



**Adjusted Serum leptin and leptin
Adiponectin ratio in correlation with
Hyperemesis gravidarum**

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبِقَانِكَ لَا عِلْمَ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

ACRP30	Adipocyte Complement Related Protein of 30
AdipoR	: Adiponectin Receptors
ALT	Alanine Amino Transferase
	Adjusted Leptin Level
ALL	
AST	: Aspartate AminoTransferase
AMPK	Adenosine Monophosphate activated protein Kinase
BMI	Body mass index
cAd	collagenous domain
CAD	Coronary Artery Disease
CNS	Central nervous system
DBG	: Diagnostic Biomarker Genetics
DNA	Deoxyribonucleic Acid
EGF	: Epidermal Growth Factor
gAd	globular Adiponectin
G.age	: Gestational age
GBP	Gelatin Binding Protein.
GnRH	: Gonadotropin-releasing hormone
HB-EGF	: Heparin Binding EGF-like growth factor
HCG	: Human chorionic gonadotropin
HG	Hyperemesis gravidarum
HMW	: High Molecular Weight
hMADS	human Multipotent Adipose-Derived Stem cells
IBD	: Inflammatory Bowel Disease
IL	Interleukin
KDa	: Kilo Dalton.
L/A	: Leptin/Adiponectin ratio.
LMW	Low molecular weight.
LRH-I	: liver receptor homolog-1
MHG	: Mild hyperemesis gravidarum.
m-RNA	: Messenger Ribonucleic acid
NPY	: Neuropeptide Y
OB-R1	: Long form leptin receptor
Ob-Rs	: Short form leptin receptor
PAI-1	: Plasminogen Activator Inhibitor type 1
PPAR	: Peroxisome Proliferator-Activated Receptor

List of Abbreviations

ROC	: Receiver operating characteristic curve
SHG	: Sever Hyperemesis gravidarum.
SNS	: Sympathetic Nervous System
TNF	: Tumor Necrosis Factor
WAT	: White Adipose Tissue

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Introduction

Hyperemesis gravidarum [HG] is a significant but underappreciated illness of pregnancy. It is the most common indication for admission to the hospital in the first half of pregnancy and second only to preterm labour as a cause of hospitalization overall. Hyperemesis gravidarum is a state characterized by intractable vomiting during pregnancy, leading to dehydration, ketonemia, electrolyte imbalance and weight loss (*Goodwin et al., 2006*).

Nausea and vomiting is a common symptom of early pregnancy. Affecting up to 80 % of women. While the reported incidence of hyperemesis gravidarum is 0.5-2.0% (*V, Kirk and PapGeorgiou, 2006*).

Although recent research says that the pathophysiology for hyperemesis gravidarum is not clear. It has been proposed that hormonal, allergen, genetic factors, immunological, neuropsychosomatic, metabolic factors may play a role in the etiology of hyperemesis gravidarum (*Karaca, Lee and Brady, 2009*).

Leptin and adiponectin are the hormones that are secreted mainly by the adipose tissue to signal the status of body energy stores to the central nervous system. As a signal of energy sufficiency, adequate leptin levels suppress feeding and permit energy-costly neuro endocrine functions (*Bates et al., 2004*).

Leptin:

Is a circulating hormone which acts as an afferent satiety signal to regulate body weight and has a structure similar to that of cytokines. A relationship between leptin and hyperemesis gravidarum was originally based on the crucial role in reducing appetite and raising the consumption of energy by interacting with other factors such as cortisol, thyroid hormones and insulin (*Considine and Caro 2008*).

Supporters of the leptin theory stated that this could be a false negative finding due to a negative energy balance in HG patients, a dramatic decrease in leptin levels being observed in other situations with a negative energy balance, such as fasting (*Kolaczynski et al., 2009*).

Adiponectin:

A protein hormone produced and secreted exclusively by adipocytes (fat cells) that regulates the metabolism of lipids and glucose. Adiponectin influences the body's response to insulin. Adiponectin also has anti inflammatory effects on the cells lining the walls of blood vessels.

Maternal serum adiponectin decreases in case of hyperemesis gravidarum.

Like in case of fasting due to decrease in fat cells in which this protein hormone is secreted from. Leptin

concentration in normal pregnancy was determined to be between 7.4 and 19 ng / ml (*Magariños et al., 2007*).

Circulating leptin levels are elevated during pregnancy, reaching a peak during the second trimester and remain elevated until parturition (*Lee and Brady 2009*).

Although the pathophysiology for hyperemesis gravidarum is not clear. Maternal leptin level increases progressively during gestation. However, in other hypothesis, rapid increase in maternal leptin concentration disproportional to gestational week is a marker for hyperemesis gravidarum (*Enriori and Evans et al., 2007*).

Adjusted leptin levels is a predictor for hyperemesis gravidarum in which it is significantly high, and shows an increase with gestational weeks of first trimester and reaches a high peak levels at the second trimester. Adjusted leptin levels is calculated by : maternal serum leptin level / gestational week. Thus concluded that adjusted leptin level (ALL) is a fundamental factor triggering the development of hyperemesis gravidarum can also be a good predictor for it (*Henson and Castracene, 2008*).

A prospective study was carried out at the early prenatal care unit, SSK Ankara Women Health and Teaching Hospital on Leptin / adiponectin ratio which show that this ratio have a significant role in hyperemesis gravidarum. It is calculated by dividing the maternal serum leptin levels which show an increase in cases of

hyperemesis gravidarum by the maternal serum adiponectin levels which show decrease in hyperemesis gravidarum. leptin / adiponectin ratio will be significance with hyperemesis gravidarum in the first trimester of pregnancy (*Mantzoros et al., 2004*).

Aim of the work

The aim of this study is to determine the level of serum leptin, adiponectin and leptin /adiponectin ratio in women with hyperemesis gravidarum and compare it with those with normal pregnancy in order to speculate a possible role for adiponectin or leptin in pathogenesis of HG.