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PHYSIOLOGICAL COAGULATION STUDIES IN INFANTS 24-31 WKS GESTATION. Dorothy R Barnard, Michael A Simmons, Alvin Zipursky, William E Hathaway. Univ of Colo Med Ctr, Denver, and McMaster Univ Med Ctr, Hamilton, Ont., Dept of Peds.

33 infants, whose deliveries were attended by the high risk neonatal team, were studied. 16 infants (8 born in Hamilton, 8 in Denver) designated as 'normal'(NPT) were physiologically normal at the time of study, had no sepsis and had uneventful hospital courses. The 8 infants from Hamilton were included in factor analysis only. Of the remaining infants(born in Denver)10 were classified as 'moderately' ill(MPT) and 7 infants who died at a mean age of 1 day as 'sick'(SPT). The SPT did not have clinical bleeding. Blood was collected through umbilical arterial lines after clearing to prevent heparin contamination. Blood was drawn into buffered citrate. Cord bloods were studied in 24 healthy fullterm infants (FT). Cords were double clamped prior to placental separation and blood collected by 2 syringe technique. Mean values are recorded below. NPT have an exaggeration of the physiological deficiencies seen in the FT plus lower mean factor VIII and V levels.

GROUP	GA	WT	5'apgar	PT	PTT	TT	I	II	VII	VII-X	IX
FT	40	3200	9	13.6	65		246	51	58	47	29
NPT	28	1029	8	15.4	108	15.0	282	31	37	39	22
MPT	30	955	6	17.1	110	15.9	226	31	40	37	16
SPT	29	1042	5	19.1	193	18.9	140	27	38	31	14

GROUP	ATIIIag	ACT	VIIIag	TGT	PTT	V	XI	XII	FITZ	FLET	PLAT
FT	58	50	101	108	121	100	36	47	56	33	280
NPT	27	27	151	60	87	73	20	20	28	27	260
MPT	29	21	214	49	61	59	26	23	41	29	237
SPT	30	27	233	49	67	39	19	29	27	31	224

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SURFACE MARKERS AND RNA CONTENT OF LEUKEMIC BLASTS IN ACUTE MYELOID LEUKEMIA OF CHILDHOOD AS A MEASURE OF STAGE OF MATURATION

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Peripheral blood and bone marrow myeloid cells from 5 children with acute myeloid leukemia were examined using a panel of surface markers and by flow cytofluometry. DNA and RNA content of individual blast cells were measured using acridine orange as a dye. RNA content of leukemic blasts from all 5 patients was higher compared to normal peripheral blood lymphocytes. Eighty-one to 85% of blast cells from 2 of 5 children had IgG Fc receptors and 14-28% of blast cells phagocytized latex particles in vitro. By contrast, the 3 remaining patients had only 11-40% blast cells which had IgG Fc receptors and only 1-3% cells ingested latex particles in vitro. Receptors for complement (C3) were present on 1-6% of the blast cells from each of the 5 patients. The high RNA content of leukemic blasts probably indicates that these cells represent a malignant deviation representing a maturation arrest of myeloid cells at an early stage of differentiation. The expression of IgG Fc receptors and the phagocytic property of blast cells in the present study demonstrate that there exists heterogeneity of the cells involved in acute leukemia of childhood and that this heterogeneity is reflected in the presence of blast cells representing different stages of maturation along the myeloid cell line. (Supported in part by fellowships from the Deutsche Forschungsgemeinschaft, J.M. Foundation and NIH grants CA-17404, CA-19267 and AI-11843)

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INTRAUTERINE OR INTRAPARTUM Rh ISO-SENSITIZATION AND USE OF MICRhoGAM IN THE NEONATE. Betty Bernard, Margaret Presley, Guillermina Caudillo, Charles Rouault, James McGregor. (Spon. by Paul Y.K. Wu) Dept. of Peds, Univ. So. Calif. Sch. of Med., LAC-USC Med. Ctr.

To investigate incidence and timing of a possible transfusion of Rh_0 (D)-positive (Rh+) maternal cells to a fetus with Rh_0 (D)-negative (Rh-) cells and the role of Rh_0 (D) immune globulin in prevention of potential primary sensitization, 354 Rh-infants born to Rh+ mothers were studied. MICRhoGAM (MRG) (50ug) was administered to 114 female infants in the first 72h. of life and 240 infants were controls (52 females, 188 males). Of 263 cord serums screened, antibody was found in 6, none of which were anti-D on retesting against a 10 red-cell panel. Two of 167 heel stick samples obtained from infants at 2 days of age revealed maternal Rh+ cells (courtesy B.Clauss & E.R. Jennings). No anti-D antibody was found in either infant at 3 and 6 mo. of age. No anti-D was found in 207 serum samples from control infants (158 males, 49 females) who were ½ to 17 mo. of age; however, 26 of 94 MRG recipients had anti-D between 2½ and 5 mo. of age. (RhoGam may be detected up to 6 mo.) Reports indicating significant risk for either intrauterine or parturition primary anti-D sensitization cannot be corroborated by our studies. Primary sensitization not presently detectable may be confirmed later by an amnestic anti-D response on a second exposure to Rh+ cells, perhaps during pregnancy with a Rh+ fetus. Long term follow-up will ultimately decide the immunoprophylactic role of MRG in prevention of Rh_0 (D) iso-sensitization.

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ISOLATED VITAMIN K FACTOR IX DEFICIENCY IN LIVER DISEASE. Salvatore J. Bertolone, R. Gohmann, and J. Davis. (Spon. by Billy Andrews). University of Louisville School of Medicine, Department of Pediatrics,

Deficiencies of plasma clotting factors in hepatocellular disease are a well-described entity in adult patients. Factor IX deficiency with a normal PT has been described in adult patients. We report an isolated Factor IX depression in mild hepatic disease which corrected with return of normal liver function. A three-year-old white male was admitted for evaluation of a non-specific febrile illness and found to have an enlarged liver, prolonged PTT with a normal PT and mildly elevated transaminase levels. Further study revealed serial Factor IX assays of 30% with Factors VIII, XI, II, V, VII all > 100% activity. Fibrinogen level was 270, fibrin split products 1:5Θ 1:20Θ and screen for circulating inhibitors was negative. Differential diagnosis for this patient was mild hemophilia B versus an isolated Factor IX deficiency secondary to hepatic dysfunction. The patient's fever subsided and his liver returned to normal size. On follow-up his liver enzymes returned to normal as well as Factor IX assay, PT and PTT. This case illustrates that isolated Vitamin K dependent factors can be affected by mild hepatic disease. The half life of Factor VII is shorter than Factor IX. An isolated Vitamin K dependent Factor IX decrease would not be predicted. A diagnosis of mild hemophilia B cannot be made if there is any evidence of hepatocyte dysfunction.

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ENRICHMENT OF HUMAN F-CELLS IN FETAL-MATERNAL BLOOD MIXTURES. Syama P. Bhattacharya, Stephen I.O. Anyaibe, and Verle E. Headings. Howard University College of Medicine, Division of Medical Genetics, Department of Pediatrics and Child Health, and Center for Sickle Cell Disease. Washington, D.C.

Recovery of fetus-origin red cells from maternal venous blood could facilitate diagnosis of fetal hemoglobinopathies by the single cell immunodiffusion method, using specific antibodies to Hb variants. Among 40 Black American women in mid-trimester pregnancy who presented for termination of pregnancy, and who had a Hb A phenotype by electrophoresis, the blood of 9 contained an occasional Hb S-cell. In only these 9 cases were S-cells found in the amniotic fluid. This finding prompted development of an F-cell enrichment procedure, assuming a majority of cells which migrate into maternal circulation from the midtrimester fetus contain Hb F. F-cells in term cord blood and from adults with Hb A, AS, or S were more resistant than A-cells or S-cells to hypotonic stress equivalent to 0.45 gm% NaCl. Cells were also subjected to sequential treatment by low Na and differential centrifugation in a molten agar gradient (45C). This yielded a cell fraction in which F-cells in blood of adults were changed from 6% to 48% and in cord blood from 48% to 90%, whereas centrifugation alone on the latter achieved 74% F-cells. Preliminary observations on enrichment of maternal blood in midtrimester pregnancy are equally promising.

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Δ-AMINOLEVULINIC ACID (ALA) SYNTHETASE DEFECT IN A FEMALE WITH CONGENITAL SIDEROBLASTIC ANEMIA. George R Buchanan, Sylvia S. Bottomley & Ruprecht Nitschke (Spon. by George H. McCracken), Univ.of Texas Health Sci.Center at Dallas, Dept. of Pediatrics, Dallas, & Univ. of Okla. Health Sci. Center, Depts. of Medicine & Pediatrics, Oklahoma City.

Since birth a 3-year old black girl has had severe refractory hypochromic microcytic anemia. Her usual red blood cell (RBC) values are Hgb 6.0 gm/dl, Hct 20%, Retic. 0.5%, MCV 52 fl, MCH 15 pg. Iron deficiency and clinically significant thalassemia were excluded by: lack of response to oral or parenteral iron, serum Fe/TIBC 231/276 μg/dl and serum ferritin 407 ng/ml; normal hemoglobin electrophoresis, absence of erythroid inclusions in the peripheral blood and bone marrow (BM), α/β globin synthetic ratio of 0.85 in peripheral blood reticulocytes and negative family studies. Intensive erythroid hyperplasia and numerous ring sideroblasts were present in the BM aspirate, and electron microscopy confirmed intramitochondrial deposits of iron. Free RBC protoporphyrin, urine porphyrins and porphyrin precursors, and BM ferrochelatase activity were normal. RBC ALA dehydrase, uroporphyrinogen synthetase and pyridoxal kinase activities were increased. Activity of BM ALA synthetase was markedly reduced to 6.5 pmoles ALA/10^6 erythroblasts/30 min (normal 127±29) but was enhanced 5-fold by pyridoxal phosphate (normal 0-25% increase). Therapy with oral pyridoxine has thus far not noticeably increased effective RBC production. The sideroblastic anemia in this patient appears to be related to an inherited defect in the initial step of heme biosynthesis.