was diagnosed in 211 (43%) patients, and AI was excluded in 264 (54%) patients. CST was performed in 478 (97%) patients, ITT was done in 45 (9%) patients, with 32 patients having both CST and ITT performed. Using a peak cortisol of <18 mcg/dl during CST to diagnose AI, ROC analysis of DHEAS demonstrated an area under the curve of 0.79, p<0.0001. A DHEAS cutoff of 100 mcg/dL excluded AI with a sensitivity of 93%, specificity of 41%, and a false negative rate of 3%. A DHEAS cut-off of 25 mcg/dl diagnosed AI with a false positive rate of 9% (Sensitivity 57% and specificity 85%). Notably, of 32 patients who had both CST and ITT performed, the diagnosis of AI was concordant in only 5 patients, while additional 27 patients had discordant results (26 were diagnosed with SAI based on ITT, but with a normal CST, and 1 patient was diagnosed with AI on CST but not on ITT). When excluding the 27 patients with discordant results, the overall performance of DHEAS in diagnosis of AI based on CST has not changed.
Conclusion: DHEAS is a valuable baseline diagnostic test for AI. DHEAS >100 mcg/dl predicts a normal response during CST with a false negative rate of 3%, while DHEAS <25 mcg/dl is reflective of underlying adrenal insufficiency and predicts an abnormal CST with a false positive rate of 9%. In these situations, CST can be avoided.

Adrenal

ADRENAL – CLINICAL RESEARCH STUDIES

The Improvement in Hepatic Steatosis After Cushing's Syndrome Treatment Is an Early Sign of Metabolic Recovery

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Context: Cushing Syndrome (CS) is characterized by cortisol excess, impaired glucose tolerance, and obesity. As assessed by CT imaging, 20% of CS patients develop steatohepatitis (NASH). The gold standard test, liver biopsy, is associated with CS complications and cannot be used to confirm the diagnosis. This study evaluated the ability of magnetic resonance spectroscopy (MRS).
Objective: To identify the prevalence of NASH and its temporal changes in relation to other metabolic parameters in CS before and after successful treatment. **Primary Outcome Measure:** PDFF measured by MRS at 3T before, 6 and 12 months after Cushing's syndrome treatment DESIGN: In this prospective IRB-approved study, 41 consecutive CS patients (44±1.8 y; 34(85%) females, 32.6±1.5 kg/m²; urine cortisol excretion 2242.7±1806.3 [3.5–45.0 mcg/24h]) underwent MRS before, 6 and 12months after successful treatment. PDFF was measured by MRS at 3T; NASH was defined as >5% PDFF. Metabolic markers – glycohemoglobin (A1C) and body mass index (BMI) – were measured; Wilcoxon matched-pairs signed-rank test evaluated changes over time, and spearman rank test evaluated the correlation between variables. **Results:** At baseline, mean PDFF was 10.4±1.7 and correlated positively with BMI (r=0.5710, p<0.0001). NASH was present in 32% of patients. After treatment, PDFF decreases were similar at 6 and 12 months (-52%, p=0.001 and -50%, p=0.02, respectively); rates of NASH declined to 13% and 11%. BMI decreased (-9%; p=0.0018 and -12%, p=0.0003) but without a statistically significant change overweight/obese status. A significant decrease in A1C followed at 12 months (-12%, p=0.0005).
Conclusions: MRS-PDFF is valuable for diagnosing NASH in Cushing Syndrome, which can affect a third of this patient population. Liver fat decreases by 6 months after normalization of cortisol and precedes the improvement of A1C. Indicating that liver insulin resistance due to fat accumulation has an essential role in diabetes pathophysiology in CS.

Adrenal

ADRENAL – CLINICAL RESEARCH STUDIES

The Majority of Inpatient Short Synacthen Tests Are Performed Incorrectly, Due to Imprecise Timing, Incorrect Sampling and Failure to Interrupt Steroid Administration

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Introduction: The short synacthen test (SST) is commonly used to assess adrenal function. Accurate timing and appropriate holding of exogenous steroids are essential to ensure correct interpretation of results.
Aims & Methods: We reviewed all SSTs performed on inpatients in our hospital over a 1-year period, in order to determine accuracy of testing.
Results: 42 patients (Male 15, Female 27), with mean age 68 years (range 43–90), underwent SST. The majority (39/42; 93%) of tests were requested by internal medicine physicians. The indications for testing were; suspected adrenal insufficiency (18), HPA axis suppression (9), fatigue (7), hyponatremia (5), suspected pituitary disease (2) and vomiting (1). 7 (44%) of the 16 patients taking steroids did not have medication appropriately held. 31 (74%) patients did not have serum ACTH measured prior to the test. 28 (66%) tests were not started at the correct time. Only 10 (24%) of the 30 minute samples were completed within the 25-35min sample window. The mean time between the 0min and 30min samples was 42mins (median 62mins; range 0-209mins). 12 (29%) tests involved an unnecessary 60min sample. 8 (19%) tests had no interpretation of results documented in the medical notes. 4 (10%) patients underwent repeat testing, necessitated by an incorrect first test.
Discussion: The vast majority of inpatient SSTs (33/42;79%) were performed suboptimally, with the most common errors pertaining to incorrect timing of the test, inaccurate sampling and inappropriate pre-test steroid administration. Considering these errors, some results may have been interpreted incorrectly. Repeat tests were recognised as required in 10% of patients, with associated inconvenience, cost and discomfort. Improved training and guidelines for performing SSTs should be available to hospital staff to ensure more accurate application of the test.