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Alanine, insulin and glucose levels in newborns

Plasma alanine (PA), immunoreactive insulin (IRI) and blood glucose (BG) levels were measured in newborns (NB) before any feeding and between 5 and 72 hours of life, 3 hours after glucose administration. At 4 hours of life, in 26 NB (birthweight (BW) : 2,620 to 4,060 g), BG was 52 ± 2 mg/100 ml (mean \pm S.E.), PA 447 ± 19 μ M, and IRI 3.5 ± 0.4 μ U/ml. In 5 premature NB (BW : 1,600 to 2,450 g), BG was 45 ± 11 , PA 318 ± 52 ($p < 0.05$, significantly different from normal NB), IRI 3.1 ± 0.5 . In 9 small for gestational age (SFGA) NB, (BW : 1,530 to 2,490 g), BG was 45 ± 5 , PA 384 ± 12 ($p < 0.01$), IRI 3 ± 0.4 . A significant correlation was observed in all NB between PA and BW ($r : 0.390$, $p < 0.05$) but not between the other parameters. After glucose administration (31 normal NB and 10 SFGA), BG and IRI were similar, PA was significantly lower in SFGA (250 ± 32 μ M) than in normal NB (424 ± 19 , $p < 0.005$). A similar correlation was observed between PA and BW ($r : 0.386$, $p < 0.05$). The data suggest that PA may be dependent upon the muscle mass.

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Membrane binding characteristics of a dividing population of lymphocytes in human umbilical cord blood.

A population of lymphocytes in human umbilical cord blood has been shown to be actively dividing: by the taking up of tritiated thymidine when in culture. The ability of these cells to bind E (sheep erythrocytes), EA (ox red cells treated with rabbit anti-ox IgG), and EAC (ox red cells treated with rabbit anti-ox IgM and complement) in order to determine whether they belong to a thymic or a bone marrow dependant group of lymphocytes. Autoradiography of the rosettes obtained initially showed that the majority of the dividing cells bound to none of the indicator cells used. Using a modified system, more cells were accounted for. Allogeneic enhancement of tritiated thymidine uptake in unidirectional mixed lymphocyte culture suggest that the stimulus for this lymphocyte division to occur may be provided by membrane bound maternal antigens. These results suggest that the foetus may mount an immune response against the mother, although the significance of this response is not clear.

J. VIDNES* and O. SØVIK. Pediatric Research Institute, Univ. of Oslo, Norway. Increased gluconeogenesis after subtotal pancreatectomy in the course of persistent neonatal hypoglycemia.

The aim of the present work was to study glucose production from non-carbohydrate precursors in cases of severe hypoglycemia. An *in vivo* method was developed, employing trace doses of 14 C-alanine or 14 C-glycerol. After an i.v. injection of these isotopes, there was a rapid appearance of label in circulating glucose and lactate. In particular 2 cases have been studied. Due to somewhat elevated plasma insulin levels these patients were initially treated with diazoxide and later on subjected to subtotal pancreatectomy. Histopathological examination (Prof. S. Falkmer, Umeå, Sweden) revealed islets of Langerhans that were increased in number as well as size. Although in both cases a decrease was observed in the levels of plasma insulin, there was only a slight clinical improvement after the operation. However, in one of the cases the operation apparently caused a markedly increased ability to produce glucose by the gluconeogenic pathway. This finding suggests that an important pathogenetic mechanism in some cases of hypoglycemia may be an inhibition of gluconeogenesis in liver caused by increased insulin levels.

B.A. WHARTON and A. FOSBROOKE, Institute of Child Health, London. "Added lactose" and "added sucrose" cows milk formulae in neonatal nutrition.

Carbohydrate may be added to dried cows milk to reduce the concentration of protein and minerals to levels nearer those in human milk. The carbohydrate used varies. In other circumstances the quality of dietary carbohydrate is known to affect intestinal tolerance, deposition of body fat (in rats) and concentrations of plasma lipids (in men).

Therefore, the effects of an added lactose formula and an added sucrose one have been studied in 29 low birth weight babies during the first 3 months of life. The "added lactose" group experienced more diarrhoea (5 had to be withdrawn from the trial because of diarrhoea of 1 of the "added sucrose" group) and a greater degree of metabolic acidosis during the first week of life (base excess - mean \pm SD at 7 days = added lactose, -7 ± 4 , added sucrose -3 ± 4 $p < 0.05$). The "added sucrose" group did not become fatter nor were their concentrations of plasma lipids higher than in the "added lactose" group, (result at 3 months, in added lactose group first, added sucrose group second mean \pm SD): Total skin fold thickness 10.9 ± 2.6 , 8.7 ± 2.2 mm, $p < 0.03$. Serum cholesterol 164 ± 48 , 160 ± 27 , mg per 100 ml, NS. Serum triglyceride 109 ± 39 , 68 ± 35 , mg per 100 ml $p < 0.02$.

Despite the teleological arguments in favour of lactose we found no objective contra indications to the use of added sucrose cows milk formulae in nutrition of low birth weight babies