Prevalence of Occult Cushing's syndrome in Metabolic Syndrome

Thesis by

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Abstract

Background: Subclinical Cushing's syndrome refers to autonomous cortisol production that is insufficient to generate the typical, clinically recognizable overt syndrome. However, SCS could be involved in the pathogenesis (development) of non-specific pathologies such as obesity, diabetes, and hypertension. **Aim:** to evaluate the prevalence of occult CS in metabolic syndrome patients using the Overnight 1 Mg Dexamethasone Suppression Test. **Methods:** For all the patients full laboratory test, calculation of body mass indices, The Overnight 1 mg dexamethasone suppression test was done. **Results &conclusions:** In our study we found that the prevalence of subclinical CS in metabolic syndrome patients using the overnight 1 mg dexamethasone suppression test with cut-off point of 3 µg/dL was 10% (3/30 patients) which is actually a high percentage to be considered.

Key words:- Metabolic syndrome , Subclinical Cushing's syndrome, dexamethasone suppression test.

Abbreviations

ACE	**Angitensin converting enzyme**
ACTH	**Adrenocorticotropic hormone**
ADA	**American Diabetes Association**
AIDS	**Acquired immune deficiency syndrome**
AIMAH	**ACTH-independent bilateral macronodular adrenal hyperplasia**
AMP	**adenosine monophosphate**
ANF	**Antinuclear factor**
ATP	**adenosine triphosphate**
ATP lll	**Adult treatment panel lll**
AVP	**arginine vasopressin**
BIPSS	**bilateral inferior petrosal sinus sampling**
BMI	**body mass index**
C	**Control**
cAMP	**cyclic adenosine monophosphate**
CBG	**cortisol binding globulin**
CHD	**coronary heart disease**
cm	**centimeter**
CRH	**Corticotropin releasing hormone**
CRP	**C-reactive protein**
CS	**Cushing's Syndrome**
CT	**computed tomography**

CVD	**cardiovascular disease**
CYP	**cytochrome P450**
DHEA-S	**DehydroEpiandrosterone sulfate**
DM	**Diabetes Mellitus**
DNA	**Deoxyribonucleic acid**
DST	**Dexamesathone suppression test**
DX	**Dexamethasone**
FFAs	**free fatty acids**
GC	**glucocorticoid**
GIP	**Gastric inhibitory peptide**
GnRH	**Gonadotropin-releasing hormone**
GR	**glucocorticoid receptor**
HDDST	**high-dose dexamethasone-suppression test**
HDL	**High density lipoproteins**
HH	**hyperhomocysteinemia**
HMG-CoA	**3-hydroxy-3-methyl-glutaryl-CoA reductase**
HPA	**hypothalamo-pituitary-adrenal**
IDF	**International Diabetes Federation**
IGF-1	**Insulin-like growth factor 1**
IGT	**impaired glucose tolerance**
IL-6	**Interleukin-6**
IPSG	**inferior petrosal sinus ACTH gradient**
IR	**insulin resistance**

LDL	**low density lipoproteins**
LDDST	**Low dose Dexamesathone suppression test**
LIF	**Leukemia inhibitory factor**
MetS	**Metabolic syndrome**
Mg/dl	**Milligram/deciliter**
mmHg	**Millimeter mercury**
Mmol/l	**Millimol/litre**
MR	**mineralocorticoid receptors**
MRI	**Magnetic resonance imaging**
mRNA	**Messenger Ribonucleic acid**
MSaC	**midnight salivary cortisol**
MSeC	**midnight serum cortisol**
NIH	**National Institutes of Health**
nmol/l	**Nanomol/liter**
ODST	**Overnight Dexamesathone suppression test**
P	**Patients**
PAI-1	**plasminogen activator inhibitor-1**
PDE11A	**Dual 3',5'-cyclic-AMP and -GMP phosphodiesterase 11A**
PET	**18-flurodeoxyglucose positron-emission tomography**
PEPCK	**phosphoenolpyruvate kinase**
POMC	**proopiomelanocortin**
PPAR	**peroxisome proliferator-activated nuclear receptors alpha**

PPNAD	**Primary pigmented nodular adrenal disease**
PTH	**Parathormone hormone**
PRKAR	**cAMP-dependent protein kinase type I-alpha regulatory**
SCLC	**small cell lung cancer**
SCS	**Subclinical Cushing's syndrome**
SPGR	**spoiled gradient recalled acquisition**
SNS	**sympathetic nervous system**
SOM	**somatostatin analogue**
SRB1	**scavenger receptor class B1**
St AR	**Steroidogenic acute regulatory protein**
TG	**triglycerides**
TLC	**Theraputic life style change**
TNF	**Tumor necrosis factor**
TZDs	**thiazolidinediones**
UFC	**urinary free cortisol**
11ß-HSD	**11ßhydroxysteroid dehydrogenase**
2Hpp	**2 hour postprandial**
µg/dL	**Microgram/ deciliter**

Introduction

Cushing's syndrome is an endocrinal disorder caused by prolonged exposure of the body tissues to high levels of the cortisol hormone. It affects adults aged 20 to 50. Cushing's syndrome (CS) is a chronic insidious disease that is associated with reduced life expectancy mostly due to cardiovascular complications. **(Newell-Price et al., 2002)**

There are striking similarities between Cushing's syndrome and the metabolic syndrome as both are characterized by central obesity, hypertension, insulin resistance, and glucose intolerance**. (Bo, 2007)**

A number of patients with subclinical CS may not be recognized while they are managed for diabetes, either because of mild clinical presentation or because of insufficient awareness of the physicians who take care of such patients**.** **(Tauchmanova et al., 2001)**

Missing a diagnosis of subclinical CS may have detrimental consequences because hypercortisolism, although clinically inapparent, makes metabolic control more difficult to achieve and increases the probability of future cardiovascular events through induction/amplification of other risk factors**. (Tauchmanova et al., 2001)**

A high index of suspicion is required to identify subclinical CS is requested when diabetes is first diagnosed than after many years of poor metabolic control and attending complications**.(Minetto et al., 2004)**

Subclinical Cushing's syndrome is much more common than classic Cushing's syndrome with an estimated prevalence of about 8 /10.000 in the general population, in fact, this prevalence is likely to be underestimated because of the lack of specific clinical picture in subclinical Cushing's syndrome patients**.(Bo, 2007)**

Metabolic syndrome may therefore be a clue to the presence of CS. However, relatively high prevalence of occult CS was found in some studies up to 26%. **(Bo, 2007)**

We are conducting a cross sectional study to evaluate the prevalence of occult CS in metabolic syndrome patients.

The best screening test to uncover autonomous cortisol secretion is the short dexamethasone suppression test (DST). **(Lindsay et al., 2006)**

AIM OF THE WORK

The aim of the present study is to evaluate the prevalence of occult CS in metabolic syndrome patients using the Overnight 1 Mg Dexamethasone Suppression Test.