

- 190 Change of human fetal foramen ovale flow during fetal breathing movements. T.Matsuura, M.Higuchi, A.Tsuda, H.Hirano, M.Maki, Dept. Obst and Gynec., Akita Univ. Sch. Med., Akita.

Using color flow mapping and pulsed Doppler technique, fetal foramen ovale flow signal was examined in 9 human fetuses during fetal breathing movements (FBMs) and no FBMs. Their gestational ages ranged from 29 to 37 weeks. Most of the venous return from the inferior vena cava passed through the foramen ovale and flowed in the left atrium during no FBMs. On the other hand, during FBMs, the venous return from the inferior vena cava diffused in the right atrium. It was supposed that the venous return from the inferior vena cava was increased and distributed to the right heart during FBMs.

- 191 Evaluation of cardiac dysfunction in the human fetus. S.Satoh, H.Maeda, N.Horimoto*, T.Yoshizato*, T.Koyanagi, H.Nakano*, Maternal and Perinatal Care Unit, Kyushu Univ. Hosp., Fukuoka, *Dept. Gynec. Obst., Kyushu Univ., Med., Fukuoka.

To elucidate pathophysiology of fetal cardiac dysfunction, we studied the relationship between fetal cardiac pumping function using real-time ultrasound and neonatal outcome. Studied are a total of 107 human fetuses between 24 and 39 weeks of gestation, in which 22 cases showed signs of cardiac failure within 48 hours after birth. We set three categories for evaluating fetal cardiac dysfunction: hydropic change, ventricular enlargement and decrease in cardiac contractility assessed using Fractional Shortening of bilateral ventricles, and compared these with the fact whether cardiac failure was present or not shortly after birth. The most obvious combinations of these parameters for predicting neonatal cardiac failure were either decrease in cardiac contractility and/or cardiac enlargement with hydropic change (13 cardiac failure cases out of 13:100%). For fetuses with normal heart rate, all 15 cases with any two criteria showed neonatal cardiac failure. These results indicate that cases with poor cardiac contractility and/or ventricular enlargement in addition to hydrops fetalis in utero are in the deterioration of fetal cardiac pumping function.

- 192 Estimation of fetal blood gas level by the combined assessment of FHR monitoring, fetal behavior and resistant index of umbilical artery by Doppler. H.Endoh, J.Murotsuki, M.Iwamoto, T.Watanabe, K.Okamura, A.Yajima, Y.Kimura. Dept. Obst. and Gynec., Tohoku Univ. Sch. Med., Miyagi, *Kamaishi City Hospital., Iwate.

FHR reactivity, biophysical profile score (BPPS) and resistant index (RI) of umbilical artery were evaluated in 83 fetuses just before fetal blood sampling by cordocentesis. Based on the relationship between these fetal assessments and fetal blood gas values, the equation by multiple regression analysis (YHAT model) using three variables; FHR, BPPS, RI, was formed to estimate fetal pH, pO_2 , pCO_2 . Significant correlations were observed between "YHAT model" and each fetal gas level. In conclusion, we can estimate fetal gas level by using the "YHAT model".