Serum Dehydroepiandrosterone Sulphate (DHEA-S) Concentration and Serum Prolactin concentration in Female Patients with Chronic Idiopathic Urticaria (CIU)

Thesis

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List of Abbreviations

ACC	**Anterior cingulate cortex**
AIU	**Autoimmune urticaria**
ANOVA	**Analysis of variance**
ASST	**Autologous serum skin test**
C2	**Complement 2**
C5	**Complement 5**
CIU	**Chronic idiopathic urticaria**
CNS	**Central nervous system**
CU	**Chronic urticaria**
DHEAS	**Dehydroepiandrosterone sulphate**
FcεRI	**IgE receptors**
FcεRIα	**α-chain of the high-affinity IgE receptor**
HLADR4	**Histocompatibility complex class II allele (DR4)**
Ig	**Immunoglobulin**
IgE	**Immunoglobulin E**
IgG	**Immunoglobulin G**
IL-1	**Interleukin-1**
IL-4	**Interleukin-4**
IL-8	**Interleukin-8**
IQR	**Interquartile range**

LT	**Leukotrienes**
LTC_4	**Leukotriene C_4**
MBP	**Major basic protein**
NK	**Natural killer**
NSAIDs	**Non-steroidal anti-inflammatory drugs**
PCP	**Primary care physician**
PGD_2	**Prostaglandin D_2**
PL	**Placental lactogens**
PLP	**Prolactin-like proteins**
PRL	**Prolactin Hormone**
PRP	**PRL-related proteins**
RA	**Rheumatoid arthritis**
RDBPC	**Randomized, double-blind placebo controlled**
SD	**Standard deviation**
Stat5	**Signal Transducers and Activators of Transcription protein 5**
SLE	**Systemic lupus erythematosus**
Th1	**T helper cell**
TNF-α	**Tumor necrosis factor alpha**
ug/dL	**Microgram per deciliter**

Introduction

Urticaria is a common clinical disorder; pathophysiology is based on mediators release from mast cells, predominantly histamine and subsequently an inflammatory response ***(Schocket, 2006).*** However, in most cases, aetiology of chronic urticaria is unknown; it is referred to as chronic idiopathic urticaria (CIU). Some cases of chronic idiopathic urticaria (CIU) have histamine-releasing IgG autoantibodies in their blood. This disease subgroup is called "autoimmune urticaria". The autologous serum skin test (ASST) is the best in vivo clinical test for the diagnosis of autoimmune urticaria ***(Kulthanan et al., 2006).***

Chronic urticaria is approximately twice as common in females as in males, suggesting that sex differences in hormone patterns may play a role in this phenomenon. Extensive evidence suggests that, abnormalities in sex hormones metabolism and/or

secretion may modulate activity of some immunologic diseases ***(Schwartz, 2002)***.

Receptors for sex hormones have been identified on various immune and inflammatory cells suggesting that these hormones influence directly their functions. Sex hormones are involved in immune response by regulation of maturation, survival, activation and function of diverse immune cells; generally with estrogens as enhancers at least of the humoral immunity and androgens and progesterone as natural immune-suppressors. **(Tanriverdi et al., 2003)**

It has been reported that adrenal androgens, dehydroepiandrosterone (DHEA) and its ester dehydroepiandrosterone sulphate (DHEA-S) show immunomodulatory properties and their deficiency has been associated with immune-mediated diseases, including systemic lupus erythematosus,

rheumatoid arthritis and autoimmune thyroiditis, which predominantly affect women ***(Dillon, 2005)*** **.** Prolactin which is a hormone released by the pituitary gland to stimulates breast development and milk production in women. is a common mediator of the neuro-endocrine-immune network as well ***(De Bellis et al., 2005).***

Prolactin and dehydroepiandrosterone sulfate (DHEA-S) exert multiple immunomodulatory effects ***(Schwartz, 2002)*** and their circulating levels change in a contrasting manner in the course of some immune-inflammatory diseases. Only some scarce information is available on the hormonal environment in chronic urticaria (CU) patients. ***(Brzoza et al., 2007).***

The aim of this study :

To evaluate serum concentration of DHEA-S and Prolactin in female patients suffering from CIU showing positive and negative response to autologous serum skin test (ASST) as compared with the healthy subjects. In addition, to assess the relationship between serum concentrations of prolactin and DHEA-S in such patients.

Chapter I

Chronic idiopathic urticaria

1.1. Epidemiology:

Urticaria is a common dermatologic condition, characterized by erythematous wheals caused by mast cell degranulation and histamine release, approximately 15% to 25% of the population is affected at some point in their lifetime causing a significant disturbance in quality of life. (***Kaplan, 2003)***

Chronic urticaria (CU) refers to continuous or intermittent wheals existing for 6 or more weeks that may be caused by physical stimuli, allergy, systemic illness, drugs, or infection, however, in the majority of cases (80%-90%), no eliciting cause is identified and recently, researches show no evidence of an exogenous allergen as the cause of CU which is labeled chronic idiopathic urticaria (CIU). ***(Kaplan et al, 2009)***

As many as 30% to 50% of patients with CIU are thought to have an autoimmune cause of histamine release leading to recurrent hives. (***Kaplan, 2003)***

CIU is twice as common in women as in men. Although persons of any age may experience CIU, it occurs most frequently after adolescence, with the highest incidence in young adults in the adult population **(*McGirt et al., 2006)***.

1.2. Clinical picture:

Urticaria is characterized by the rapid appearance of itchy wheals with duration of usually 1–24 h; it has diverse presentations ranging from occasional localized wheals to widespread recurrent whealing with angioedema. ***(Zuberbier et al, 2007)***

Chronic urticaria (CU) is defined as recurrent urticarial lesions characterized by short-lived itchy wheals and swellings during 6 weeks. ***(Grattan et al, 2002)***.