

DECREASED SKIN CAPACITANCE AND ELASTICITY MAY BE REVERSIBLE AFTER TREATMENT OF CUSHING'S SYNDROME

Karaca Z¹, Firat ST¹, Borlu M², Tanriverdi F¹, Unluhizarci K¹, Kelestimur F¹

¹ Erciyes University Medical School Department of Endocrinology, Kayseri, Turkey

² Erciyes University Medical School Department of Dermatology, Kayseri, Turkey

OBJECTIVES

Acne, stria and decreased skin elasticity are dermatological features of Cushing's syndrome (CS). Although it is known that collagen mass in skin is decreased in CS and glucocorticoids play a role in acneiform skin lesions, the dermatological findings of CS has not previously been measured by reliable methods. The aim of the present study was to measure skin elasticity, capacitance, sebum content, pH and temperature in CS before and after 12 months of treatment.

METHODS

20 patients with CS and 11 healthy control subjects were included in the study. Skin properties were measured on dorsum of both hands by Cutameter (skin elasticity), Tewameter (skin temperature), Corneometer CM825 (skin capacitance), Sebumeter SM810 (skin sebum content), Phmeter PH900 (Ph) as non-invasive reliable measuring methods. Patients were treated for CS with surgery and they were reevaluated 12 months after.

RESULTS

The age (40.3±14.2 and 34.8±7.5 years for CS and control groups respectively) and sex distribution of 2 groups were similar. The sebum content, temperature and capacitance of the skin were found to be significantly decreased in patients with CS compared to healthy controls on dorsum of both hands at baseline. The skin capacitance in CS was found to be similar to healthy controls after treatment, however the increment was not found to be significant compared to baseline. The sebum and temperature of the skin did not show significant changes according to baseline and was still significantly lower than healthy controls. Although statistically not significant, the elasticity of the skin was lower in CS than in the controls. The elasticity of the skin was found to be significantly increased a year after treatment and similar to healthy control. The pH of the skin was found to be similar to healthy controls in patients with CS. Treatment resulted in a decrease in skin pH only on dorsum of left hand according to baseline. There was no correlation of skin elasticity, capacitance, temperature and sebum content of the skin with morning or midnight cortisol, urinary free cortisol or ACTH levels at baseline.

Table 1: Results of skin measurements in patients with Cushing's syndrome and control group

| | Control group | Cushing's syndrome | p |
|---|---------------|--------------------|--------|
| Right hand elasticity (cutameter) | 0.68±0.11 | 0.64±0.15 | 0.490 |
| Left hand elasticity (cutameter) | 0.75±0.11 | 0.65±0.10 | 0.056 |
| Right hand temperature C ⁰ | 28.74±2.88 | 24.27±2.19 | <0.001 |
| Left hand temperature C ⁰ | 29.41±2.79 | 25.21±1.95 | <0.001 |
| Right hand skin capacitance (corneometer units; 0.02 mg/cm ²) | 47.45±14.29 | 33.85±9.71 | 0.006 |
| Left hand skin capacitance (corneometer units; 0.02 mg/cm ²) | 48.81±16.90 | 33.71±9.78 | 0.003 |
| Right hand sebum content (sebumeter units µg/cm ²) | 4.72±3.71 | 1.85±1.55 | 0.020 |
| Left hand sebum content (sebumeter units µg/cm ²) | 8.0±2.6 | 2.33±0.52 | 0.012 |
| Right hand pH (pHmeter) | 5.57±0.69 | 7.64±2.02 | 0.469 |
| Left hand pH (pHmeter) | 5.47±0.60 | 5.41±0.63 | 0.819 |

Table 2: Results of skin measurements before and after treatment of Cushing's syndrome

| | Control group | Cushing's syndrome baseline | Cushing's syndrome posttreatment | P1 | P2 |
|---|---------------|-----------------------------|----------------------------------|-------|--------|
| Right hand elasticity (cutameter) | 0.68±0.11 | 0.64±0.15 | 0.76±0.12 | 0.018 | 0.086 |
| Left hand elasticity (cutameter) | 0.75±0.11 | 0.65±0.10 | 0.76±0.11 | 0.002 | 0.873 |
| Right hand temperature C ⁰ | 28.74±2.88 | 24.27±2.19 | 24.58±1.96 | 0.564 | <0.001 |
| Left hand temperature C ⁰ | 29.41±2.79 | 25.21±1.95 | 26.08±1.50 | 0.099 | 0.001 |
| Right hand skin capacitance (corneometer units; 0.02 mg/cm ²) | 47.45±14.29 | 33.85±9.71 | 38.15±15.41 | 0.176 | 0.110 |
| Left hand skin capacitance (corneometer units; 0.02 mg/cm ²) | 48.81±16.90 | 33.71±9.78 | 39.60±14.56 | 0.068 | 0.122 |
| Right hand sebum content (sebumeter units µg/cm ²) | 4.72±3.71 | 1.85±1.55 | 1.00±0.27 | 0.100 | <0.001 |
| Left hand sebum content (sebumeter units µg/cm ²) | 8.0±2.6 | 2.33±0.52 | 1.10±0.37 | 0.057 | 0.002 |
| Right hand pH (pHmeter) | 5.57±0.69 | 7.64±2.02 | 6.10±0.98 | 0.451 | 0.126 |
| Left hand pH (pHmeter) | 5.47±0.60 | 5.41±0.63 | 6.14±0.75 | 0.004 | 0.018 |

P1: represents the comparison of pre and posttreatment values in patients with Cushing's syndrome

P2: represents the comparison of posttreatment values of Cushing's syndrome with control group

CONCLUSIONS

This study revealed a hypothermic skin surface with decreased sebum secretion and capacitance and mildly decreased skin elasticity in CS. The decreased elasticity and capacitance of the skin may increase after treatment of CS.