 ± 0.1 mg/kg • min, M 1.8 ± 0.2 mg/kg • min (both $P < 0.05$ vs. P), and M+S 1.5 ± 0.1 mg/kg • min ($P < 0.01$ vs. P). Although the EGP slope of decline was faster in M and M+S vs. S, all had comparable greater post-MTT EGP inhibition vs. P ($P < 0.05$).

Conclusions

M+S combined produce additive effects to 1) reduce FPG and postmeal plasma glucose, 2) augment GLP-1 secretion and b-cell function, 3) decrease plasma glucagon, and 4) inhibit fasting and postmeal EGP compared with M or S monotherapy.

Investigation of Incidence Rate, Demographics, Clinical Manifestations, and Outcomes of Coccidioidomycosis in Medical Center Hospital, a West Texas Community Hospital, In the Past Nine years

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Research Advisors: Charles Sponsel, D.O., Timothy Benton, M.D., Satish Mocherla, M.D.

Background

Coccidioidomycosis is a disease caused by the dimorphic fungi Coccidioides immitis / posadasii. Coccidioidomycosis is endemic in central and south California, south Arizona, southwest Texas, part of Nevada, New Mexico and Utah. Coccidioidomycosis has been listed as a reportable infectious disease in California, Arizona and New Mexico, however, not in Texas. The absence of the investigative study and/or review of Coccidioidomycosis in West Texas might be contributed to this drop-off. Based on our clinical observations, the incidence rates of Coccidioidomycosis have been increasing in West Texas over the past 10 years. The current study will be the first complete review of Coccidioidomycosis in West Texas.

Hypothesis / Objective

To investigate the demographics, clinical manifestations, and outcomes of Coccidioidomycosis at Medical Center Hospital (MCH), a West Texas campus in Odessa, over the past nine years.

Method

This will be a retrospective study. All medical records of MCH from 10/2003 to 10/2013 with keywords of "Fungus" and / or "Coccidiomycosis" will be reviewed. We will be collecting only the necessary personal information: such as age, sex (male/female), ethnicity, social history, time and method of diagnosis, co-morbidity, species of Coccidiomyosis, system of infection etc. MCH (Ector County) population will be used as control to calculate the incidence rate over nine years. Then a multivariate repeated measures analysis of variance will be used for statistical significance with the dependent variable as diagnosis of Coccidioidomycosis (incidence) and independent variables of age, gender, ethnicity and co-morbidity. The significance of the interactions among the independent variables will be determined. The years will be used as the repeated measures with year 1 as the baseline incidence rate.

Results / Expected Results

There is a significant increase in the incidence rate of Coccidioidomycosis in Ector county hospital (MCH) in the past 9 years. The ethnicity, age, gender and co-morbidity have significant effects on infection rate.

Conclusion / Significance

There is an absence of up-to-date data on patient population, trend, distribution and treatment efficiency of Coccidiomycosis infection in West Texas. This pilot study would help us to understand the risk and distribution of Coccidiomycosis infection in Ector County of West Texas. It will improve the awareness and prevention to this disease, provide scientific data on the diagnosis, treatment and possibly promote the legislation of mandatory report of this infectious disease in center for disease control, Texas.

Prevention of Radio-Contrast Mediated Acute Renal Injury with Intravenous Sodium Bicarbonate

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Background

Radiocontrast-induced acute kidney injury (RAKI) is associated with increased short and long-term mortality and poor renal outcomes. Treatment with sodium bicarbonate is more protective than sodium chloride in animal models of acute ischemic renal failure. However, the use of sodium bicarbonate (SB) compared with normal saline (NS) in preventing RAKI in patients undergoing coronary angiography with moderate to severe renal dysfunction is controversial.

Objectives

The objectives of the this study is to evaluate the effectiveness of SB compared with NS in preventing RAKI in patients with chronic kidney disease (CKD) stage III-IV undergoing coronary diagnostic and interventional procedures and to evaluate the outcome of either hydration protocol in the one and five year incidence of renal replacement therapy and survival of patients receiving SB or NS for RAKI prevention.

Methods

Three-hundred and ninety six patients (n=396) (mean age: 67±12) (52 percent males) with a GFR < 60 mL/min/1.73m2 were included the study, who underwent elective coronary angiography using an iso-osmolar contrast agent. Patients were randomized to receive either 154 mEq/L of intravenous (I.V.) SB (n = 192) or NaCl (n = 190) with 5 percent dextrose at 3 mL/kg for one hour before contrast administration followed by 1 mL/kg/hr for 6 hours post- procedure. Renal function was measured in all patients before and 48 hours after contrast administration. Incidence of RAKI, in-hospital, one year and five year mortality and renal outcomes were compared between groups. Patients in acute heart failure, CKD stage V, with acute myocardial infarction, undergoing surgical revascularization, receiving theophylline, mannitol, I.V. diuretics, or vasopressors were excluded. RAKI was defined as increase in serum creatinine > 0.5 mg/dL or an increase from > 25 percent baseline within 48 hours after the administration of contrast.

Results

There were no statistically significant differences in each group regarding baseline demographics, medical therapy, renal function or co-morbidities, contrast volume used, hydration volume pre- and post-procedure, coronary artery severity, incidence of revascularization and ejection fraction. No significant differences between groups were noted in the incidence of RAKI [25 (13 percent) treated with SB vs. 31 (16 percent) with NS (p= 0.89)]. The in-hospital mortality, one or five year mortality or need for renal replacement therapy was not statistically different between groups.

Conclusions

In patients with stage III-IV CKD undergoing diagnostic or interventional coronary angiographic procedures, the use of SB is as effective as NS in preventing RAKI, with similar in-hospital, one and five year mortality and need for renal replacement therapy.

Subnormal Testosterone Concentrations in Men with Type 2 Diabetes and Renal Insufficiency

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Background

One-third of men with Type 2 diabetes have subnormal testosterone concentrations along with inappropriately normal LH and FSH concentrations. It is not known if the presence of renal insufficiency affects free testosterone concentrations in men with Type 2 diabetes.

Hypothesis

We hypothesized that Type 2 diabetic men with renal insufficiency (glomerular filtration rate less than 60 ml/min/1.73m2) have lower free testosterone concentrations than men with normal renal function (GFR greater than 60 ml/min/1.73m2).

Methods

This is a retrospective chart review. The study was conducted at a nephrology clinic in Odessa, Texas, and a diabetes clinic in Buffalo, N.Y. Men with Type 2 diabetes who had the following information available in the charts were included in the study: age, BMI, HbA1c, Total testosterone, SHBG, free testosterone, albumin and SHBG. Total testosterone concentrations were measured by liquid chromatography tandem mass spectrometry. SHBG concentrations were measured by a solid-phase, chemiluminescent immunometric assay. Free testosterone was calculated from total testosterone, albumin and SHBG concentrations. Unpaired t-test, ANCOVA or chi-square were used as appropriate to compare groups (chronic kidney disease stages). Total testosterone, SHBG and HbA1c were not normally distributed and hence were log transformed for statistical comparisons (data for them presented as median [25th-75th percentile]. Testosterone concentrations were adjusted for the age and BMI differences between the groups.

Results

Four hundred and two men with complete hormonal data were included in the study. Two hundred and sixty eight men had normal renal function, while 134 men had renal insufficiency (103 men were stage III (GFR 30-60ml/min), 18 were stage IV (GFR 15-30ml/min) and 13 men were stage V (GFR <15ml/min or on dialysis)). Patients with renal insufficiency were older than men with normal renal function (63.3±11.1 and 55.4±11.4 years; p<0.001) but their BMI and HbA1c were similar (32.4 [29.9-37.4] and 33.6 [28.7-39.1] kg/m2; 7.50±1.71 percent and 7.61±1.84 percent; p>0.6 for both). Age/BMI adjusted free testosterone concentrations were similar in men with and without renal insufficiency (7.11±3.05 vs. 7.62±3.13 ng/ml; p=0.13). Free testosterone concentrations of men with CKD stage IV (5.83±2.14 ng/ml) and V (4.12±2.03 ng/ml) were lower than those with normal renal function (p=0.02 and <0.001 respectively). Free testosterone concentrations of men with mild renal insufficiency (stage III) were similar to those with normal renal function (7.69±3.17 vs. 7.62±3.13 ng/ml; p=0.84).

Conclusions

Type 2 diabetic men with stage IV and V chronic kidney disease have lower free testosterone concentrations than those with normal renal function. These findings need to be confirmed in larger number of patients with chronic kidney disease.

Gestational Weight Gain: Relationship Between Maternal Adiposity and Effects on Maternal/fetal Outcomes

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Objective

To determine the rate of gestational weight gain (GWG) in each trimester for a normal, overweight, obese, morbidly obese and gestational diabetic women and, compare the rate of weight gain to fetal weights, APGARS and maternal outcomes.

Methods

Retrospective cohort study of 495 randomly chosen pregnant women from TTUHSC at the Permian Basin OB-GYN Clinic between 2009 and 2011. Prenatal and delivery records were reviewed. Women were categorized by their pre-pregnancy BMI: normal (BMI <25), overweight (25-29), obese (30-39), morbidly obese (BMI 40+) or gestational diabetic (GDM). Their weight was recorded at each visit, mean weight gain per trimester determined. Maternal morbidity was calculated. Maternal outcomes (induction, length of first and second stage of labor, mode of delivery) were compared to weight gain. Neonatal outcomes (weights and APGAR scores) were compared to weight gain.

Results

Multiple ethnicities were represented with the following distribution: Mexican-American (64.89 percent), white (22.24percent), African-American (4.69 percent), and not recorded (8.16 percent). Normal weight women gained a mean three pounds in the first, 12 pounds in the second, and 10 pounds in the third trimester. Overweight/obese women gained four pounds in the first, 13 pounds in the second, and 15 pounds in the third trimester. Morbidly obese women gained one pound in the first, seven pounds in the second, and 11 pounds in the third trimester. Five minute APGAR score mode was nine. The normal weight women were more likely to deliver infants that weighing less than 3500 gm. GDM pregnancies had normal but high normal blood pressures in the first trimester.

Conclusion

Women did not gain significant amounts of weight during the first trimester. Neonates born to obese/morbidly obese women were larger than those born to normal weight women. APGAR scores were not affected by weight gain.

Hematological Effects of the Synthetic Parasite Derived GK1 in a Melanoma Mice Mode

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Background

For 2014, the American Cancer Society estimates the number of newly diagnosed melanoma cases in the United States to be about 76,100 and 9,710 people are expected to die of the disease. Melanoma is susceptible to modulation by immune cytokines. Tumor eradication has been achieved in models of cancer by intratumoral or peritumoral application of cytokines or by implantation of tumor cells expressing cytokines. Previous studies have shown the therapeutic efficacy of subcutaneous injection of GK1 peptide in a melanoma mouse model, effectively increasing the mean survival time by 42.58 percent, delaying tumor growth and increasing intratumoral necrosis when compared to control ($P < 0.05$).

Objectives

To determine the role of GK1 as an anti-tumoral molecule in melanoma bearing mice treated with the GK1 peptide; elucidate its therapeutics and hematological effects; and identify the intratumoral and serum cytokine profile.

Methods

Thirteen male mice were transfected in the lateral tail vein with 2 • 105 B16-F0 murine melanoma cells. After two weeks mice were separated into two different groups: the GK1 therapy and control. The GK1-treated group (seven mice) was injected every five days with an antiseptic intravenous injection of GK1 (10 mcg/100 mL of sterile saline solution) in the lateral tail vein, and the control group (six mice) was injected every five days with an antiseptic intravenous injection of sterile saline solution. Blood samples were collected every five days from treatment initiation and cell differentiation and count was performed; blood and tumor samples were also obtained for cytokine measurements on the day of sacrifice.

Results

Mice treated with GK1 presented statistically significant increase in serum IL-17 and a decrease of INF-γ compared to control ($P < 0.05$). In contrast, lung metastatic analysis demonstrated a significant increase of INF-γ and a decrease in IL-23 and IL-4 in the treated group ($P < 0.05$). In the peripheral blood of treated mice, lymphocytes tended to be lower compared to the control mice, this interaction was marginally significant ($P = 0.0648$). Although treated mice tended to have more neutrophils than the control group, the difference is not statistically significant at 5 percent significance level ($P=0.0939$)

Discussion

Further studies must be performed to elucidate the precise mechanisms of action of GK1 peptide, however this general approach will set the base for molecular studies to understand the effect on survival in mice and the eventual application in humans.

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