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49 DIURNAL PLASMA-ACTH-LEVELS IN CORTICOSTEROID TREATED PATIENTS WITH CONGENITAL ADRENAL HYPERPLASIA (CAH) .
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The therapeutical control of CAH-patients by measuring a single parameter of the steroid hormones is controversial. The measurement of different adrenal androgens has not given the awaited useful results (1). The same has been seen for single plasma-ACTH-levels (2). This study has measured the plasma-ACTH-levels at different times during the day (08⁰⁰, 12⁰⁰, 18⁰⁰, 24⁰⁰) to assess the therapeutical value of 2 different corticosteroids, cortisol (F) and prednisone (P), usually given 3 times daily (08⁰⁰, 13⁰⁰, 21⁰⁰). In addition, in the patients with salt loss, 9 α -F-cortisol was given. The diurnal variation of plasma-ACTH and 17 α -OH-progesterone (17-OHP) and F was examined in 20 patients, 9 of which were re-examined after alteration of therapy. Plasma-ACTH was measured by radioimmunoassay (RIA) after extraction (3). Plasma steroids were measured by RIA after prior chromatography on Sephadex LH-20 columns (4).

RESULTS: ACTH-levels were on the whole elevated, with maximal values at 08⁰⁰, falling to a minimum at 24⁰⁰. There was a significant correlation between ACTH-levels and 17-OHP (n=114) after a logarithmic transformation (r=0.639, p<0.001) and an inverse correlation between ACTH and F (n=114, r= -0.255, p<0.01). For a better comparison between different patients, the integral (I) under the ACTH curve over a 24h period was used ($I = \int_0^{24} \text{ACTH}(t) dt = x \text{ pg/ml ACTH}$). The value of I in CAH-patients in most cases was much higher than in normals (I: 400-900, n=4). In F-treated patients I ranged from 220-8000 (n=17), in P-treated patients from 580-12100 (n=12), which was no significant difference. The ratio F:P (given dose in mg) was 4-5 : 1. A better comparison is obtained when I was calculated for each patient, who has undergone both F and P treatment (n=5). In 4 of these patients I is much lower under F, whereas in the remaining one, under 12.5 mg F/day I = 5700, under 3 mg P/day I = 2573. In a further 4 patients under differing doses of the same corticosteroid it was found that in particular the evening dose (21⁰⁰) must not be too low, otherwise the ACTH-level on the following day (08⁰⁰) was excessively high.

CONCLUSION: The use of the ACTH-24h-integral, as described here, appears to be promising in the evaluation of therapy in CAH-patients. Furthermore the use of this parameter in the same patients receiving different corticosteroids helps in the choice of their "optimal" medication.

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