

47 PLASMA ALDOSTERONE LEVELS IN CHILDREN UNDER VARIOUS CONDITIONS.

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Plasma aldosterone (PA) was determined by RIA after extraction and thin layer chromatography using an antibody against aldosterone 18,21 - disuccinate - BSA in a dilution of 1:10⁶. The average recovery of 1,2³ H- aldosterone was 58,1 + 5,7 (SD) %.

PA levels in 52 health children of different age groups 2-14 years at 8 a.m. in supine position were as follows:

- a) 2-6 years 5,7 ± 3,6(SD)ng/100ml range 0,9-13
- b) 6-10 years 8,5 ± 5,0(SD)ng/100ml range 1,4-16,4
- c) 10-14 years 7,8 ± 5,0(SD)ng/100ml range 1,7-18,7
- d) under sodium 21,3 ± 18,0(SD)ng/100ml range 3,2-69,8 restriction (N=17)
- e) vomiting children 53,7 ± 39,8 17,6-170,0 (N = 19)
- d) ACTH - stimulation 29,8 ± 11,9 11,6- 45,4 (N=10)

In addition, the preliminary results of a few pathologic conditions (adreno-cortical deficiency, ketonemic vomiting) are presented and the method of PA determination modified in our institute, is discussed.

48 HYPOTHEMIA OF THE NEWBORN: CHANGES IN THE LEVELS OF SERUM THYROXINE (T4) INSULIN (I) AND GROWTH HORMONE (GH).

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The role of hormones in thermogenesis of the newborn is not known. Eight premature newborns (aged 12-72 hours and weighing 1080-2200 gr), who were admitted with rectal temperature ranging from 30.1-34.1°C (mean 32.8) were studied. Serum T4 iodine, GH, I, and blood glucose (BG) were determined during hypothermia (stage A) and when body temperature had been normal for at least 24 hours (stage B). The serum T4 values were significantly lower in stage A (1.8±55 mcg/100 ml), than in stage B (4.58±2 mcg/100 ml) with p < 0.05. Serum I. values were also lower in stage A (13.57±6.7 μU/ml) than in stage B (21.4±4.9 μU/ml) with p < 0.05, without analogous changes in BG concentration. GH concentration was not significantly different in stage A (23.7±9.4 ng/ml) than in stage B (16.5±5.1 ng/ml). The low levels of thyroxine may suggest a stage of decompensation or an inability to increase thyroid function inappropriately upon exposure to cold.

49 TESTOSTERONE CREAM AS AN AID TO ENLARGING THE PENIS FOR OPERATIVE CORRECTION OF HYPOSPADIAS ASSOCIATED WITH MICROPENIS.

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4 patients with male karyotype, two of whom have an uterus and ovarian stroma while the other two have "vanishing" testes (1 patient) and a small testes (1 patient) have been treated with local testosterone cream in an attempt to enlarge their penis so as to make operative correction of their perineal or scrotal hypospadias easier.

The results of pre- and post-operative clinical and laboratory measurements are presented, including the results of human chorionic gonadotrophin tests and of plasma testosterone levels.

50 OUR EXPERIENCE WITH THE RADIOIMMUNOASSAY OF PRA AND ANGIOTENSIN II IN CHILDREN. Giorgio Giovannelli, A. Catterina, G. Cavagni.

Clinica Pediatrica - University of Parma - Italy. We determined PRA and Angio II (Kit of CEA-CEN-SORIN) in some hundred cases in two different technical conditions: (A) pH = 7; DFP as inhibitor (B) pH = 5.5 and BAL-IC. Results: in a group of normal children at normal and constant diet PRA was: 0.64 ± 0.46 ng/ml/h. In 30 infants (8 h. - 11 m.) the mean value was: 0.75 ± 0.27. The correlation between PRA and Angio II values (107 children) was highly significant; in spite of this we no longer measure Angio II with the kit because of the cross reactivity with the hepta and hexapeptide. (B) at pH = 5.5 the PRA values were higher. In 10 normal children (5-12 years) at a constant sodium intake of 50 mEq/m²/day, the mean PRA value in supine position after overnight fasting and rest was: 1.11 ± 0.36; after 30-40 min. exercise was: 2.88 ± 0.34. The previous experience (A) of independence of PRA from hypertension, azotemia etc. was confirmed. The sodium intake and position play an overwhelming role in determining the height of PRA values. Finally, the results obtained in some selected conditions or pathological cases are reported.

51 ENDOCRINE RESPONSES TO "STRESS" IN CHILDREN

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It is known that growth hormone, ACTH and cortisol are secreted in response to stress.

Although the physiological role of pancreatic glucagon is not yet fully understood, it has recently been shown, that "stress" also leads to an increase in plasma glucagon concentration.

Anesthesia, as well as minor or major surgical procedures should provoke a "stress"-response. The development of sensitive radio-immunological methods allows the assay of a series of hormones in small plasma samples. Using these methods the presumed stress response could therefore be investigated in pediatric patients.

The plasma concentrations of HGH, ACTH, cortisol and glucagon were determined before, during and after anesthesia pneumoencephalography, cardiac catheterisation and minor or major surgery in children of different ages.

52 PRELIMINARY STUDIES IN PLASMA AND CEREBROSPINAL FLUID CORTISOL IN CHILDREN WITH DIFFERENT DISEASES.

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Corticosteroids and ACTH can successfully be used for therapy of infantile spasms, especially when spasms are of idiopathic origin. Therefore we are interested in the amount of cerebrospinal fluid (CSF) cortisol and the ratio of plasma to CSF cortisol. Using a protein binding technique we studied plasma and CSF cortisol in 5 children with infantile spasms (West syndrome) and 48 other children, from the neonatal period up to 14 years.

In the infantile spasms group we found elevated cortisol levels, in the plasma exceeding 260 ng/ml and in the CSF higher than 26 ng/ml, and CSF cortisol relatively more elevated than plasma cortisol, the ratio plasma to CSF cortisol was therefore below 10. Similar findings were observed in 15 other patients with different diseases. All the other patients showed a normal plasma cortisol level and a ratio plasma to CSF cortisol higher than 10.

Our results seem to be in correlation with the experiments of Ortiz-Galvan and Morell who suggested that cortisol might have a protecting function in the central nervous system. Low suspected that cortisol might act by stimulation of enzyme activity. Karlson and Sekeris and also Kröger demonstrated the induction of enzymes by cortisol and synthetic corticoids. Therefore it may be that there exists a correlation between the disease of the central nervous system and the CSF cortisol levels. Further studies will give us more information on this matter.