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RASHKIND RALLOON ATRIAL SEPTOSTOMY(BAS) FOR CYANOTIC TRANSPOSITION OF THE GREAT ARTERIES(TGA). IS IT ALWAYS NECESSARY? Barry G. Baylen, Marek Grzeszczak, Marie M. Gleason, Stephen E. Cyran, Howard S. Weber, John L. Myers, John A. Waldhausen. The Milton S. Hershey Medical Center, Pennsylvania State University, Hershey, PA, USA

Catheterization and Rashkind BAS is "routine" management in reported series of neonates prior to arterial switch repair of TGA. From 8/86-2/90, we treated 15 newborns with TGA, birth weight 3.3kg(range 2.7-4.3). All received PGE-1; 2-D echo, Doppler, color flow included assessment of foramen ovale(FO), ductus arteriosus(DA) and coronary anomaly(Co-Anom). The FO was defined "restrictive"("R"FO) by echo grading of septal L-R bowing, diameter FO and flow velocity(Table). All had switch under deep hypothermia, cardiopulmonary by-pass and circulatory arrest.

	Admit	pO_2	pO_2-PGE	pH	pH-PGE	"R"FO	CoAnom	Switch	Survive
MoBAS(12)	14hrm	24m	43m	7.31m	7.36m	0	1	36hrm	12
BAS(3)	94hr	20	29	7.29	7.41	3	0	148hr	2

Only 3 required cardiac cath and BAS(ages 10hr, 16hr, 270hr). All 15 had PDA after PGE, but these 3 did not have acceptable pO_2 rise (Table). Only these 3 had "R"FO by echo and O_2 increased after BAS (m pO_2 29→43 torr). The 1 Co-Anom was correctly predicted by echo. Fourteen(93%) survive to date(2mo-3.5yr) and are NYHA-I. The non-survivor had BAS but died 2 days post switch. Conclusion: Clinical and echo criteria accurately identify newborns requiring BAS. Routine cath and BAS are not necessary for successful arterial switch when undertaken early in newborns with acceptable pO_2 and non"R"FO.

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SURFACTANT PROTEIN A (SP-A) STIMULATES PROSTAGLANDIN E_2 (PGE_2) PRODUCTION IN ALVEOLAR MACROPHAGES. Kristiina Bry and Mikko Hallman, Department of Pediatrics, University of California, Irvine, CA.

It has been proposed that signals for the onset of labor may be of fetal origin, but little evidence has been presented to support this possibility. The number of alveolar macrophages and the concentration of surfactant protein A (SP-A) in fetal lung fluid and in amniotic fluid increase markedly shortly before birth. Prostaglandins are of central importance in the initiation of labor. We studied the effect of SP-A and of surfactant lipids on prostaglandin E_2 (PGE_2) production in alveolar macrophages. Alveolar macrophages were isolated from bronchoalveolar lavage fluids of adult rabbits and incubated at a concentration of 5-7x10^5 cells/ml in RPMI with or without SP-A and/or surfactant lipids. After incubation for 16 h in an atmosphere of 5 % CO_2 at 37 °C the media were collected and PGE_2 was measured by RIA. SP-A, at a concentration of 2, 6 and 10 µg/ml, increased the production of PGE_2 in alveolar macrophages by 380, 930 and 1800 %, respectively. Surfactant lipids at concentrations of 50 to 1500 nmol/ml had no effect. SP-A supplemented with surfactant lipids gave similar results as SP-A alone. We propose that the interaction of SP-A with fetal alveolar macrophages is an important fetal signal for the initiation of labor.

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EFFECT OF DIFFERENT MILK DIETS ON GASTROINTESTINAL BLOOD LOSS IN INFANCY. T.Walter, E.Hertrampf, M.Arredondo, V.Vega. University of Chile, Santiago.

Gastrointestinal (GI) blood loss is an important determinant of iron status during the first year of life, and the most difficult to measure accurately. Fresh cow milk has been thought to increase GI blood loss. Thirty seven infants 2-9 mo of age admitted to a Nutrition Rehabilitation Research Center who were healthy and growing well were exclusively given a) powdered whole cow milk, b) maternalized proprietary formula, c) soy base formula and d) fresh pasteurized milk, each during 10 consecutive days. The latter 72 hrs of each cycle, all stool was collected and hemoglobin measured with a new fluorescent assay quantitative and specific for hemoglobin. Stool humidity was an average of 25% with no difference between diets. Fecal concentration of hemoglobin was similar and independent of diet (0,25 mgHb/gr feces) but the volume of stool differed so that absolute blood losses calculated from infants Hb were 0.09, 0.08, 0.04 and 0.03 ml blood/kg/day with fresh cow milk, powdered cow milk, soy based and maternalized cow milk formula respectively (ANOVA p< 0.001, pairwise comparisons all different p<0.05). Blood loss with fresh milk is threefold greater than with modified formula, however, powdered cow milk also induces significantly greater blood loss. GI blood loss is proportional to stool volume, not to Hb concentration in stool. The data indicate that fresh or powdered whole unmodified milk should be avoided during early infancy.

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Bone and Kidney Mineral Content with Diuretic Therapy in the Neonatal Rat. G BOYD, N McINTOSH, D PYE, J HUNTER. Department of Child Life and Health, Medical Physics and Pharmacology, University of Edinburgh, UK.

Litters of suckling rat pups (COB strain) were treated daily from day 4 to 30 with intramuscular diuretics - Group 1: control, Group 2: frusemide 5 mg/kg/d, Group 3: chlorothiazide 30 mg/kg/d, Group 4: frusemide 5 mg/kg/d + chlorothiazide 30 mg/kg/d. The rats (n = 13-15) in each group were sacrificed at day 34. They were weighed to the nearest 0.01 g and the Bone Mineral content of each rat was measured by Dual beam photon absorptiometry (Hologic QDR 1000). Each femur and kidney was then dissected out, weighed, dried to constant dryness and then ashed at 420°C. Calcium content was measured by Atomic Absorption spectrophotometry and phosphate by a colorimetric method. The body weights of the Group 3 and 4 rats were significantly less (p <0.001) than the Group 1 but Group 2 were not significantly different. The Bone Mineral content of the 4 groups, measured by photon absorptiometry were all similar when normalised for body weight but the calcium content of the femurs of the rats in Groups 2 and 3 and the phosphate content of the rats in Groups 2, 3 and 4 were all significantly less than the controls (Group 1). The calcium content of the kidneys from Group 4 rats was significantly increased but otherwise the mineral contents of the experimental Group kidneys were similar to the controls when normalised for body weight.

Chronic Diuretic therapy causes growth retardation and skeletal calcium and phosphorus depletion in suckling rats. A proportion of the mineral eluted from bone is deposited in the kidney reaching significant degree in the rats treated with both frusemide and chlorothiazide. This experiment has implications for preterm infants on chronic diuretic therapy.

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ENHANCEMENT OF PHORBOL DIESTER-STIMULATED RESPIRATORY BURST IN HUMAN POLYMORPHONUCLEAR LEUKOCYTES BY GROWTH HORMONE

Gian Luigi Spadoni, Anna Spagnoli, Stefano Cianfarani, Domenico Del Principe, Adriana Menichelli, Stefano Di Giulio, Brunetto Boscherini. Dept. of Pediatrics, 2nd University of Rome, Italy.

The oxidative metabolic burst of mononuclear and polymorphonuclear phagocytes can be stimulated to produce free oxygen radicals. Several substances can enhance this respiratory burst activity by a priming action: recently growth hormone (rat and porcine) was demonstrated to act as a priming agent on rat peritoneal and on porcine alveolar macrophages. In our study we wanted to verify whether also human growth hormone (hGH) had a similar priming action on homologous polymorphonuclear leukocytes (PMNLs) which have a similar oxygen-dependent intracellular killing mechanism as macrophages. To determine the oxydative activity of PMNLs, after stimulation with phorbol myristate acetate (PMA), a flow cytometric assay was employed which registered the intracellular formation of highly fluorescent products as indicators for the intracellular formation of hydrogen peroxide. The incubation of PMA-stimulated PMNLs with biosynthetic hGH resulted in a time-dependent and dose-dependent increase of fluorescence thus demonstrating that hGH enhances in vitro the oxydative metabolic burst of these cells. The action of hGH was maximal after 60 min of incubation at a final concentration of 100 ng/ml. Specificity of GH action was demonstrated by the inhibition of this effect by the addition of monoclonal antibodies to hGH. The well-known role of oxygen free radicals in host defense, in the modulation of inflammatory events and in the carcinogenic process, may suggest that one carefully consider some possible effects of this action in short normal children who are treated with exogenous recombinant hGH.

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VERY LOW BIRTHWEIGHT CHILDREN AT JUNIOR SCHOOL

Neil Marlow, Lynne Roberts, Richard Cooke. Department of Child Health, Liverpool Maternity Hospital, Liverpool, UK.

Few studies have as yet evaluated educational outcome for VLBW children who received intensive neonatal care. As part of a longitudinal study we report the eight year outcome for 51 children, with birthweights of 1250g or less, who were free of major impairment and receiving mainstream education.

Children were assessed at school using a battery of motor, behavioural and educational tests. Compared to age and sex matched classmates, the index group had significantly poorer age adjusted scores in maths (VLBW group: med: 25 (range:9-40); controls: 32 (10-52); p=<0.001), spelling (VLBW: 95 (45-141); controls: 106 (77-145); p=0.026) and motor performance (VLBW: 3.5 (0-11); controls 2.0 (0-8); p=<0.001). 50% of VLBW children were having problems in one or more subject, 30% considerable difficulty. Teachers reported significantly more emotional problems among the VLBW group. Children with poor motor scores at six years had significantly lower maths, reading, spelling and higher behavioural scores at eight.

Despite major improvements in survival and major morbidity, VLBW children are still at risk of major learning difficulties that may be identifiable by preschool motor testing.