

January 2012 and December 2018. Deciduitis was defined as one with inflammatory cell infiltration including plasma cells and lymphocyte infiltration in the decidua or the one with inflammatory cells invading from the decidua to the villus and decidual necrosis. Chorioamnionitis (CAM; C) and deciduitis (D) were assessed microscopically. Then, the patients were classified into the following 4 groups to investigate maternal/clinical backgrounds: C(-)D(-), C(+)D(-), C(-)D(+), and C(+)D(+) group.

Result: CAM and deciduitis were observed in 29 patients (78%) and 21 patients (57%), respectively. There were 4 patients in the C(-)D(-) group, 12 in the C(+)D(-) group, 4 in the C(-)D(+) group, and 17 in the C(+)D(+) group. The average age in the D(+) group was lower than the other groups. The patients in the D(+) group were likely to repeat miscarriage and preterm delivery and get complicated with decidual polyp.

Conclusions: It was suggested that deciduitis is the important factor when taking precautions for the next pregnancy.

13.

RETROSPECTIVE ANALYSIS OF THE ASSOCIATION OF OPAQUE FETAL MEMBRANE WITH CHORIOAMNIONITIS AND EARLY NEONATAL COMPLICATIONS

Takuma Furukawa, Yoshimasa Horikoshi, Chizuko Yaguchi, Chika Etoh, Masako Matsumoto, Naomi Isomura, Kazunao Suzuki, Hiroaki Itoh. *Department of Obstetrics and Gynecology, Hamamatsu University School of Medicine*

Objective: Opaque fetal membrane is known as one of the abnormal findings of the placental gross screening which has been linked with histological chorioamnionitis (CAM). However, its sensitivity and specificity has not been established for predicting histological CAM or poor neonatal outcome. The aim of the present study is to retrospectively evaluate the association of the opaque fetal membrane with incidence of histological CAM and early neonatal complications.

Methods: Total 571 placentas were retrospectively enrolled to the study, because the records of both gross and histopathological findings were available, among 5201 deliveries at Hamamatsu University Hospital from April 2010 to March 2017. We evaluate the association of the presence of opaque fetal membrane with the incidence of CAM. Then, logistic regression analysis was performed to test if opaque fetal membrane could be a risk factor of neonatal respiratory disorder.

Results: Among 571 placentas, positive opaque fetal membrane was observed in 220 cases, but not in 351 cases. CAM was observed in 180 in the positive group and 97 cases in the negative group. Positive and negative predictive value of CAM were 81% (180/220) and 28% (97/351), respectively. Opaque fetal membrane was identified as the independent risk factor of neonatal complications that could cause breathing problems (OR: 1.81; 95% CI [1.05-3.12]).

Conclusion: Gross screening of opaque fetal membrane is clinically efficient to predict the presence of histological CAM as well as the predisposition to neonatal complications.

14.

IMPACT OF HUMAN CYTOMEGALOVIRUS INFECTION ON TROPHOBLAST TRANSCRIPTOME

Nobuko Mimura, Takeshi Nagamatsu, Kazuki Morita, Ayumi Taguchi, Keiichi Kumasawa, Takayuki Iriyama, Yutaka Osuga, Tomoyuki Fujii. *Department of Obstetrics and Gynecology, The University of Tokyo Hospital*

Objectives: Placental dysfunction is known as a pathological factor triggering fetal growth restriction in human cytomegalovirus (HCMV) infection. This study aimed to investigate the impact of HCMV infection on gene transcriptome in cytotrophoblasts (CTBs) associated with placenta dysfunction.

Methods: Human placentas were obtained from term deliveries. CTBs isolated from the placentas were infected with AD169rev, a HCMV strain. CTBs were collected at 72 hours after infection. The transcriptome profiles were compared between CTBs groups with and without infection by

CAGE-seq. KEGG pathway analysis were utilized in the analysis of the gene expression data. The syncytialization of the CTBs with and without HCMV infection was assessed by hCG secretion and by immunostaining for cell surface desmoplakin.

Results: A total of 629 differentially expressed genes (DEGs) were identified. KEGG pathway analysis demonstrated that DEGs were enriched in the signaling pathways related to cell cycle, focal adhesion. Most of the genes known to be up-regulated with syncytialization were suppressed in the cultured CTBs with HCMV infection. Additionally, this gene suppression under HCMV infection was concurrent with the reduced hCG secretion. Immunostaining for cell surface desmoplakin revealed that HCMV reduced the cell fusion of cultured CTBs. These findings imply that HCMV infection has negative impact on the syncytializing process that is indispensable for the maintenance of virus function.

Conclusion: HCMV infection interferes with gene expression profile and functional differentiation in CTBs.

15.

A CASE OF PLACENTAL POLYP SAFELY REMOVED WITH HYSTEROSCOPIC OBSERVATION

Yuta Kinoshita, Nanae Tsuchida, Mitsuru Hayashi, Masahiro Sagisaka, Minoru Hirose, Chiaki Nakazaki, Akina Yamanaka, Junya Kojima, Toru Sasaki, Hiroataka Nishi. *Department of Obstetrics and Gynecology, Tokyo Medical University*

Introduction: Placental polyp is a rare disease occurring from placental tissue, which remain in the uterus after miscarriage or delivery. Spontaneous regression is possible. However, an abundant blood flow could lead to a severe hemorrhage by intrauterine manipulation. Here, we report the case with a placental polyp, which was safely removed with hysteroscopic observation.

Case: A 28-year-old G1P0 woman was diagnosed with miscarriage at 12 weeks of pregnancy. The patient underwent dilation and curettage at another hospital. Two months later, she visited the doctor due to missed period. A uterine mass was confirmed, and she was subsequently referred to our hospital. A transvaginal ultrasonography showed a mass measuring 18 × 11 mm with abundant blood flow in the uterine cavity. Her serum hCG was 87.5 IU/ml. MRI revealed a remarkable contrast effect of the tumor and flow void by T2 weighted images. As a consequence, a placental polyp was suspected. Because of childbearing desire, we firstly performed a hysteroscopic observation. Hysteroscopy revealed a broad-sided polyp on the uterine anterior wall. Due to lack of blood flow evaluated by hysteroscopy and ultrasonography, the mass was removed using a curette. Intraoperative blood loss was small. Postoperatively, serum hCG levels became undetectable.

Histological examination was consistent with placental polyp.

Conclusion: Transvaginal ultrasonography and macroscopic observation by hysteroscopy confirmed that the placental polyp's blood flow spontaneously regressed, leading to a successful resection.

16.

TRANSCRIPTOMIC FEATURES OF HUMAN INDUCED PLURIPOTENT STEM CELL (HIPSC)-DERIVED TROPHOBLAST LINEAGE CELLS

Nanae Tsuchida¹, Hidenori Akutsu², Junya Kojima¹, Naoaki Kuji¹, Hiroataka Nishi¹. ¹*Department of Obstetrics and Gynecology, Tokyo Medical University;* ²*National Center for Child Health and Development*

Objective: In the previous study, we established a culture system of human induced pluripotent stem cell (hiPSC)-derived trophoblast (TB) lineage cells. Although such differentiated cells are heterogeneous, it may be possible to elucidate novel genes expressed in TBs by analyzing their features. In this study, we isolated the cells that expressed the pan-TB marker KRT7, and performed comprehensive gene expression analysis.

Methods: Four types of hiPSCs were treated with 50 ng/mL of BMP4 for 10 days. KRT7-positive cells were purified using flow cytometry and analyzed by DNA microarray. Differences in gene expression profiles between KRT7-positive cells and hiPSCs were compared.

Results: Comparing our microarray data with previous analyses of the human transcriptome, we found that the gene expression patterns of KRT7-positive cells were similar to those identified in placental tissue. We identified 259 upregulated genes commonly expressed in all four KRT7-positive groups, including well-known TB markers. Among these, we identified seven genes whose placental expression and functions have not been previously characterized. To identify whether these genes could be candidate novel TB-related genes, we confirmed their expression in primary placental tissue by immunohistochemical staining. As a result, we found that only XAGE2 and KCNQ2 were expressed in TB layers.

Conclusions: BMP4-treated KRT7-positive cells have similar characteristics to those of human placental tissue. Our approach allowed for the identification of novel genes possibly involved in placentation.

17. CHARACTERISTICS OF PHYSIOLOGICAL DEVELOPMENT OF PLACENTAL VILLOUS VASCULATURE USING SUPERB MICRO-VASCULAR IMAGING

Takashi Horinouchi, Toshiyuki Yoshizato, Yutaka Kouduma, Masato Yokomine, Kimio Ushijima. *Department of Obstetrics and Gynecology, Kurume University*

Objective: Superb Micro-vascular Imaging (SMI) is a new technology for observing low blood flow profiles and providing high-resolution Doppler images. We aimed to analyze the characteristics of the physiological development of placental chorionic villous vessels (VVs) using SMI.

Material and Methods: The subjects were 5 cases of normal singleton pregnancy. The observations were made longitudinally, at 19-21, 29-31 and 36-38 weeks. The VVs were defined as primary (P), secondary (S) and tertiary (T), according to branching structures. In each observation, branching characteristics of VVs were analyzed qualitatively. The distance between P-VVs on the chorionic plate were measured. Among the VVs, one branching vessel clearly delineated from P to T VVs was sampled, and the length of each VV was measured. The gestational age-related characteristics of VVs were analyzed qualitatively using the Kruskal-Wallis one-way ANOVA on ranks test and followed up with the Dunn's test. The significance was set at $P < 0.05$.

Results

- 1) The distances between the P-VVs at 19-21 weeks (median: 14.8mm) became elongated at 29-31 weeks (23.2mm), but no change thereafter at 36-38 weeks (23.1mm).
- 2) The lengths of the P/S-VVs at 19-21 weeks (8.15mm / 5.55mm) extended at 29-31 (12.6mm/ 9.6mm), but showed no change thereafter at 36-38 weeks (11.35mm/ 8.0mm).

Conclusions: The distance between the P-VVs and the length of the P/S-VVs extended to 29-31 weeks and no further changes thereafter. This suggested that the basic structure of villus vasculature was completed at around 30 weeks' gestation.

18. UMBILICAL CORD EDEMA WITH UMBILICAL CORD HEMANGIOMA IN PREGNANCY, A CASE REPORT

Risa Shimokawa¹, Chisato Kodera¹, Tetsuo Naramura², Takasi Ohaba¹, Hiroshi Mitubuchi³, Hidetaka Katabuchi¹. ¹Department of Obstetrics and Gynecology, Faculty of Life Sciences, Kumamoto University; ²Department of Pediatrics, Faculty of Life Sciences, Kumamoto University; ³Department of Neonatal Studies, Kumamoto University Hospital

In addition to the circulating disorders and inflammations, edema of the umbilical cord has an association with congenital anomalies and perinatal death. Here we report a case having umbilical cord edema with umbilical cord hemangioma who gave birth to a healthy infant vaginally. A 26-year-old, 3 gravida 1 para female conceived naturally and received periodical check-up at a local obstetrical clinic. She was pointed out

umbilical cord cysts at 30 weeks of gestation and referred to our institution. Ultrasonography revealed edematous umbilical cord with cystic structures. The fetal growth was appropriate, no morphological abnormalities. Her pregnancy course was uneventful and she gave birth to a 2,965g of female infant vaginally at 39 weeks and 2 days of gestation. The fetal status was reassuring throughout the parturition. The total length of the umbilical cord was 70 cm and the cord was edematous over 53 cm from the umbilical ring. Histopathological examination revealed no urachal sinus in umbilical cord. Instead, there was a lobulated and circumferential hemangioma-like hyperplasia around the umbilical artery, leading to a diagnosis of umbilical cord hemangioma.

Hemangioma is benign endothelial cell neoplasms that affect the skin and the other organs. It may form part of a syndrome or occur in association with other malformations. Unlike the placental hemangioma, umbilical cord hemangioma is very rare and may not be detected prenatally. It is recommended to rule out associated malformations and hemangiomas in other locations for the fetus with umbilical cord edema.

19. PROGESTERONE SUPPRESSES THE ENHANCEMENT OF INFLAMMATION ON THE FETAL MEMBRANE

Yuko Teraoka¹, Satoshi Urabe¹, Haruhisa Konishi³, Jun Sugimoto¹, Mutsumi Miyauchi², Yoshiaki Kudo¹. ¹Department of Obstetrics and Gynecology, Hiroshima University; ²Department of Oral and Maxillofacial Pathobiology, Hiroshima University; ³Miyoshi central hospital

Objective: Progesterone (P4) has been known to be important in maintaining pregnancy by anti-inflammatory effect in the myometrium, however, this effect is less understood in the fetal membrane. We previously reported that mice with dental *Porphyromonas gingivalis* (*Pg*) infection could be useful as a model of preterm birth. In this model, inflammation in the fetal membrane via toll-like receptor 2 (TLR2) is thought to result in preterm birth. The aim of this study was to investigate the effect of P4 on the fetal membrane.

Methods: *Pg* mice were injected subcutaneously with (*Pg* + P4 mice) or without (*Pg* mice) 1mg P4 daily at day 15.5-17.5 of gestation. We performed Western blot analysis for detection of MAPK and NF- κ B on the fetal membrane at day 18 of gestation. We also evaluated inflammatory cytokines (IL-1 β , IL-8, TNF- α) and TLR2 at the same tissues using RT-PCR.

Results: The enhancement of MAPK and NF- κ B expression levels was decreased in *Pg* + P4 mice, compared with in *Pg* mice. The treatment with P4 significantly reduced the enhancement of the expression of IL-1 β , IL-8, TNF- α and TLR2.

Conclusion: P4 prevented preterm birth by suppressing the activation of inflammatory signaling pathways via TLR2 in the fetal membrane of preterm birth mouse model.

20. THE CONTRIBUTION OF PLACENTAL PATHOLOGY TO THE PREDICTION OF, AND PROTECTION AGAINST, CEREBRAL PALSY (CP)

Masayoshi Arizawa. *Tokyo Metropolitan Ohtsuka Hospital*

Object: As we know, cerebral palsy (CP) can be caused by intrauterine hypoxia, hypoxia in delivery, and premature birth. In this study I investigate how to predict CP through examination of the placenta for signs of hypoxia.

We looked at what kind of hypoxic states can be found through an examination of the placenta, looking at Villous edema, thrombosis of the villous vessels, decidual degeneration, Diffuse Chorioamnionic Hemiosiderosis (DCH), Chorioamnionitis (CAM) and abruptio placentae.

Method: I examined 37 placentas from CP cases by microscope.

The cases were chosen from clinical records and diagnosis by pediatricians.

Results: From 37 cases I found.

Edematous villi - 19 cases

Villous vessels occlusion - 15 cases

Dysmature villi - 5 cases