119

POSTNATAL WEIGHT LOSS AND REGAINING OF BIRTH WEIGHT IN VLBW INFANTS REFLECT EXTRACELLULAR VOLUME CHANGES AND NOT NUTRITIONAL STATUS.

Bauer K, Götz M, Bovermann G, Versmold HT.
Div. of Neonatology, Dept. OB GYN, University Munich, F.R.G.

Do initial weight changes under the usual restrictive fluid therapy in premature infants reflect water balance or nutritional status? We studied in 8 premature infants (GA 26-29 wks, on respirator) total body water TBW (D_2O space), body solids (weight-TBW), extracellular volume ECV (sucrose space) and intracellular volume ICV (TBW-ECV) at birth, at maximal weight loss and when birth weight was regained. Weight (-79g), TBW (-95ml) and ECV (-80ml) initially decreased ($p < 0.01$; $**0.001$), body solids and ICV did not change. During subsequent weight gain there was a trend of TBW and ECV to return to initial levels. Caloric intake was borderline to meet basal metabolic needs, but even at study end not sufficient for growth. Conclusion: Postnatal weight loss is loss of body water from the ECV, subsequent weight gain is restoration of fluid volumes towards initial levels.

age at study	7±3h	3.4±0.5d	8.9±2.2d
weight(g) (±SD)	1057±213	978±202**	1036±201**
TBW (ml)	830±162	736±133*	794±144
body solids (g)	227±126	242±118	242±113
ECV (ml)	451±111	371±122*	420±98
ICV (ml)	379±95	365±73	374±146
fluid intake(ml/kg/d)	66±21	115±21	137±30
urine output(ml/kg/d)	76±48	108±37	96±41
calories (kcal/kg/d)	27±8	61±9	98±14

120

HUMAN MILK MERCURY-A HAZARD FOR A NEONATE?

T. Paszkowski, R. Sikorski, T. Juskiewicz, P. Milart, J. Kryński

From: Clinic of Gynecology, Inst. of OB/GYN, Academy of Medicine, Lublin and Dept. of Pharmacol. and Toxicol., Veter. Res. Inst., Puławy, Poland.

Total mercury levels were determined by cold vapour atomic absorption spectrometry in early breast-milk obtained from 93 healthy mothers inhabiting three regions of Poland e.g. the Lublin region, the Podlasie region and the Chorzów region; the last being one of the greatest heavy-industry centers in Europe. The estimated daily mercury ingestion by a 4-days-old neonate via mothers milk was the highest in the Chorzów region ($0.62 \pm 0.27 \mu\text{g/kg b.wt.}$), where in one third of the cases the ADI threshold of WHO was exceeded. The study documents the efficient transfer of environmental mercury to nursing neonate. Due to the considerable developmental toxicity of this metal, lactating women with known, high mercury exposure should be warned.

121

ALIMENTARY EXPOSURE OF A BREAST-FED NEONATE TO SELECTED ENVIRONMENTAL CONTAMINANTS

R. Sikorski, T. Juskiewicz, T. Paszkowski, T. Radomski, J. Żmudzki, T. Niewiadomska

From: Clinic of Gynecology, Inst. of OB/GYN, Academy of Medicine, Lublin and Dept. of Pharmacol. and Toxicol., Veterinary Res. Inst., Puławy, Poland.

The levels of selected xenobiotics (cadmium, lead, mercury, total-DDT, total-HCH, HCB, PCBs, nitrates and nitrites) were determined by ASA (toxic metals), GLC (organohalides) or colorimetry (N-compounds) in 3/4 postpartum day colostrum of 49 normal mothers. The detectable levels of Cd, Pb and Hg were found in 55.1%, 93.9% and in 100.0%, respectively. The neonatal daily intakes of t-DDT and PCBs exceeded the admissible daily intake value (ADI) of WHO in 61.2% and 22.4%, respectively. Milk nitrate levels were relatively low and averaged 2.5% of the corresponding ADI value. However, the quantifiable nitrite contents were measured in 32.7% of samples. Despite of legal restrictions in their usage, the contamination with organohalides persists in human milk at a level that may result in neonatal alimentary exposure exceeding the recommended ADIs of WHO. Hence, there is a pressing need for perinatologists to have current data on breast-milk contamination by these chemicals.

122

DIOXINS (PCDDs) AND DIBENZOFURANS (PCDFs) IN THE MILK OF POLISH MOTHERS.

Władysław Rokicki, Janna Koppe, Aleksandra Kajzerek. Silesian Medical Academy, Katowice, Poland, and the University of Amsterdam, Holland.

Seven isomers of PCDDs and the same number of PCDFs were determined in the breast milk of 5 women - inhabitants of Katowice (Silesia, the region highly polluted by industrial plants like coal mines, foundries, chemical works). The results were compared with those simultaneously determined for 14 Dutch mothers from Amsterdam and with the data published in 1984 by Rappe et al. concerning 5 milk samples from Sweden and Germany. The mean values of the Polish mothers' milk samples were as follows (ppt, counted on fat weight): 2,3,7,8-T4CDD - 3.6 ± 1 ; 1,2,3,7,8-P5CDD - 6 ± 1.8 ; 1,2,3,4,7,8-H6CDD - 1.8 ± 1.9 ; 1,2,3,6,7,8-H6CDD - 11 ± 3.5 ; 1,2,3,7,8,9-H6CDD - 3.5 ± 3.9 ; 1,2,3,4,6,7,8-H7CDD - 30.9 ± 11.2 ; 1,2,3,4,6,7,8,9-OCDD - 250.4 ± 117.6 ; 2,3,7,8-T4CDF - 1.6 ± 0.2 ; 1,2,3,7,8-P5CDF - 4.3 ± 2.8 ; 2,3,4,7,8-P5CDF - 15.4 ± 1.9 ; 1,2,3,4,7,8-H6CDF - 18.6 ± 6.6 ; 1,2,3,6,7,8-H6CDF - 10.3 ± 3.4 ; 2,3,4,6,7,8-H6CDF - 1.2 ± 2.6 ; 1,2,3,4,6,7,8-H7CDF - 35.1 ± 21.7 . It was found that PCDDs and PCDFs contents in the milk of Polish mothers were lower than in the milk from the compared countries. It could be due to the smaller development of chemical industry and different nutritional traditions in Poland.

123

THYROID DISORDERS IN NEWBORNS IN IODINE DEFICIENT AREAS AFTER DISCONTINUATION OF IODINE SUPPLEMENTATION

M. Rybakowa, D. Tylek, R. Ratajczak

Endocrine Dept. Instit. Ped. Kraków Poland

Sub-Carpathian region in Poland is known as an Iodine deficient area. 5 groups of babies with thyroid gland dysfunction were selected on HT screening: Congenital hypothyroidism was detected in 15 cases (1:5011) the transient hypothyroidism in three (1:25551) and 88 patients were diagnosed as having IDD (Iodine Deficiency Disorders) including 42 with transient hyperthyrotropinemia, 46 with goiter with or without concomitant hyperthyrotropinemia. The high incidence of IDD in this area seems to be connected with the insufficient Iodine supplementation in the years 1981-87. The Iodine urine excretion confirmed the moderate environmental Iodine deficiency in the studied area. Conclusions: 1/ The prevalence of congenital hypothyroidism in Kraków district is 1:5011. 2/ Kraków belongs to the class II Iodine deficient areas. 3/ The incidence of the IDD in this area is 1:824. 4/ The correction by Iodine salt supplementation seems urgent.

124

HUMAN MILK AND ENVIRONMENTAL POLLUTION

G.P. Donzelli, P. Galvan, G. Poggini, G. Rapisardi, C. Profeti, C. Vecchi. Department of Pediatrics, NICU, University of Florence, Italy

It is an ever increasing reality that environmental pollution is affecting all aspects of our health. Even human milk can be polluted by xenobiotic trace elements. Lead and cadmium milk concentrations were spectrometrically detected (Spectra 30 Zeeman VARIAN) in two comparable groups of 28 non smoking mothers living in non industrialized (Group A, age 28 ± 4 yrs, range 20-35) and industrialized areas (Group B, age 27 ± 4 yrs, range 21-35). Results are shown in the table.

Trace element	N	day of lactation	Group A	Group B
Lead ($\mu\text{g/l}$)	28	30	9.76 ± 2.0	$18.29 \pm 2.4 *$
Cadmium ($\mu\text{g/l}$)	28	30	0.385 ± 0.06	$0.583 \pm 0.08 *$

* $p < .001$

The data show a significant difference in lead and cadmium levels within the two groups. Further studies are needed to investigate if such polluted milk is hazardous to human health.