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HERITABILITY OF BIRTH SIZE: A POOLED INDIVIDUAL-BASED ANALYSIS OF GLOBAL GEOGRAPHICAL DIFFERENCES USING CODATWINS PROJECT

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Introduction: Birth size is an indicator of infant health and also associated with a wide range of health related traits in later life such as higher blood pressure and obesity. Moreover, there is clear evidence that low birth weight, compared to normal birth weight, is associated with a higher risk of metabolic diseases including type 2 diabetes and cardiovascular diseases in adulthood. Genetic and environmental variation of fetal growth may differ between populations because of differences in maternal dietary habits, other environmental exposures and the gene pool of population. We examined differences in the genetic and environmental contributions to birth weight, length, and ponderal index (PI) across geographic-cultural regions (Europe, North America and Australia, and East Asia) and how gestational age modifies these effects. **Methods:** Data from 26 twin cohorts in 16 countries including 57,613 monozygotic and dizygotic twin pairs were pooled. Genetic and environmental variations of birth size were estimated using genetic structural equation modeling. Birth weight, length and PI values (both unstandardized and standardized for gestational age) were first adjusted for twin cohort within each sex and geographic-cultural region using linear regressions, and the resulting residuals were used in the analyses. All genetic models were fitted by the OpenMx package in the R statistical platform using the maximum likelihood method to estimate the variance components with 95% confidence intervals (CIs). **Results:** Additive genetic factors explained a small proportion of the total variance of birth size (up to 23%), whereas the contribution of environmental factors, shared by co-twins, was substantially larger (up to 65%). After standardization for gestational age, the proportions of shared environmental variances of birth weight decreased from 65% to 30%, and for birth length and PI from 74% and 45% to 50% and 43%, respectively. The heritability estimates were similar in the geographic-cultural regions, but estimates for unique environmental influences were slightly larger and shared environmental influences smaller in East Asia than in the other regions. **Conclusions:** The contribution of genetic factors to birth size is around 20 to 25%, which is smaller than the estimate for the contribution of shared environmental factors. Shared environmental factors have an important role

in birth size and these effects differed across geographic-cultural regions.

ASSOCIATION OF CERVICAL LENGTH CHANGE AFTER INITIAL INDUCTION OF LABOR WITH SUBSEQUENT SUCCESSFUL INDUCTION IN TWINS

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Introduction: Over half of the women with twin gestations attempting vaginal delivery require induced labor. However, there is little information regarding the ultrasonographic parameters and clinical which predict the success of labor induction. Recent published studies involving twin pregnancies showed that the change in cervical length over time was associated with preterm delivery. Therefore, we considered that the possibility that similarly in women who failed to induce labor on the first attempt of serial induction, the change in cervical length following the attempt may be predictive of the induction success on the second attempt. The purpose of this study was to determine whether the change in cervical length is valuable in predicting the success of serial induction of labor on the second day in women with twin gestations who failed to induce labor on the first day. **Methods:** This retrospective cohort study included 72 consecutive women with twin gestations at ≥ 35.0 weeks of gestation who failed labor induction on the first day of serial induction. Cervical length on transvaginal ultrasound and the Bishop score were estimated prior to performing each labor induction on the first and second days. The primary outcome measure was successful labor induction (defined as an ability to achieve the active phase of labor). **Results:** The overall success rate of labor induction performed on the second day was 36.1% (26/72). The group of women in whom labor was successfully induced on the second day had a significantly higher mean change in cervical length and maternal height compared with the group of the women in whom labor induction failed. However, other parameters studied, including cervical length and Bishop score on day 2, change in Bishop scores, chorionicity, and methods of conception, were not significantly different between the two groups. Multiple logistic regression analysis identified change in cervical length and maternal height as independent predictors

THE RELATIONSHIP OF PHYSICAL HEALTH TO MENTAL HEALTH IN THE VIETNAM ERA TWIN STUDY OF AGING (VETSA)

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Introduction: A simplistic dualism distinguishing physical health from mental health is inconsistent with our current understanding of human biology, but treating these domains as separate is a convenient heuristic. **Materials and Methods:** Data were collected from approximately 1,000 participants in the Vietnam Era Twin Study of Aging (VETSA). The sample comprises men who served in the military between 1965 and 1975. VETSA includes data on major depression and posttraumatic stress disorder (PTSD) that were collected when the average age of participants was 41 years. During the second wave of VETSA data collection subjects were 62 years old on average and completed the Center for Epidemiologic Studies Depression Scale, the self-report DSM-IV based PTSD Checklist Civilian Version, and self-report questions about medical conditions. **Results:** Cross-sectionally at age 62, symptoms of depression and PTSD were associated with self-reported sleep apnea, hypertension, diabetes, migraines, hypercholesterolemia, gastritis, osteoarthritis, rheumatoid arthritis, and erectile dysfunction. Depression, but not PTSD, was associated with asthma. PTSD, but not depression, was associated with heart disease. Symptoms of depression and PTSD were associated with self-rated general health and life-satisfaction at age 62. In longitudinal analyses examining the association of depression at age 41 with health outcomes at age 62, we controlled for depression at age 62. Similarly, analyses of age 41 PTSD controlled for age 62 PTSD symptoms. Symptoms of depression at age 41 were associated with self-reported stomach ulcer and gastroenteritis at age 62. Symptoms of both depression and PTSD at age 41 were associated with erectile dysfunction at age 62. Symptoms of depression and PTSD at age 41 were also associated with elevated C-reactive protein at age 62 after controlling age 62 depression and PTSD. Symptoms of depression and PTSD at age 41 were not associated with age 62 self-rated general health and life-satisfaction when age 62 PTSD and depression were controlled. **Conclusions:** As might be expected, there were more significant cross-sectional relationships between medical disorders with depression and PTSD at age 62 than longitudinal relationships. However, a number of age 62 health outcomes were related to psychopathology at age 41 even after controlling for psychopathology at age 62, indicating an association that persisted for over two decades.

THE EVALUATION OF DISCORDANCE IN TWINS WITH SPECIFIC AND NON-SPECIFIC PATHOLOGY BY MEASUREMENTS OF LIVER, THYROID GLAND AND KIDNEYS

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Introduction: Discordant biometric indices in twins may be the markers of pathologic development. Prenatal ultrasound of some organs is important for establishing complete diagnosis. Objective is to propose the new approaches to the evaluation of well-being of twins with discordance. **Materials and Methods:** In fetuses with specific and non-specific complications of 58 mono chorionic diamniotic (MCDA) twin pregnancies, the following investigations were performed: 2D/3D ultrasound, Doppler, and invasive procedures on indication. The following parameters in twins were analyzed: expected fetus weight, amount of amniotic fluid, measurements of liver, kidneys and thyroid gland. **Results:** The research

showed that the maximum discordance of all studied parameters took place at fetofetal transfusion syndrome (FFTS). The presence of significant discordance was noted for the expected fetus weight in 2nd and 3rd trimester ($31.7\% \pm 2.9$), amount of amniotic fluid ($76.2\% \pm 3.36$), size of the liver ($27.5\% \pm 2.8$) and thyroid gland ($34.7\% \pm 2.35$). Maximal discordance was seen in the amount of amniotic fluid which is a typical manifestation of pathology. In selective intrauterine growth retardation (SIUGR), there was significantly high discordance between fetuses in relation to the expected fetus weight ($32.4\% \pm 3.36$) and amount of amniotic fluid ($38.8\% \pm 4.2$), compared to the control group. The higher discordance of the amount of amniotic fluid is associated with oligohydramnion, which occurs in 33.3% of SIUGR. Since there was no polyhydramnion in the larger fetus, there was no discordance of the amount of amniotic fluid. **Conclusions:** The discordance of the expected fetus weight, the amount of amniotic fluid, the size of the liver, kidneys and thyroid gland in fetuses with specific and non-specific complications of multiple pregnancy was evaluated. The discordance may be diagnosed not only with expected fetus weight, but also by measurement of only liver or thyroid gland.

HELLP SYNDROME WITH MONOCHORIONIC GEMELLA: CASE REPORT

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Introduction: The number of twin pregnancies has increased over the last few decades and reaches 3% of all deliveries thanks to assisted fertilization. The mode of delivery depends on the existent complications in pregnancy. The birth itself is much often complicated even by placenta abruption, by placenta and vasa praevia, by premature rupture of membranes, by preterm delivery and prematurity, by abnormal presentation, collision, prolapsed of the umbilical cord, by uterine dysfunction, by hypotonia and postpartum hemorrhage. The optimal time to complete uncomplicated twins pregnancy at diorionic gemellas is the 38th gestational week. In mono chorionic gemella, it is necessary to finish pregnancy after the 34th gestational week, or the 37th gestational week at the latest. In monoamine twins pregnancy, there is a high risk of twisting of umbilical cord, so it is recommended to end pregnancy between 32nd and 34th gestational week after corticosteroid therapy. **Case Report:** A patient aged 30 years, primipara in 36th/37th gestational week. She denied previous illness, TA 140/100. She had been hospitalized due to fatigue and swollen feet. At the patient laboratory, clinical and ultrasound examination were performed, and it was concluded that it was a vital gemellar pregnancy 36th/37th gestational week (MH, DA). Biometrics and morphology of the fetus were neat. CTG records were reactive. Laboratory findings of April 7, 2017 showed WBC 9.28, RBC 3.65, Hgb 92, HCT 261, AST 470, ALT 389, CRP 13.2. The findings on April 9, 2017 showed CRP 21.3, AST 1084, ALT 1005, PLT 229. On April 9, 2017, delivery of 2 male children was performed by cesarean section: 1st male child 3,110/52/34 APGAR 9/9; 2nd male child 2,700/50/33 APGAR 9/10. Puerperium started out neatly. The patient was released on the 4th postoperative day in good general condition. Laboratory findings are of the reference values at discharge. **Conclusion:** Preeclampsia occurs in 10% of pregnant women and is the leading cause of maternal and fetal morbidity. Increased pressure in pregnancy and the occurrence of HELLP syndrome was caused by an increase of placenta blood vessels development with placenta ischemia. HELLP syndrome is often overlooked and can be diagnosed as hepatitis. In this case, HELLP syndrome in a pregnant woman with monohormone gemella was diagnosed timely and the pregnancy worked out favorably.