

Serum prolactin concentration and its relationship with dehydroepiandrosterone sulfate concentration in chronic urticaria patients with positive and negative response to autologous serum skin test

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Prolactin is a common mediator of the neuro-endocrine-immune network (1). Prolactin and dehydroepiandrosterone sulfate (DHEA-S) exert multiple immunomodulatory effects (1, 2) and their circulating levels change in a contrasting manner in the course of some immune-inflammatory diseases (3). Only some scarce information is available on the hormonal environment in chronic urticaria (CU) patients. Previously, we found that serum DHEA-S concentration is lower in chronic urticaria patients than in the healthy subjects (4, 5). We hypothesize that there are some changes in circulating levels of other stress associated and immunoregulatory hormones in CU patients. Therefore, in the present study, we evaluated serum concentration of prolactin and cortisol in female patients suffering from CU showing positive and negative response to

Different behavior of both immunomodulatory and stress associated hormones - prolactin and DHEA-S in chronic urticaria.

autologous serum skin test (ASST) as compared with the healthy subjects. In addition, the relationship between serum concentrations of prolactin and DHEA-S was assessed in such patients.

Thirty-three CU female patients (median age 35 years, range 20–45) who manifested negative response to ASST (negative – ASST/CU subgroup). Twenty CU selected female patients (median age 36 years, range 23–42) had positive reactivity on ASST (positive – ASST/CU subgroup). All other identified causes of urticaria had been excluded following the appropriate investigation.

The control group consisted of 26 healthy subjects (median age 36 years, range 20–44). All the controls responded negatively to ASST. All the subjects did not take any medication affecting the hormone level.

Blood was taken at 8 a.m. for measurement of basal concentrations of prolactin and DHEA-S; blood for cortisol rhythm was sampled at 8 a.m. and at 6 p.m. Serum concentrations of these hormones were measured by automated electrochemiluminescence immunoassay (ECLIA) (Roche Diagnostics, Mannheim, Germany).

The Kruskal–Wallis variance analysis was used for screening differences between the groups. The Mann–Whitney *U*-test was used to compare hormonal values between the two groups of patients

and the control group. Correlation was analysed by the Spearman test. *P*-values below 0.05 were considered significant.

The basal concentrations of prolactin and cortisol (at each time point) did not differ significantly among the three groups (Table 1). Moreover, we did not observe changes in the cortisol rhythm between those subjects. DHEA-S concentration was significantly lower in the patients group when compared with the controls (Table 1), which proves consistent with our previous results (4, 5). However, we do not know whether this phenomenon occurs before the disease onset or is rather a secondary event caused by the inflammatory process or stress (4, 5). Moreover, serum concentration of these hormones did not significantly correlate with the disease activity. Both, increased prolactin concentration and decreased DHEA-S concentration in the peripheral blood of patients with some nonorgan specific and some organ-specific autoimmune diseases have been demonstrated, suggesting the immunomodulatory role of the hormones (1, 2). Considering a possible role of prolactin in DHEA secretion and *vice versa* as well as the fact that in an immune-mediated disorder the inverse correlation between prolactin and DHEA-S concentrations was a recognized tendency (3, 6) we investigated correlations within CU subjects for the hormones. There are

Table 1. Serum concentrations of prolactin, cortisol, and dehydroepiandrosterone sulfate (DHEA-S) in chronic urticaria (CU) patients with positive or negative response to autologous serum skin test (ASST) and in healthy controls

Analysed hormones (unit)	Control group, <i>n</i> = 26 (median range)	Positive-ASST/CU group, <i>n</i> = 20 (median range)	Negative-ASST/CU group, <i>n</i> = 33 (median range)
Prolactin (ng/ml)	14.5 (4.3–23.9)	19.3 (2.7–27.7)	17.7 (4.6–26.2)
Cortisol (µg/dl)			
8 a.m.	12.9 (7.3–18.3)	9.4 (4.2–18.3)	14.36 (7.5–18.7)
6 p.m.	5.6 (2.1–8.8)	4.2 (2.5–8.4)	6.3 (3.1–8.5)
DHEA-S (µg/dl)	257.8 (125.4–487.9)	159.3 (30.0–224.9)	169.4 (62.3–43.9)

however some controversies concerning the effect of prolactin on modulation of DHEA-S secretion. No significant correlation between serum DHEA-S and prolactin concentration in our CU patients might indicate that lower DHEA-S serum concentration could not be accounted for by changes in prolactin secretion.

In conclusion, it seems that hyperprolactinemia does not accompany the immune-inflammatory processes associated with CU, also in the presence of positive ASST result, which suggests the autoimmune origin of the disease. We did not find any causal relationship between the reduced serum DHEA-S concentration and basal prolactin secretion. The lack of abnormalities in peripherally detectable hormones does not exclude the possibility of prolactin exerting immunomodulatory effects upon the urticarial inflammation. Verification of such hypothesis requires however further studies to be performed.

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