**INTRODUCTION**

Diagnosing Cushing Syndrome can be challenging and may require repeated testing for confirmation\(^1,2\). Hair cortisol evaluation has been recently used to help detect patients with suspected Cushing syndrome (CS)\(^3\) and presents as a convenient alternative with the unique ability for retrospective evaluation of hypercortisolemia over months\(^4\). We sought to evaluate cortisol exposure in the proximal 3 cm of hair in patients evaluated for CS at the NIH Clinical Research Center from September 2013-January 2015.

**METHODS**

36 patients

<table>
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<tr>
<th>30 patients with CS</th>
<th>6 controls</th>
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<tr>
<td>age 26.2 ± 18.8 years, 73.3% female</td>
<td>age 27.8 ± 21.2 years, 83.3% female</td>
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<tr>
<th>Cushing Disease (19)</th>
<th>Adrenal CS (9)</th>
<th>Ectopic CS (2)</th>
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Data analysis: 1. For patients undergoing surgery, all pre-operative biochemical results within the previous 3 months were collected and included in the analysis. 2. Hair cortisol in each 1-cm segment and average over 3 cm were determined 3. Results within the previous 3 months were collected and included in the analysis. To determine any relationships of statistical significance, hair cortisol levels were log transformed for normality, and Pearson’s correlations, Student’s t-test, and non-parametric testing were used as needed.

**RESULTS**

Proximal hair cortisol was higher in CS patients (96.6±267.7 pg/mg) than control patients (14.1±9.2 pg/mg) (p<0.003). Proximal hair cortisol was highest of all segments in 25/36 (69%) patients. Proximal hair cortisol was strongly correlated with UFC/BSA (r=0.5, p=0.005, Figure 1), late night serum cortisol (r=0.4, p=0.03, Figure 2) and 17OHS/Cr (r=0.3, p=0.06, Figure 3) among all subjects.

**CONCLUSIONS**

Proximal hair cortisol levels were the most reliable segment and correlated best of all 3 segments with the majority of the initial biochemical tests for CS in our study. These findings support using proximal hair cortisol in the diagnostic workup for CS.

**References**


Figures 1-3. Correlations between proximal hair cortisol and BSA/UFC (A), 17OHS/Cr (B), and late night cortisol (C) for all subjects (n=36).