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Selenium requirement in children.

Under approved dietary treatment the daily Se intake amounted only to 1.0-4.7 µg in patients with phenylketonuria (PKU) or maple-syrup-urine disease (MSUD). For 120 days 5 patients got an oral Se supplementation by yeast rich in Se, daily dose 0.56 g yeast, equivalent to 45 µg Se.
Before supplementation the Se contents of serum and whole blood were reduced to 5-16 ng/ml, 10-27 ng/ml resp., that means to 10-20% normal. The activity of the erythrocyte glutathione peroxidase (GSHPx) amounted only to 0.19-2.69 U_{37}/g Hb. After 4-8 weeks of supplementation the Se contents of serum and whole blood reached normal values. The activity of the erythrocyte GSHPx showed only a slow increase of the values after 4-6 weeks of Se supplementation. Within 9-15 weeks it reached a plateau at low normal values - a time similar to normal red cell life span. There was a close positive relationship between the erythrocyte Se content and the activity of the erythrocyte GSHPx.- Although mammalian GSHPx has been shown to contain seleno-cysteine residues in polypeptide linkage, our knowledge about the Se requirements in man is still scarce.

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MICROMETHOD FOR DETERMINATION OF PLASMA ZINC IN PRETERM INFANTS.

Atomic absorption spectrophotometry (A.A.S.) flame techniques use 0·2-0·5 ml plasma. A.A.S. with Electrothermal atomisation is more sensitive and requires <20 µl of plasma, but contamination is a problem and interference from the plasma matrix prevents the use of aqueous standards. Therefore the zinc in sheep serum was removed with Chelex 100 and the residual zinc(<0·05 µg/ml) analysed by flame A.A.S. Zinc standards ranging from 0·1 to 2·0 µg/ml.Zn were prepared in this serum. Only acid washed glass, polypropylene or P.T.F.E. equipment was used. A single 50 µl Oxford pipette tip, once cleaned, was used to check the distilled water (<0·2ng/ml.Zn) and then for the whole days work, being rinsed in 5% Aristar HNO_3x10 and H_2Ox10 between injections. Standards and samples were diluted 1:200 by a Micromedic diluter into polypropylene tubes and 50 µl injections made into the furnace. Precision studies give a Coefficient of variation of 2·5%. Recovery experiments gave results 98 ± 2% of expected value with 95 ± 5% recovery of the amount added.

37 FIVE SIBLINGS WITH CHRONIC LEAD POISONING

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Five siblings aged 5-11 years, children of a smelter worker, living within 500 meters of a primary lead smelter, were found to have persistently raised blood lead levels (above 30µg/dl) on two occasions with at least a two-month interval between measurements). Three of the children had levels greater than 50µg/dl. All had lines of increased density at the lower femoral metaphyses, three had lead lines on their gums and two had hypochromic microcytic anaemia. The eldest also showed reduced nerve conduction velocity. It is likely that these children had lifelong exposure to lead. Renal function studies including serum creatinine level (Cr), urinary aminoacids and urinephosphorus to urine creatinine concentration ratio (UP/UCr) were within normal limits for the their age. Haematological and neurological effects of increased lead absorption have been studied extensively, but there is less information on the renal effects.

38 R. GORODISCHER and E. SHINWELL,* Soroka Medical Center and Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel. Severe Nutritional Deficiencies in Infants from a strict Vegetarian Community.

Infants from strictly vegetarian (vegan) families usually receive diets deficient in calories, essential aminoacids, vitamin B_{12} and other nutrients. Twenty-three infants from a vegan community were treated at our institution. Mean ± SD age was 7.5 ± 4.6 months. They received only breast milk during the first three months of life, and thereafter low calorie preparations based on cereals, vegetables, fruits and seeds. Diagnoses included protein-calorie malnutrition, vitamin B_{12} and Zn deficiency (100% of cases examined) diarrhea (89%), pneumonia (48%), hypophosphatemic rickets (39%), oral moniliasis (35%), myoclonic jerks (13%), congenital anomalies (9%). Serum vitamin B_{12} was 69 ± 31 pg/ml (normal 200-1000), and Zn 46 ± 19 mcg/ml (normal 68-110). Maternal serum Zn was 45 ± 5. Five infants died; three additional cases were dead on arrival at the hospital. This experience (which is the largest reported) demonstrates the danger of vegan diets in infancy. It is a form of maltreatment of infants; difficulties arise in its prevention because it results from fanatic beliefs.

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FETAL BLOOD SAMPLING IN EARLY PREGNANCY

Within the last 32 months we used two different techniques placenta aspiration and fetoscopy for taking fetal blood samples during the second trimester of pregnancy for antenatal diagnosis in 250 patients (3 twins) who were in risk having children with b-thalassemia major or sickle cell anemia. Fetoscopy was used as a first choice technique in 227 patients (90.8%) with a success rate of taking adequate fetal blood samples with one attemptance 72.9% the first year and 97.1% the last 8 months. Placenta aspiration was used in 23 patients with a success rate 65.2%. In cases that fetoscopy was failed a second fetoscopy or placenta aspiration was used one week later. In 52 (20,5%) patients, the fetus had b-thalassemia major or sickle cell anemia and pregnancy was terminated by prostagladins. Short and long term, fatal and non fatal complications over the 198 remained patients with 201 fetuses from 18% the first year to 4.9% the last 8 months. Until February 1980, 145 healthy babies were delivered and in the remain 38 patients the pregnancy is continued without any complications. The prematurity decreased from 7.6% the first year to 5.8% the second year. It is prooved that both techniques are clinical applicable in the antenatal diagnosis, and fetal blood sampling is a safe procedure. Ultrasounds and experience are the two main helpful factors, for successful fetal blood sampling in early pregnancy.

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Excretion of RNA catabolites in pregnancy.

As we could show earlier, the excretion of normal and modified ribonucleosides and free nucleobases reflects growth velocity when correlated to age and creatinine. Therefore, we tried to develop a new biochemical pregnancy surveillance test. Modified RNA catabolites cannot be recycled and are only in part degraded prior to excretion. So, these "one-way" catabolites indicate the intensity of RNA turnover which is linked t protein biosynthesis and finally to growth velocity. Normal and modified nucleobases and nucleosides (adenine, guanine, 1-methyl-, 2-methyl-, 2,2-dimethyl-, 7-methylguanine and pseudouridine) are measured at the picomole level by cation exchange chromatography. We found a steady increase of all modified RNA catabolite which was traceable from the end of the first trimenon Around week 36 about twice the normal level was reached. In addition, there were shifts in the pattern of the RNA catabolites excreted. We could establish a statistically significant (p=0.01) correlation between the length of the child at birth and its mothers excretion of RNA catabolites, beginning as early as in week 9/10. It is therefore concluded that this new concept should turn out to be especially suited for the follow-up of pregnancies at risk.