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Relationship between PRA and Sodium intake in normal children.

In literature a negative correlation between PRA and chronological age has been reported for children. Sodium balance has not been considered in most cases. In adults negative correlation between PRA and Sodium excretion has been clearly documented. A nomogram plotting PRA in normal children, of various ages, in supine and upright positions against the daily rate of urinary Sodium at equilibrium would be desirable. In such a way we investigated a group of normal children, 26 to date; ages 50 days -13 yrs; dieted with constant Kalium (50 mEq/m²/24hrs.) and different Sodium contents (15-150 mEq/m²/24hrs). Results: regression equations calculated on plotted values show a similar adult-trend. Supine PRA are poorly, whereas upright PRA values are highly related to Sodium intake. A linear correlation is justified in the former; in the latter, a parabolic (or hyperbolic?) correlation consistently reduces the variance. Evidence arises that supine PRA has a limited significance, in individual cases, considering its wide variability also after normalization for Sodium intake.

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Studies of serum immunoreactive parathyroid hormone (iPTH) and calcitonin (iCT) during the very early hours of life in low birth weight infants (LBW).

At the last meeting of this society, we showed that an increase in serum iPTH and iCT occurs between 1-2 h and 22-24 h in LBW and that part of this increase takes place between 1-2 h and 10-14 h. The present study was designed to obtain more precise data on the changes in calcium hormonal regulation during the first hours in LBW. Serum Ca, P, iPTH and iCT levels were determined in 7 infants (mean weight : 2065g ± 370; mean GA : 35,4 w + 2,6) in cord blood and at time 2, 5, 8 and 11 hours. Mean ± SD serum Ca, iPTH and iCT levels were as follow : (* p < 0.05 ; **p < 0.005)

	Cord	2h	5h	8h	11h
Serum Ca mg/100ml	85.7	78.7	72.7*	66.7**	71.1
	± 11.7	± 11.3	± 9.4	± 10.4	± 11.4
iPTH pEq/ml	51	99	116	124	156**
	± 36	± 63	± 70	± 83	± 86
iCT pg/ml	882	308	601	910*	980**
	± 158	± 180	± 222	± 527	± 592

-Normal in children: iPTH: 63 ± 18 pEq/ml ; iCT: non detectable (< 150 pg/ml) - There was no significant changes in serum P. These data confirm that an increase in serum iPTH and iCT takes place very early after birth in LBW. The reason why marked increase in serum iCT occurs after 2 hours of life and mostly between 5 and 8 h following an earlier decrease in serum Ca, is unclear.

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Growth hormone and calcitonin: Possible relation to the exaggerated decrease in plasma calcium in infants of diabetic mothers (IDM) after birth.

EDTA plasma samples from 19 newborn infants were analysed with respect to growth hormone (HGH) calcitonin (CT) and plasma calcium. Ten IDM and nine controls were studied. Blood was obtained from the umbilical artery (IDM) every third hour from birth up to 30 hours of age, and from a peripheral vein (controls) respectively at 0, 3, 6, 12 and 24-29 hours of age. Plasma calcium conc. decreased after birth in both groups, but more markedly in the IDM. The conc. of HGH increased in both groups, the increase being most pronounced in the IDM. At 3-6 hours after birth the mean in the IDM was 46 mU/l and 18 mU/l in the controls. The variations in the HGH conc. were more marked in the IDM. Up to 24 hours of age 6 of 9 controls had maximum values below 50 mU/l, whereas 9 of 10 IDM had 2-7 values above 50 mU/l. A significant negative correlation between HGH and plasma calcium was found in both groups. The CT measurements are in progress. Previous results show marked increase in the CT conc. in both groups after birth. The results support the hypothesis given previously (Bergman, 1974) i.e., that there will be a pronounced decrease in plasma calcium conc. if there is an increase of plasma HGH conc. leading to high bone turnover at a time, when the conc. of CT is high. This may indicate that the conc. of HGH is an important parameter in the development of early neonatal hypocalcaemia.

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Tetrahydroaldosterone excretion in hyponatraemic pre-term infants.

A specific mass spectrometric method has been used to determine urinary tetrahydroaldosterone (the major aldosterone metabolite) in pre-term infants of 26 to 34 weeks gestational age. Urine was collected from five infants at intervals during the first six weeks of life. Plasma sodium concentrations were also determined and sodium balance studies were completed in three infants. All infants studied were hyponatraemic (plasma Na < 135 mmol/l). Negative sodium balance was observed during the first 2 weeks of life and the excretion of tetrahydroaldosterone was slightly higher than that found in normal full-term infants (10-40 µg/24 h). In the third week of life the excretion of tetrahydroaldosterone increased significantly to 100-300 µg/24 h. Excretion remained above normal throughout the rest of the study period. Initially the adrenals appear incapable of an appropriate response to hyponatraemia. The renal tubules may be insensitive even to very high levels of aldosterone.

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Lithium intake during pregnancy leading to large goiter and subclinical hypothyroidism in a prematurely born baby

A premature baby with a large goiter was born from a mother treated during the whole gestation with lithium (750 mg/d). Tracheal compression was visible on a lateral neck x-ray. Skeletal maturation was retarded and a hyperbilirubinemia prolonged. On the second day plasma TSH was elevated to 118 uU/ml and total thyroxin was 12,5 ug %. 100 ug of TRH i.v. increased plasma TSH at 30 and 60' above 200 uU/ml. After two weeks treatment with L-thyroxin basal TSH was still elevated. After a further two weeks plasma TSH response to TRH was suppressed and the size of the goiter reduced. Somatic and psychomotor development was slightly retarded. In order to decide on the necessity of continuation of therapy a TRH-test was repeated at the age of 6 months. Substitution was therefore interrupted for 2 weeks and resumed immediately after TRH stimulation until laboratory results were available. As T₄, T₃ and the pattern of TSH were euthyroid therapy was definitively withdrawn. A TRH-test in the mother revealed a borderline hypothyroidism: basal T₄ at lower limit of normal TSH rise exaggerated. It is concluded that lithium intake during pregnancy can induce hypothyroidism. TRH-stimulation is a sensitive parameter for borderline hypothyroidism. The test is useful for the decision for withdrawal of replacement therapy started as a preventive measure in suspected cases of hypothyroidism in newborns.

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Positional fatty acid composition in total and acetone-precipitated amniotic fluid lecithin.

The fatty acid composition of lecithin has been determined separately at the 1- and 2-position in 22 samples of amniotic fluid. Palmitic acid (16:0) was the principal fatty acid present at both carbon atoms throughout the last trimester. Myristic acid (14:0) was present in very small amounts only. There was no evidence of 1-palmitoyl/2-myristoyl lecithin being present in other than trace amounts prior to 35 weeks gestation. Acetone precipitation of lecithin did not alter the observed fatty acid composition at either position, indicating that this procedure precipitates the different lecithin subspecies in equal proportion, without any preference for disaturated species. It therefore fails to isolate a lecithin fraction with a specific fatty acid composition.