W.G.SIPPELL*, H.BECKER*, T.BRÜNIG*, H.DORR* and H.VERS-
45 MOLD* (Intr. by D.KNORR). Div. of Paed. Endocrinol.,
 Children's Hospital and Women's Hospital II,
 University of Munich, D-8000 München 2, Germany.

Longitudinal Study of 7 Plasma Corticosteroids (CS) in Mother
 and Child at Birth and during the Neonatal Period.*

The adrenal cortex seems to play an important role in the
 newborn's adaptation to extrauterine life. Since systematic
 studies on multiple CS in the same human newborn have not yet
 been reported, progesterone (P), deoxycorticosterone (DOC), 17 α -
 hydroxyprogesterone (17 α), corticosterone (B), aldosterone (A),
 cortisone (E) and cortisol (F) were followed in a single 250 μ l
 peripheral plasma sample in 12 vaginally delivered full-term
 infants of either sex. Mean concentrations (after automated
 LH-20 multi-column chromatography and specific radioimmuno-
 assays) were in ng/ml: (PMP=paired maternal plasma)

Steroid	PMP	Cord	2h	4h	6h	12h	24h	4d	7d
P	120	271	57	68	46	24	13	0.9	0.5
DOC	3.0	6.0	5.5	4.5	3.0	1.2	1.2	0.13	0.10
17 α	11.0	33	8.9	6.0	4.0	2.0	0.9	0.8	1.24
B	36.3	10.5	9.3	3.0	2.8	5.2	5.3	7.9	2.5
A	1.0	2.1	3.0	3.7	3.5	3.3	3.4	2.1	1.4
E	60	138	83	87	75	57	41	23	22
F	548	69	104	49	28	76	27	57	35

Besides marked materno-fetal CS differences, P, 17 α and DOC (pre-
 dominantly of placental origin) disappear rapidly with varying
 half lives. A, B, E and F, however, remain elevated in comparison
 with later infancy, reflecting high adrenal biosynthetic activi-
 ty. * (Approved by parents and Hospital's Ethical Committee)

W. RAUH*, F.MANZ*, L.WILLE*, P.VECSEI* (Intr.
 by D. Schönberg), Depts. of Pediatrics and
 Pharmacology, Univ. of Heidelberg, F.R.G.

46 Adrenal function in premature infants with respiratory
 distress syndrome (RDS).

To evaluate the controversial role of adrenocorti-
 cal hormones in RDS, plasma cortisol (F) and urinary
 excretion of tetrahydrocortisol (THF), tetrahydrocorti-
 sone (THE), and aldosterone were determined by
 specific radioimmunoassays during the first 8-10 days
 of life in 10 normal premature infants (group I) and
 in 10 premature infants with RDS (group II). In group
 I plasma F decreased from 15.8 $\pm$ 5.4 μ g/100 ml on the
 1st day to 4.1 $\pm$ 0.8 μ g/100 ml after 1 week. Urinary
 THF (0.005 - 0.08 mg/m²/24 h) and THE (0.01 - 0.1 mg/
 m²/24 h) were low when compared with normal values of
 older children (THF 0.3 - 2.5 mg/m²/24 h, THE 0.3 -
 3.0 mg/m²/24 h). In group II plasma F rose from 15.2 $\pm$
 1.7 μ g/100 ml to 27.2 $\pm$ 8.7 μ g/100 ml on the 7th day.
 Urinary THF and THE in group II were 2-3 times higher
 than in group I. Aldosterone excretion was high, but
 varied widely (1.0 - 60.0 μ g/m²/24 h) in group I and
 II, the normal adult values being 2.0 - 12.0 μ g/m²/24 h.
 No correlation to the sodium balance could be detected.
 There is no evidence for a postnatal adrenal insuffi-
 ciency in premature infants with RDS. The low urinary
 THF and THE in the presence of normal or elevated
 plasma F levels can be explained by different metabo-
 lic pathways in premature infants.

E. H. SOBEL, Department of Pediatrics, Albert Einstein
 College of Medicine, New York, U.S.A.

47 Early and late effects of neonatal cortisone on
 growth of rats.

Corticosteroids are being used to prevent or ameliorate
 respiratory distress syndrome. An evaluation of possible deleter-
 ious effects was undertaken in Caesarian-derived Sprague-Dawley
 rats by giving 1.25mg of cortisone acetate I.M. on the 4th day of
 life to 20 pups; 25 controls received 0.05ml saline. This dose is
 equivalent to approximately 70 mg/m² of prednisone. Pups were
 reared in litters of 8 (all treated or all control); terramycin
 was added to the drinking water. At age 21 days body weight,
 stem-length and tibia length were all less in the cortisone treated
 animals than the same measurements in the controls, but skeletal
 maturation was advanced in the treated animals.

	Treated	Control	P
Body weight, gm.	51.15	63.04	<0.001
Stem length, mm.	112.55	125.32	<0.001
Tibia length, mm.	16.88	20.35	<0.001
Ossification, no.	118.0	107.56	<0.05

At age 12 weeks, decreased body weight (male p 0.01 < 0.001; female
 p 0.02 < 0.01) and bone length (male p 0.10 < 0.05; female
 p 0.05 < 0.02) were still evident but the number of epiphyseal
 fusions was the same in treated and control animals. These findings
 have implications for the future growth of infants given
 corticosteroids because reduced linear growth and accelerated
 skeletal maturation will eventuate in short stature.

E. TIMONEN*, R.O. SCOW*, H.K. ÅKERBLÖM and K. KOUVA-
48 LAINEN, Department of Pediatrics, University of Oulu,
 Oulu, Finland, and National Institute of Arthritis,
 Metabolism and Digestive Diseases, Laboratory of Nutrition and
 Endocrinology, Section of Endocrinology, Bethesda, Md., USA.

Studies on prepyloric lipase in premature and full-term newborns.

Lipolytic activity of pharyngeal origin with pH-optimum 5.4
 has been found in esophageal and gastric aspirates of adult sub-
 jects (Hamosh et al.: J.clin.Invest.1975;55:908). We studied the
 gastric contents of seven premature and 11 full-term newborns to
 find out if lipolytic activity is present in the stomach. The
 samples were acid enough to exclude pancreatic lipase. As sub-
 strates we used H³-trioleate and ingested pasteurized milk, and
 the incubations were performed in 37°C at various pH in a 5%-
 albumin-buffer solution. Mono-, di-, triglycerides and FFA were
 separated by TLC. Four out of seven premature and all full-term
 newborns had clear lipolytic activity in the stomach shortly af-
 ter birth, starting in the former group from the gestational age
 of 34 weeks. The lipase activity differed from pancreatic lipase
 by lower pH-optimum and acid-resistance. A lipase activity of
 this kind was also shown in a gastric sample of one infant with
 pyloric stenosis, and in a sample from the upper segment of eso-
 phagus of a newborn with esophageal atresia. Our preliminary re-
 sults suggest that lipase activity in gastric contents appears
 already in newborns and even in prematures with gestational age
 over 33 weeks, and that the lipase involved differs from pancre-
 atic lipase. Some evidence is given for the origin of the lipase
 from the uppermost gastrointestinal tract.

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H.P. HAURI*, M. KEDINGER*, K. HAFEN*,
49 B. HADORN, Dept. of Pediatrics, University
 of Berne, Berne Switzerland and INSERM,

Strasbourg, France. Glycoprotein synthesis by human
 small intestine in organ culture.

Glycoprotein synthesis was measured by the incorpo-
 ration of 14-C-glucosamine into total acid precipitable
 protein of jejunal explants cultured in vitro. The rate of
 glucosamine incorporation remained constant up to
 48 hours. During this time a continuous release of
 glycoprotein into the culture medium was observed.
 Pulse-chase experiments indicated that the mean half
 life of overall labelled tissue glycoprotein was about
 20 hours. SDS-polyacrylamide-gel-electrophoresis of the
 isolated brush border membrane showed that all major
 protein bands of high molecular weight had incorporated
 14-C-glucosamine. These proteins were identified as
 maltase-glucoamylase, lactase, sucrase-isomaltase,
 enterokinase and alkaline phosphatase. Specific enzyme
 activity could not be assigned to the two remaining
 labelled bands. After 5 hours of culture lactase showed
 the highest glucosamin incorporation. These results
 indicate that the organ culture method is suitable for
 studying the biosynthesis of human intestinal brush
 border enzymes in biopsies from patients with intesti-
 nal malabsorption syndromes.

S.AURICCHIO, G.ANDRIA*, L.GRECO* and
50 G.MAZZACCA* (Department of Pediatrics and
 Department of Gastroenterology, University of Naples,
 Naples, Italy). Peptidases of brush border of human
 and rabbit small intestinal mucosa.

Three peptidase activities were found to be
 present in human and rabbit small intestinal mucosa:
 the aminopeptidase A, hydrolyzing the α -L-glutamyl-
 p-naphthylamide (BNA); the dipeptidyl aminopeptidase
 IV, hydrolyzing glycyl-L-proline from glycyl-L-prolyl-
 BNA; a carboxypeptidase, hydrolyzing N-CBZ-L-prolyl-
 L-alanine. These enzymatic activities are almost
 totally localized in the brush border and have maximal
 activity in the distal ileum: they were due to three
 different enzymes, which have been separated each from
 the other, as well as from the oligoaminopeptidase
 (hydrolyzing L-leucyl-BNA), and partially purified.

The identification of these new peptidases of the
 brush border demonstrates a previously unrecognized
 importance of this subcellular organelle in the
 digestion of proteins and peptides, in a complementary
 way to intraluminal and intracellular digestion.