HORMONAL CHARACTERISTICS OF RECURRENT ACTH-SECRETING PITUITARY ADENOMAS

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Introduction: Cushing's disease (CD) remission after primary surgical treatment is achieved in 70-90%, but recurrence are ranges 18-25% after nuerosurgery.

The aim of this work to study clinical, hormonal and MRI indicators before and after surgical treatment in patients with recurrent CD to identify possible predictors of recurrence.

Subjects: 49 patients with CD [1 men and 48 women aged from 20 to 54 (mean 29.8±12.3) years] in the active stage. The disease duration was up to 3 years . On MRI there were 69.9% microadenomas and in30.1%. Macroadenimas.

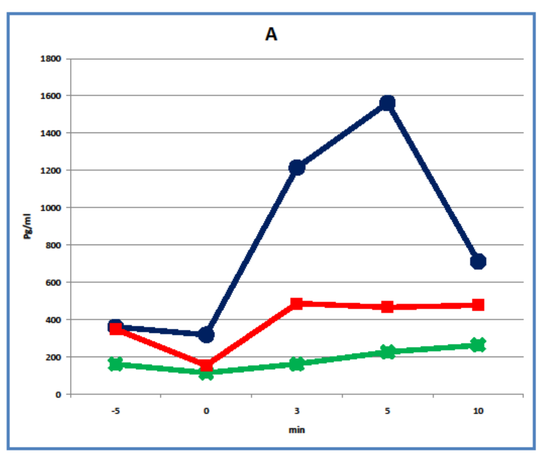
Methods: Cortisol and ACTH levels in peripheral blood, the concentration of cortisol in saliva and in daily urine were determined by automated system Cobas 601, Roche. Blood samples were taken at 8 a.m. and 11 p.m. to study the diurnal rhythm and to calculate the average daily levels, the sample of saliva was taken at 11 p.m.

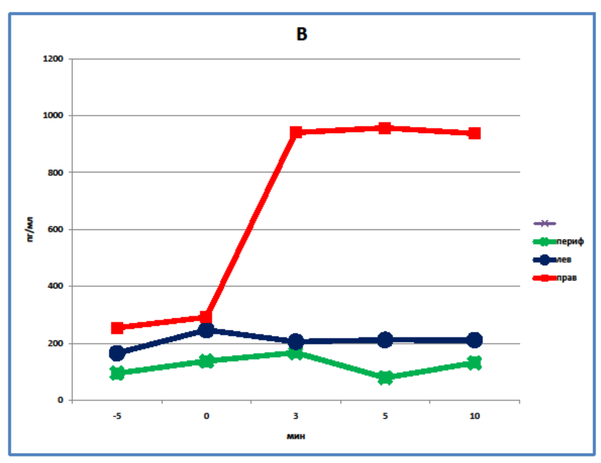
Results:

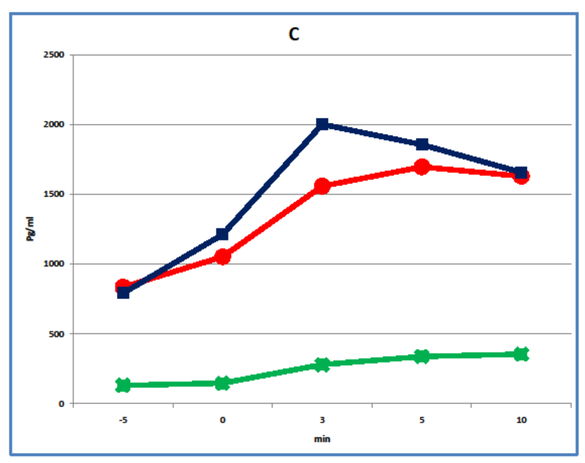
Before neurosurgery the average daily ACTH (median 80.0 pg/ml) and cortisol (median 689.5 nmol/l) in blood, free cortisol level in daily urine (median 1336.5 nmol/24h) and the evening free cortisol in saliva (median 18.4 nmol/l) were increased. ACTH levels were correlated with the tumors volume: in patients with microadenomas 69,7±17,3 (52,2-86,9) pg/ml, in patients with macroadenimas 89,9±47,5 (56,3-259,0) pg/ml (r=0.6750, p=0,000000).

Results of small test with dexamethasone (SDDST) at all patients were negative: a median of decrease in concentration of cortisol for 26,4% (from 8,2 to 35,9%). High dose dexamethasone test (HDDST) was positive at most of patients (65.3%): cortisol level decreased 74,7% (49,2-92,1%). The exception was made by 17 patients (34.7%) (decrease in level of cortisol by 23,0% (12,7-34,5%).

At part of patients (24 patients, including at patients from negative HDDST) the selective blood sampling from petrosal sinuses at desmopressin stimulation for an exception of the ACTH-ectopic syndrome has been carried out. The received results have confirmed the central genesis of a hypercortisolism: the tumor was on the left side at 4 patients (A), on the right side - at 9 patients (B), 11 patients have bilateral tumors (C).





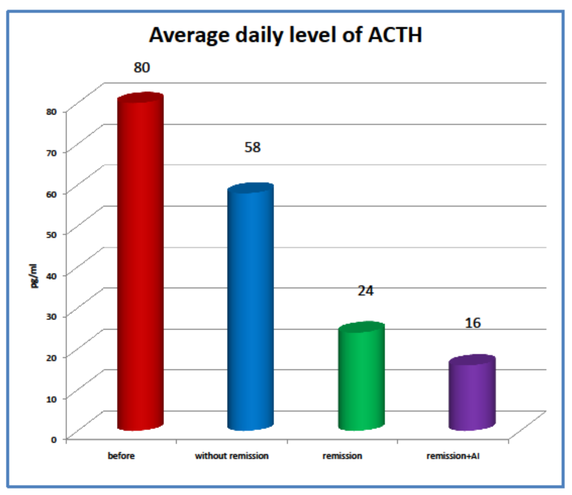


According to the results of surgical treatment patients were divided into 2 groups.

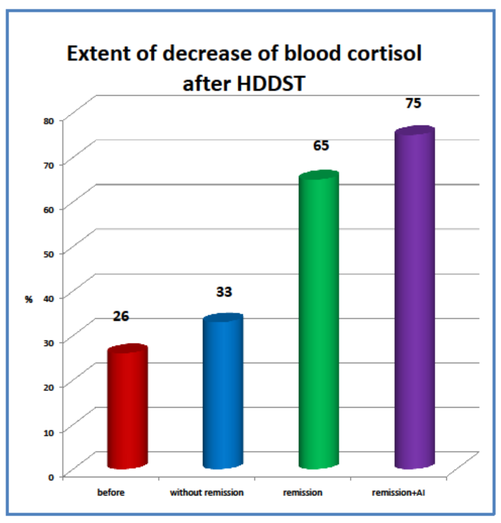
1st group – 19 patients (38.8%) had the remission, from them 15 patients had adrenal insufficiency (AI). In 4 patients AI was absent. After remission lasted from 3 to 3.9 years. We observed recurrence of CD. The remission was longer in all patients with AI.

2nd group - 30 patients (61.2%) the remission was not achieved.

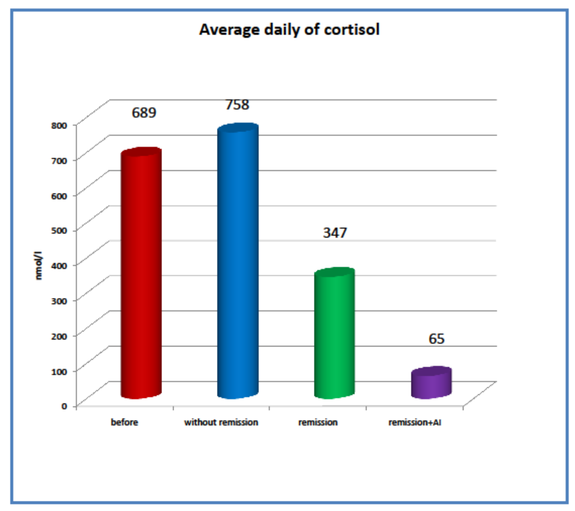
All of patients underwent the 2 nd neurosurgery.



In the group with remission there were a significant decrease ACTH and cortisol concentrations in the early postoperative period (7-10 days) and the normalization of rhythm. ACTH and cortisol levels were markedly decreased in the subgroup with AI.



Cortisol levels reduction in patients with AI was more significant (up to 75%) in HDDST before the operation. All of the patients of 2nd group had negative response after HDDST.



Conclusion:

Predictors of longer CD remission can be:

- A more pronounced cortisol reduction during HDDST before the operation
- The presence of AI after the operation
- The average ACTH level below 10.0 pg/ml after surgery