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THE WATER-ELECTROLYTE ENDOCRINE BALANCE IN INFANTS WITH BRONCHIOLITIS.

In 22 out of 23 consecutive infants with bronchiolitis, 5.5±3.5 months of age, the syndrome of inappropriate ADH secretion (SIADH) was manifested by a 1.8±1.4% increase in body weight, increased urinary osmolality (Uosm) of 737±193 mmol/L with low plasma osmolality (Posm) of 275±4 mmol/L, and markedly elevated plasma ADH of 114±225 pg/ml (normal <3.5 pg/ml) . SIADH, which usually suppresses plasma renin activity (PRA), was associated with increased PRA of 11-55 ng angiotensin 1/ml/h (normal for age <10 ngA1/ml/hr). Hyperaldosteronism was evident from the low fractional excretion (FE) of Na of 0.27±0.2% (normal 0.7±0.3%) and high FEK of 21±15% (normal 8±4.3%). Serum sodiums were normal. All the abnormalities returned to normal when bronchiolitis subsided. Thus, bronchiolitis of infancy is characterized by two abnormalities of water and electrolyte endocrine homeostatis. Both SIADH and hyperreninemia-hyperaldosteronism induced water retention. However, they counterbalanced each other with respect to serum Na, which remained normal. Bedside diagnosis can be obtained from the Posm-Uosm relationship, and the normal serum Na disregarded. Management should include water restriction.

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WITHDRAWAL OF IODINATED DISINFECTANTS IN OBSTETRICS DECREASES THE FREQUENCY OF "FALSE POSITIVES" AT SCREENING FOR CONGENITAL HYPOTHYROIDISM (CH) IN NEWBORNS.

We have previously shown that iodine overload induced in newborn infants by skin disinfection of the mothers with povidone iodine (PVP-I) for epidural anesthesia or cesarian section, transiently impaired neonatal thyroid function, especially in case of breastfeeding, and resulted in an elevated recall rate at screening for CH. Therefore, PVP-I was replaced in obstetrics by a non iodinated disinfectant (Chlorhexidine 0.5 % in isopropranolol 70 % (CHL)).
We compared neonatal TSH (mU/L serum) at screening for CH before (4912 newborns) and after (1164 newborns) replacement of PVP-I by CHL in breast and bottlefed infants born to mothers with (groups 2) or without (groups 1) skin disinfection. Results : (::::p < 0,01 as compared to groups 1)

| GROUPS | | FREQUENCY (%) OF SERUM TSH < 10 | 10-50 | >50 (recall) | % OF SERUM TSH > 50 Breastfed | Bottlefed |
|---|---|---|---|---|---|---|
| PVP-I | gr 1 | 97,2 | 2,7 | 0,1 | 0,1 | 0 |
| | gr 2 | 79,9:::: | 17,6:::: | 2,5:::: | 3,1:::: | 0,5 |
| CHL | gr 1 | 94,4 | 5,6 | 0,0 | 0 | 0 |
| | gr 2 | 94,0 | 5,7 | 0,3 | 0,3 | 0 |

In conclusion, the substitution of PVP-I by CHL in mothers at delivery prevents transient impairment of neonatal thyroid function and results in a drastic decrease in the recall rate at screening for CH. Iodine overload is a significant and often unrecognized cause of "false positives" at screening and should be carefully avoided whenever possible.

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THE ETIOLOGY OF CONGENITAL HYPOTHYROIDISM (CHT) IN THE NETHERLANDS.

The Dutch national thyroid screening (measuring T4 and in the 20% samples with lowest T4 also TSH) was started in 1981. The abnormal screening results were evaluated 4 till 6 years later. Of the 176,311 screened children (98.7% of all neonates in 1981) 1637 (0.93%) had been referred. Especially the cases with elevated TSH levels (> 25 mU/l in blood spots and/or > 10 mU/l in venous samples) were re-examined; in case of a permanent CHT of unknown cause the T4 replacement therapy was interrupted for investigation.
Permanent primary CHT was found in 51 cases (incidence 1:3500): 14 ageneses, 3 cryptic thyroids, 27 sublingual thyroids, 4 total organification defects, 1 Pendred syndrome and 2 other dyshormonogeneses. Secondary/tertiary CHT was found in 6 cases (1:30,000): the 3 having an abnormal screening result were already under pediatric control since birth; in the other 3, having normal screening values, the diagnosis congenital TSH deficiency was made after referral for growth retardation.
Transient primary CHT, comprising 89 cases (1:2000), outnumbers permanent CHT. In 45 cases a plausible etiology was found retrospectively: one mother used PTU during pregnancy, one child with a congenital nephrotic syndrome and 43 cases in which the fetus or neonate was exposed to high doses of iodine. Severity and duration of the CHT in the other 44 cases were comparable, however the cause remained unknown.
In conclusion, the Dutch overall incidence of CHT amounts to 1:1200.

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NON-GH DEPENDENT INSULIN-LIKE GROWTH FACTOR BINDING PROTEIN (IGF-BP) PROFILES IN DIABETIC ADOLESCENTS.

Recent evidence that the non-GH dependent IGF-BP is not only a carrier protein but also has an active role in the growth process is enhanced by observations of a marked circadian rhythm. We have measured RIA levels of this IGF-BP over 12 or 24 hours in 11 poorly controlled diabetic adolescents & 7 normals (4 adolescents & 3 adults). In 5 diabetics, overnight profiles were also obtained with euglycaemia maintained by an insulin clamp.
In normal adults IGF-BP was undetectable except for a nocturnal peak of 30-40ng/mL. In 2 diabetics receiving long-acting insulin in the evening, levels of 10-20ng/mL in the day and 100-120ng/mL at night were found. In 3 diabetics receiving long-acting insulin in the morning levels reached 410-460ng/mL at night concomitant with elevated plasma glucose, with which a close correlation was found. Maintenance of euglycaemia overnight failed to suppress the IGF-BP peak although this occurred earlier than on the unclamped night. However in one subject who became hypoglycaemic the nocturnal peak was considerably blunted.
These findings show for the first time that in young diabetics whilst markedly elevated non-GH dependent IGF-BP levels are found the nyctohemeral rhythm is maintained irrespective of metabolic control. Levels are consistent with insulin being a major regulator of this IGF-BP in the circulation.

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GROWTH OF CHILDREN WITH DIABETES MELLITUS - RESULTS OF A PROSPECTIVE MULTICENTER STUDY

In a cross-sectional study 89 diabetic children with longstanding disease (M ± SD : 6.7 ± 2.3 years) were significantly shorter and heavier than a control group (n = 102). In 1983 we started a prospective multicenter study in children with newly diagnosed D.M. Glycosylated hemoglobin (SDS) and insulin dose (U/kg b.w./day) were determined 3 monthly, height and weight (SDS) 6 monthly and bone age (Greulich-Pyle, SDS) 12 monthly. Mean height and weight of the diabetics and normals were expressed as bivariate plots, the 95%-confidence limits represented by ellipses; no overlapping indicated significant differences. At diagnosis (n = 142) and after 1 year (n = 88) there was no significant difference between the two groups, although the diabetics tended to be slightly underweighted at diagnosis ($\bar{x}$ SDS : - 0,3) and increased body weight after 1 year ($\bar{x}$ SDS : + 0.4). After 2 years (n = 61) there was a further weight gain ($\bar{x}$ SDS : + 0.7). After 3 years (n = 40) - the ellipses did not overlap - the diabetics were significantly shorter ($\bar{x}$ SDS: - 0.3) and heavier ($\bar{x}$ SDS: + 0.5) than the control group. After 4 years (n = 15) height reduction was more pronounced ($\bar{x}$ SDS: - 0.7). Bone age of the diabetics did not differ significantly from the controls at any time. Our results indicate that even with improved therapy significant height reduction of diabetic children occurs as soon as three years after onset of disease.

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GROWTH, PUBERTY AND ADULT HEIGHT IN CHILDREN WITH INSULIN DEPENDENT DIABETES MELLITUS (IDDM)

A longitudinal study of height, weight and onset of puberty was performed in 162 children (84 girls, 78 boys) aged 1-14 yrs at onset of IDDM. Height was assessed at yearly intervals (9-15 monthly) with a Harpenden stadiometer by trained staff and related to the Zurich longitudinal growth study. Insulin dosage ranged from 0.62-1.05 Units/kg/day in 2 daily injections and Hb A1 from 6.9-15.7 %, median 9.7 %, ref. 5.8-8.0 %). Height at the onset of IDDM was normal in both sexes, remained normal in girls, but decreased significantly ($p < 0.01$) in boys to -0.8 ± 0.8 SDS after 12 yrs of duration of IDDM. Onset of testicular growth (≥3 ml) occurred at 12.1 ± 1.2 yrs (ref. 11.8 ± 0.9, n.s.) and menarche was slightly delayed (13.9 ± 1.1 yrs, ref. 13.4 ± 1.0, $p < 0.01$). Adult height was normal in both sexes (+0.01 ± 0.96 SDS in 25 men, +0.23 ± 0.73 SDS in 32 women). There was no correlation of height velocity (SDS) with the concomitent Hb A1 values. Relative weight increased significantly ($p < 0.01$) in girls to +14.5 ± 5.0 % after 13 yrs duration, but remained normal in boys (+4.1 ± 9.3 % after 13 yrs duration, n.s.). Growth, pubertal development and adult height thus was essentially normal in a group of rather well controlled diabetic children, but girls became significantly ($p < 0.01$) overweight in puberty.