Plasma Neurokinin-B in Preeclamptic Versus Normotensive Pregnant Women

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By

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CONTENTS

List of Abbreviations

ACOG	American College of Obstetricians and Gynecologists
ALT	Alanine aminotransferase
ASH	American society of hypertension
AST	Aspartate aminotransferase
BP	Blood pressure
cAMP	Cyclic adenosine monophosphate
DIC	Disseminated intravascular coagulopathy
ELISA	Enzyme linked immunosorbant assay
HCG	Human chorionic gonadotropin
HELLP	Hemolysis , elevated liver enzymes and low platelets syndrome
ISSHP	International society for the study of hypertension in pregnancy
IUGR	Intrauterine growth retardation
LDH	Lactate dehydrogenase
NHBPEP	National high blood pressure education program working group
NKB	Neurokinin-B
NK_3R	Neurokinin-B receptor
NO	Nitric oxide
PIGF	Placental growth factor
RCOG	Royal college of Obstetricians and Gynecologists
ROC	Receiver operating characteristic

SOGC	Society of Obstetricians and Gynecologists of Canada
SP	Substance P
SOMANZ	Society of obstetric medicine of Australia and New Zealand
sVEGFR-1	Soluble Vascular Endothelial Growth Factor Receptor –1
TAC3	Neurokinin–B encoding gene
TACR3	Neurokinin–B receptor encoding gene
VEGF	Vascular Endothelial Growth Factor
uNK	Uterine natural killer cell

List of Figures

List of Tables

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Introduction

Preeclampsia is pregnancy specific condition affecting 4-7% of pregnant women worldwide and is associated with high maternal mortality and morbidity as well as risk of prenatal death, preterm birth and IUGR [1],[2].

The precise origin of preeclampsia remains elusive but it is thought to be multifactorial [3] . One current hypothesis propose that variety of underlying conditions (genetic and/or immunologic factors) solely or in association with environmental factors and possible underlying disease (e.g. diabetes or chronic hypertension) contribute to defective first trimester trophoblast invasion of the spiral arteries by the developing placenta [4, 5]. This lead to placental ischemia which is thought to release several factors thereby promoting the clinical syndrome of preeclampsia [6].

Neurokinin B (NKB), a neuropeptide of tachykinin family, is considered one of these possible factors released [7].Page et al. described expression of NKB in the outer syncytiotrophoblast of the placenta, and detectable plasma concentration in pregnant women as early as 9 weeks[7].

While placental NKB production increases gradually throughout normal pregnancy, reaching its highest level at term, its role in preeclampsia, as measured quantitatively, has been controversial[8, 9].

Page et al. reported that excessive placental secretion of NKB during the third trimester of pregnancy was associated with preeclampsia[10], In addition, Lie et al. found maternal plasma NKB to be significantly increased in early pregnancy before onset of clinical symptoms of preeclampsia and this increase was unique to preeclamptic women and undetected in either those who are normotensive and those with gestational hypertension[11].

On the other side, Schlembach et al reported lower plasma NKB level in preeclamptic women in comparison to those who

are normotensive [12], also study measuring plasma NKB level between weeks 10-20 of pregnancy in women who developed preeclampsia or delivered growth restricted babies found no difference in NKB plasma level [13].

In terms of a marker, placental NKB is unique to preeclampsia and was not associated with other known hypertensive disorders. [14]

Aim of the work

The aim of this study is:

To evaluate plasma level of Neurokinin B in women with preeclampsia in comparison to normotensive pregnant women and to correlate this result with clinical data.

Review of Literature

Hypertensive Disorders in Pregnancy

Hypertension is one of the most common medical complications of pregnancy and affects both fetal and maternal health sometimes with life-threatening consequences [15].

Hypertensive disorders of pregnancy are important cause of sever acute morbidity, long term disability and death among mothers and babies [16], [17].

Worldwide, hypertensive disorders of pregnancy affect about 10% of all pregnant women [15], [18] and account for more than 50000 maternal deaths per year. [19]

The majority of deaths related to hypertensive disorders can be avoided by providing timely and effective care to pregnant women presenting with such complication [17]. Thus, many national working groups have presented consensus documents aiming at achieving consistency in diagnosis and management of these diseases [20], [21] .

Classification of hypertensive disorders of pregnancy

Accurate diagnosis of hypertension in pregnancy is of utmost importance because preeclampsia is associated with adverse maternal and fetal outcome if not recognized early. [22]