

7 THE GLYCEMIC RESPONSE TO ALANINE AND SALINE LOAD IN THE NEONATE: THE SIGNIFICANCE OF STRESS

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The blood glucose /BG/ increment post saline at 12-18 hours of life was 12.4 ± 6.8 /n=9/; at 36-48 hours 6.7 ± 7.6 /n=10/ and at 7-16 days 9.4 ± 6.3 mg/100 ml /n=15/. The response to alanine load in well matched, nonstressed neonates /n=19/ was similar to that of saline, a finding possibly indicating lack of gluconeogenesis in these three age-groups. However in stressed neonates /n=10/, aged 7-16 days, the glycemic response to alanine /BG increment 21.6 ± 5.9 / over that of saline /BG increment 10.7 ± 9.38 / was significant /p < 0.01/. The findings suggest that in evaluating small BG changes following alanine load one needs 1/ to consider previous exposure to stress and 2/ saline controls matched for age.

8 TRANSPORT AND METABOLISM OF L-CARNOSINE AND BETA-ALANINE IN KIDNEY CORTEX SLICES OF THE RAT.

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L-carnosine and beta-alanine are taken up in renal epithelial cells by independent systems for each compound with specificity for dipeptides and beta-amino acids, respectively. The transport is found to be active and concentration-dependent. After uptake L-carnosine is hydrolysed and beta-alanine vigorously oxidized to CO₂. The rates for uptake and intracellular metabolism are higher for the studied dipeptide than the free amino acid. The data gained in this investigation reveal an effective system serving entry of dipeptide/s/ in kidney epithelial cells and extend the evidence for the segregation of amino acid and dipeptide transport. They also corroborate the findings of a membrane carrier specific for beta-amino compounds. Lastly carnosine is a surprisingly effective substrate for oxidative metabolism.

9 PLASMA POST-HEPARIN-LIPOLYTIC-ACTIVITY /PHLA/ BEFORE AND DURING TOTAL PARENTERAL NUTRITION /TPN/ IN CHILDREN

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Very low values for this enzyme have been reported in severe malnutrition and malabsorption. The present study was aimed to investigate the variations of PHLA in children on TPN with aminoacids and glucose. 11 severely wasted children aged between 1 1/2 month and 8 years were studied before and during TPN. Their daily intakes were 400mg N/kg glucose and 100 cal/kg, without lipids. PHLA was estimated by IV injection of 0.1mg heparin/kg just before the beginning of TPN and was repeated every 10 days thereafter. Results: The average initial PHLA was very low 0.051 ± 0.024 uEq/ml/min compared to normal controls 0.110 uEq/ml/min. It showed an insignificant increase after 10 days of TPN 0.055 ± 0.024 uEq/ml/min and rose to 0.100 uEq/ml/min on the 20th day. This mean rise in enzyme activity was significant compared to the mean initial value /p < 0.02/. Conclusions: It has been shown that PHLA decreased in severely undernourished children and will only rise again significantly after 3 weeks of lipid free TPN. Subsequently, IV lipids could be hazardous in the early phase of TPN in marasmic children. The disorder due to lipid infusion could be avoided by preliminary administration of glucose and aminoacids.

10 EXERCISE TESTS AND ECHOCARDIOGRAPHY IN CHILDREN WITH CHRONIC RENAL FAILURE /CRF/

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40 children with CRF on conservative treatment /CT/, on haemodialysis /HD/ or after renal transplantation /RT/ underwent repeated cardiologic investigations by chest x-ray, ECG, PCG, physical working capacity /PWC-170/ and echocardiography. In CRF PWC-170 was lower than in controls /C/ mean percentile Pc 18 vs. 60, p < 0.01/. In patients on CT, PWC-170 was negatively related to the degree of CRF. A correlation was also found between PCW-170 and renal anaemia. After starting HD, PWC-170 failed to rise significantly /mean Pc 22/ whereas after RT it increased /mean Pc 35/. By echocardiography the left ventricular relative cross-sectional area difference was 56,4 % in children with CRF compared to 60,8 % in C /p < 0.05/. The relative velocity of contraction was 0.74 in CRF vs. 1.00 in C /p < 0.05/. It is proposed to follow children with CRF by early and repetitive cardiologic examinations with the non-invasive techniques described.

11 DETERMINATION OF HEART RATE VARIATION BY COMPUTER IN DECEREBRATION SYNDROME.

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While the EEG is routinely used in the estimation of cortical damage, there is no clinical method to assess the function of lower CNS centres. We have previously shown that variation of heart rate is markedly decreased in neonates with RDS, respiratory distress syndrome /1,2/. In the present study, long-term records of the ECG were taken from 6 patients with signs of decerebration /age 7 days to 14 years/. 500 R-R intervals derived from the ECG were measured with a PDP 8/L computer and the mean heart rate, its beat-to-beat and overall variation were estimated. The mean heart rate and beat-to-beat variation were of the same magnitude as in a severe RDS, but the overall variation was only half of that in RDS. Periodic components of variation of heart rate could also be identified in all patients. These few cases indicate the feasibility of this non-invasive method and warrant further studies. Literature: 1. P.Kero: Acta Paediatr. Scand. Suppl. 250, 1974. 2. P.A. Tarlo, I. Välimäki and P.M. Rautaharju: J. Appl. Physiol 31:70, 1971.

12 INTRAUTERINE GROWTH RETARDATION IN TOXAEMIC PREGNANCIES

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Seventy-eight full term />37 weeks/ toxæmic pregnancies were observed. Classification of toxæmia: a/ Mild: diastolic pressure 81-90 Hgmm, no proteinuria, 39 cases; b/Moderate: diastolic pressure 91-110 Hgmm, moderate proteinuria, oedema, 18 cases; c/ Severe: diastolic pressure above 110 Hgmm, or 91-110 Hgmm and marked proteinuria, oedema; 20 cases. Growth retardation was stated when ultrasonic measurements of the biparietal and abdominal diameters were below the 5th percentile in the last week of pregnancy and postpartal weight, length and head circumference values were below the 10th percentile on local growth charts. Mild to moderate toxæmia had no influence on intrauterine development. Nine babies of the 20 severely toxæmic mothers were retarded in weight, 5 in length and head circumference as well. Eight of the latter nine were characterized by extremely small abdominal diameters /10-21 mm below the mean for gestational age/. The biparietal diameter was below the 5th percentile in 4 cases of general growth retardation and in 2 cases of babies with small head circumference.