hydroxylase activities in human placenta of abnormal pregnancy, especially light-for-date baby (LFD), were measured. And Type IV and AB collagen were isolated and identified using a SDS gel electrophoresis, and each hydroxyproline levels of them were examined to elucidate its characteristics and possible role.

Hydroxyproline contents of one of three cases of intrauterine stillbirth and cases of LFD with severe toxemia (39.1 ± 8.9 μg/mg protein) showed significantly ($P<0.01$) higher value than those of other abnormal pregnancy (24.5 ± 5.5 μg/mg protein). Prolyl hydroxylase activities of LFD with severe toxemia (446.4 ± 111.5 cpm/mg protein) were significantly ($P<0.01$) higher levels than those of others (332.9 ± 75.4 cpm/mg protein). Type IV collagen content amounted to approximately 1 to 2% of all collagen, AB collagen content was merely in trace level.

These results suggest that the collagen in human placenta may play not only a key in the tissue construction but also a possible role in the fetal growth retardation relating to a unique metabolism of collagen in the human placenta with severe toxemia of pregnancy.

153. Characterization of Amniotic Fluid Fibronectin in Comparison with Fetal and Adult Plasma Fibronectin

Y. YAMAGUCHI, A. SATO, M. KOHZU, M. SATO, M. ONODERA, K. AKAGI, J. SAITO, C. ENDO, Y. LIOU and M. SUZUKI

Dept. Obst. & Gynec., Tohoku Univ. Sch. Med., Sendai

Fibronectin was purified from human amniotic fluid and characterized in comparison with fibronectins from fetal and adult human plasma. These three fibronectins were indistingishable in amino acid composition and immunological properties. However, both amniotic fluid fibronectin and fetal plasma fibronectin were shown to have carbohydrate compositions different from that of adult plasma fibronectin. Amniotic fluid fibronectin was characterized with large amounts of galactose and glucosamine, and fetal plasma fibronectin with the presence of fucose. Serial lectin affinity chromatography of glycopeptides were performed with Con A-Sepharose and lentil lectin-Sepharose to study the structures of sugar chains. Fetal plasma fibronectin contained a population of glycopeptides which bound to both lectin gels. Almost all of the glycopeptides in this population lost their ability to bind to lentil lectin upon fucosidase digestion. In contrast, glycopeptides from adult plasma fibronectin lacked such glycopeptides. These results indicate that fetal plasma fibronectin possesses substantial amount of fucosylated biantennary sugar chains which were not found in adult plasma fibronectin. The lectin affinity profile of amniotic fluid fibronectin glycopeptides was unique in that more than 85% of the glycopeptides was not bound to Con A.

154. Conversion of Arachidonic Acid in Human Cervical Tissue and Cervical Mucous in Late Pregnancy

N. MITSUHASHI, T. YASUMIZU and J. KATO

Dept. Obst. & Gynec., Yamanashi Med. Univ., Yamanashi

Prostaglandins (PGs) play important role on cervical ripening in late pregnancy, namely cervical dilatation and softening. To examine this fact, arachidonic acid metabolites of cervical tissue and cervical mucous were studied. To separate and identify the metabolites, silicic acid chromatography, thin layer chromatography, reversed phase chromatography, gas-liquid chromatography and GC-MS were used. Human cervical tissue and cervical mucous were obtained from eights patients undergoing cesarean section. All cases had no pain at the time of surgery and Bishop scores were between 3 and 8. In cervical mucous, arachidonic acid was converted to $PGF_{2\alpha}$ (0.67-8.01%), PGE_2 (0.37-9.35%), TXB_2 (n.d.-1.50%) and two other peaks on TLC. Those peaks were scraped off and methylated and trimethylsililated, and then subjected to radio GLC and GC-MS. Massfragmentgram showed that these two peaks were 12-hydroxyeicosa-5, 8, 10, 14 tetraenoic acid (12-HETE) (n.d.-7.21%), and 12-hydroxy-5, 8, 10-heptadecatrieoic acid (HHT) (n.d.-3.68%). In cervical tissue, arachidonic acid was converted to 6-keto $PGF_{1\alpha}$ (0.02-0.92%), $PGF_{2\alpha}$ (0.03-0.72%), PGE_2 (0.02-3.24%), TXB_2 (0.04-4.10%) and 12-HETE (3.2-27.3%). There was no relation between arachidonic acid conversion rate and Bishop score.

155. PGDH Activity in Rat Placenta and Lung during Pregnancy and Influencing Factors

K. TSURUTA, M. YAMAGUCHI, M. KAWANO and N. MORI

Dept. Obst. & Gynec.,
Miyazaki Med. College, Miyazaki

Pulmonary and placental 15-hydroxyprostaglandin dehydrogenase (PGDH) activity during pregnancy was evaluated and the effects of progesterone, puromycin and indomethacin of PGDH activity were studied.

Rats were sacrificed on day 10, 15, 19, 20, 21 and 22 of gestation. Progesterone (400 μg, 4 mg) was administered intramuscularly on day 14 of gestation.

Puromycin (1.5 mg, 4 times, every 6 hr) and indomethacin (1 mg, 4 times, every 6 hr) were administered intramuscularly on day 19 of gestation. Rats were sacrificed 24 hr later after the first injection. Lungs and placentas were minced and homogenized. Supernatant of centrifugation at 10,000×g for 40 min at 4°C was used as a source of PGDH. PGDH activity was measured by spectrophotometry of alkali treated 15-keto PGE_2 at 500 nm and was expressed as p mol/mg non heme protein/min.

Pulmonary PGDH activity during normal pregnancy was 86, 85, 92, 72, 79 and 67 p mol/mg non heme protein/min and placental PGDH 196, 35, 160, 171, 219 and 270 p mol/mg non heme protein/min, respectively.

PGDH activity in progesterone group was 100 and 135 p mol/mg non heme protein/min in lung and 47 and 37 p mol/mg non heme protein/min in placenta, respectively.

PGDH activity in puromycin and indomethacin-treated group was 91 and 83 p mol/mg non heme protein/min in lung and 142 and 140 p mol/mg non heme protein/min in placenta, respectively.

The present study has shown that 1) There is remarkable change of PGDH activity in rat placenta during pregnancy 2) drugs influence PGDH activity in various ways.

156. Calmodulin in Human Featal Membrane

K. SHINYASHIKI, T. YOSHIDA, Y. TAKASHIMA, Y. INOUE and K. NODA

Dept. Obst. & Gynec.,
Kinki Univ. Sch. Med., Osaka

Prostaglandins are considered to play an important role in the initiation of human parturition and phospholipose A_2 and C are limiting step in the synthesis of prostaglandins. These enzymes require Ca^{++} for maximal activity. Recent evidences indicate that calmodulin is a multifunctional Ca^{++} binding protein, we investigated whether the effect of Ca^{++} on phospholipase A_2 and C is mediated by calmodulin in fetal membrane. The additions of calmodulin in incubation system increased the activities of both enzymes and the addition of W_7 calmodulin antagonist, decreased prominently the activities of both enzymes. But the calmodulin content in fetal membrane with labor pain are about 100 ng/mg protein and not different from one without labor pain. We considered from above, the phospholipase A_2 and C required calmodulin Ca^{++} for their maximal activities. But calmodulin content in fetal membrane is not direct factor for initiation of labor pain.

157. Modulation by Ca^{2+} of Prostaglandins Synthesis in Human Placenta and Effect of Calmodulin Antagonist on its Prostaglandins Synthesis

J. HIRATA, K. KATO and N. MAKIMURA

Dept. Obst. & Gynec.,
National Defense Med. College, Saitama

In order to elucidate a role of Ca^{2+} on prostaglandins (PGs) synthesis in human placenta, PGs (E_1, E_2 and $F_{2\alpha}$) released by incubating slices and homogenates of human placenta obtained at surgery with aspirin, EGTA, ionophore A 23187 and W-7 were determined by RIA. When aspirin was added into the medium with placental slices, amounts of PGs released into the medium were decreased to 30% of those of controls. EGTA, that is chelate compound of Ca^{2+}, resulted in decreases of 60% for E_2 and 20% for $F_{2\alpha}$ of controls. When A 23187 was added into the medium in order to elevate intracellular Ca^{2+} content, PGs synthesis was markedly stimulated and amounts of PGs in the medium doubled, compared with those of controls. Furthermore, addition of W-7 into the medium with placental slices caused 2.5 times increase of E_2 and 3.5 times increase of $F_{2\alpha}$ of those of controls. Addition of W-7 into the placental homogenates also stimulated PGs synthesis in dose-dependent fashion. To our knowledge, the present study is the first report to demonstrate that W-7 stimulates PGs synthesis in human placenta. These results should serve for understanding of mechanism in the initiation of parturition.

158. Localization of the Prostaglandin Receptor on the Plasma Membrane of Pregnant Rabbit Myometrium