166 P.CHOLNOKY[+], K.MANGLIÁR[+], L.SZABÓ[+]/Intr.by K. Méhes/.County Hosp.and Inst.for Handicapped Children,Szombathely,Hungary. Hyperaminoaciduria and phosphate wasting in severe psychomotor retardation: An effect of anticonvulsants.

249 mentally severely retarded children were examined for se Ca,P,aminoacid N,alk.P-ase,tubular rejection of P,aminoacid N;urinary aminoacid chromatogram. They had not been treated with vit.D. 170/Group 1/did not take anticonvulsants,79/Gr 2/ were on long-term anticonvulsant treatment.Gr 1 showed no abnormal findings,only 6/170 had hyperaminoaciduria.Gr 2 showed first markedly decreased se P,increased alk.P-ase,tubular rejection of P and aminoacid N. Hyperaminoaciduria occurred in 25/79. Gr 2 was then subdivided: 39 /Gr 2a/were left without vit.D,4o/Gr 2b/were treated with oral D3,3000 IU/day.Both subgroups continued taking anticonvulsants.After 3 mos all determinations were repeated.Vit.D3 abolished nearly all abnormalities in Gr 2b,in Gr 2a all deviations got more pronounced,hyperaminoaciduria included.

Conclusions:

1.Hyperaminoaciduria in mental retardation is due mostly to anticonvulsant induced vit.D deficiency.

2.Measurement of tubular reabsorption of P and aminoacid N is useful in follow-up of patients on anticonvulsants.

167 W.E.Laug, S.E.Siegel, K.W.F.Shaw, B.Landing and J. Baptista (Intr. by E.Rossi), Childrens Hospital Los Angeles and U.S.C. School of Medicine, Los Angeles, Ca 90027, USA. Initial Urinary Catecholamine Metabolites and Prognosis in Neuroblastoma. Excretion of catecholamine metabolites in increased quantities is found in urine of patients with neuroblastoma. To determine if initial pattern of excretion is related to ultimate prognosis, quantitative studies using a paper chromatography technique on single-voided urine specimen obtained at diagnosis from 55 children with neuroblastoma were performed. This retrospective study revealed that the homovanillic acid/vanilmandelic acid ratio (HVA/VMA) was highly predictive: Poor prognosis was correlated with higher levels of HVA relative to VMA ($p = 0.003$). This correlation was independent of age of patient, stage or histologic grade of tumor ($p = 0.02$). The presence of cystathionine ($p = 0.007$), vanillacetic acid ($p = 0.009$) and/or 3-metoxytyrosine ($p = 0.04$) also indicated poor prognosis. In contrast the presence of vanilglycol, normetanephrine or β-aminoisobutyric acid did not correlate with prognosis, nor did the absolute levels of VMA or HVA. Therefore initial excretion patterns of urinary catecholamine metabolites may be predictive in ultimate prognosis in neuroblastoma.

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Protection of Hb from oxydative denaturation by riboflavin.

The administration of riboflavine (RF) is known to increase the activity of glutathione reductase (GR).In this work the possibility of protection of red cell (rc) Hb from oxydative denaturation by the increased GR activity was investigated.RF (10mg daily) was given to 20 normal volunteers 10 males and 10 females aged 20-35 years, for one week.Before and after RF the following tests were performed. 1.Estimation of GR activity 2.Oxy-Hb,Met-Hb and sulf-Hb determination after 1-4h. incubation of rc suspensions or hemolysates with different concentrations of acetylphenyhydrazin (APH). Mean GR activity before RF was 57.71 ± 23.63 i.u/10^9rc and after RF 92.62 ± 33.18 i.u/10^9 rc. After RF the formation of Met-Hb was definetely decreased.There was a smaller decrease in the formation of Sulf-Hb.The protective effect of RF was more marked at 1h. of incubation and an APH:Hb ratio of 8:1.Unter these conditions the remaining Oxy-Hb was before RF (average values in 5 subjects) 88.5% in the rc suspensions and 83.8% in the hemolysates, while after RF it was 91.2% in the rc suspensions and 88.6% in the hemolysates. The difference was statistically significant for both, the rc suspensions ($p<0.01$) and the hemolysates ($p<0.001$). It is concluded that RF protected to some degree Hb from oxydative denaturation in vitro. This partial protection was very likely caused by the increased activity of GR after RF administration.

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A new principle to quantify exercise tolerance in repeated ergometry.

Our research group has previously demonstrated the advantages of pulse conducted exercise test (PCXT) in paediatric ergometry (1). Because our fully-automated version of PCXT is based on the feed-back derived from the subject's heart rate (2), it cannot be used in testing the effect of factors (e.g. drugs) affecting heart rate.

For our present experiments on the effect β-blocking agents we have designed so called work-conducted version of the test (WCXT).

Before β-blockade the PCXT is carried out by increasing the work load to accelerate the heart rate by 8 beats/min/min. With this system the loading will be individually optimal for every patient. The work profile is recorded on magnetic tape.

When the subject is on a β-blocking drug the WCXT is carried out playing back the record of work profile to control electronically the ergometer load. During the WCXT the work profile and the both heart rate profiles (correspondig to the PCXT and WCXT) are simultaneously copied for further analysis.

The system appears accurate and relatively simple to use.

1. Petäjoki, M-L., Arstila, M., and Välimäki, I.: Acta Paediat. Belg. 1974, 28, Suppl. p. 40-47.
2. Arstila, M., Viherä, P., Wendelin, H., Petäjoki, M-L., and Välimäki, I.: Abstract 59 in Proc. of III Nordic Meeting on Med. and Biol. Engineering. Finn. Soc. for Med. and Biol. Engineering. Tampere 1975.

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Factors influencing an optimal salicylate dosage regimen in children with rheumatoid arthritis.

Plasma salicylate levels were monitored in 31 children with rheumatoid arthritis in order to elucidate a series of problems concerning the establishment of an optimal drug regimen. In 6 of these children 24-hour urinary excretion of acetylsalicylic acid, salicyluric acid and total salicylate metabolites were also measured. Our results may be summarized as follows. 1) Monitoring, per se, is very effective in improving the compliance of patients. 2) Inter-individual variability of plasma levels at approximately equal dosage per kilo is very consistent: when only those children who had taken 78.6 ± 1.8 mg/kg/day were considered, plasma salicylate concentrations were found to be 16.5 ± 5.5 mg%. 3) Relationship was found between the administered salicylate dosage and the apparent plasma half-life (T1/2) but not between plasma levels and the T1/2. 4) A direct relationship between plasma salycilate levels and the per cent of the administered dose that was excreted as free or total salicylic acid was demonstrated. 5) Concomitant administration of corticosteroids seemed to significantly lower the plasma levels of salicylate.

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Effect of hGH lack on the insulin response to glucagon.

Fourteen children with hGH deficiency (10 with isolated and 4 with multiple hormone deficiency) underwent an OGTT followed by i.v. glucagon at 180'. Seventeen of such children underwent in addition a single i.v. glucagon test. Four children were retested during hGH therapy (6mg/week) of at least 6 months. Comparing the results to those obtained in a control group of 14 children with normal hGH we found that children lacking hGH had: a) lower basal glucose values and a lower glucose response in the single glucagon test; b) a markedly lower insulin response to glucagon in the combined and single glucagon test; c) hGH treatment raised the insulin response to i.v. glucagon. We conclude that this study a) provides further evidence for the effect of hGH on the releasable pool of insulin from the beta-cells; b) proves the augmentory effect of glucose preloading on the insulin release by i.v. glucagon, without relation to the concomitant glucose concentration; c) indicates that this effect is markedly decreased by longstanding hGH deficiency and d) is restored by hGH therapy.

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