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fetal circulation are not completely understood. Therefore, in order to elucidate the effects of PGF_{2a} and PGE_2 on the fetal circulation, we performed 10 experiments on Shiba goat fetuses at 136 days of gestation. Ten μ g, 20 μ g, 40 μ g of PGF_{2a} and PGE_2 were administered intravenously and intraarterially, alternatively.

After $PGF_{2\alpha}$ was injected intravenously and intraarterially, FAP increased and FHR decreased immediately.

On the other hand, after PGE_2 was injected intravenously, FAP fell immediately and some of them showed gradual recoveries.

In these fetuses, baseline variability of FHR were noticed in 7 out 8 fetus. In the fetuses that did not show the recoveries, the baseline variability of FHR were lost in 4 of 6 fetuses. The changes of FHR after PGE_2 injection were varied. We concluded that PGF_{2a} and PGE_2 had an opposite action on FAP. PGF_{2a} decreased FHR, but the effects of PGE_2 on the FHR were varied.

167. A Study on the Etiology Classification of IUGR in Terms of the Placental Circulatory Kinetics and of the Architectural Change in Omphaloplacenta in Fetus

T. Kurashima, T. Tanaka, N. Tsutsumi, Y. Shinohara and H. Ito

> Dept. Obst. & Gynec., National Ohkura Hosp., Tokyo

Using the Toshiba Sondlayer SSH-65A, etc., peak times for descending aorta and umbilical artery in fetus were measured. Retrospective morphological examinations of both umbilical cord and placenta were also made. The results enabled us to make a classification of the following four groups.

Group I showed the same peak times for both descending aorta and umbilical artery as the control.

Group II showed prolonged peak time only for umbilical artery.

Group III showed prolinged peak times for both these.

Group IV showed shortened peak times for both these.

Umbilical anormaly, small placenta and slight infarction, hypoplastic placenta and string infarction findings, and fetal malformation were responsible for the above peak time disturbance in Group I, Group II, Group III and Group IV, respectively.

168. The Study on the Regulation of the Circuration in the Cases of the Intrauterine Growth Retardation

T. Tsuzaki

Dept. Obst. & Gynec., Yohka Municipal Hosp., Hyogo

Feto-placental and fetal brain circuratory state was evaluated by pulsed Doppler method and hematological survey was also carried out by various parameters such as plasma Erythropoietin level in the umbilical cord blood in 13 cases of IUGR.

Sampling points in pulsed Doppler technique were set in the umbilical artery and the middle cerebral artery and utilized parameter for evaluation of circuratory resistance was the resistance index. The higher the resistance index in the umbilical artery, the lower the one in the middle cerebral artery. The case revealed high resistance index in both artery developed into neonatal death due to intracranial hemorrhage.

The birthweight showed good correlation with the ratio of the resistance index in the middle cerebral artery to the one in the umbilical artery.

The resistance index in the umbilical artery showed transient elevation during a variable deceleration, but on the contrary the index in the middle cerebral artery showed transient reduction.

Polycythemia caused by chronic hypoxemia which promote Erythropoietin secretion is thought to be a factor of high circuratory resistance.

169. Antenatal Prediction of IUGR and Evaluation of Utero-placental Circulation in High-risk Pregnancies by Pulsed Doppler Ultrasonography

K. UCHIDA, M. EMOTO, T. KANEOKA and K. SHIRAKAWA

Dept. Obst. & Gynec., Fukuoka Univ. Sch. Med., Fukuoka

The flow velocity waveforms of uterine and umbilical arteries were recorded using a combined pulsed Doppler ultrasound system, Aloka SSD280/URG23 unit, and the pulsatility index (PI) values were calculated. In normal pregnancies (n=75), while PI values of uterine artery (PI_{ut}) remained constant at $0.59 \pm$ SD 0.08 between 24 and 40 weeks' gestation, those of umbilical artery (PI_{um}) were gradually decreased from 1.15 ± 0.11 at 24 weeks' gestation to 0.83 ± 0.10 at 40 weeks' gestation. PI values higher