Serum amyloid A level in preeclampsia

Thesis

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List of Abbreviations

ACOG	**:**	American College of Obstetricians and Gynecologists
ADAM12	**:**	A disintegrin and metalloprotease 12
BP	**:**	Blood pressure
CBC	**:**	Complete blood count
CK	**:**	Creatine kinase
CNS	**:**	Central nervous system
CTG	**:**	Cardiotocograph
CVP	**:**	Central venous pressure
DBP	**:**	Diastolic blood pressure
DIC	**:**	Disseminated intravascular coagulopathy
ELISA	**:**	Enzyme linked immunosorbent assays
FDA	**:**	Food and drug administration
Flt	**:**	Fms-like tyrosine kinase
HDL	**:**	High density lipoprotein
HLA	**:**	Human Leukocyte antigen
IUGR	**:**	Intrauterine growth restericction
LCAT	**:**	Lecithin cholesterol acyltransferase
LDL	**:**	Low density lipoprotein
NK	**:**	Natural killer
PlGF	**:**	Placental growth factor.

PP-13	**:**	Placental protein 13
PTX3	**:**	Pentraxin3
RIA	**:**	Radioimmuno assays
SAA	**:**	Serum amyloid A
SBP	**:**	Systolic blood pressure
SD	**:**	Standard deviation
sEng	**:**	Soluble endoglin
TNF	**:**	Tumor necrosis factor
VEGF	**:**	Vascular endothelial growth factor
VLDL	**:**	Very low density lipoprotein

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Introduction

Hypertensive disorders with pregnancy are one of the main reasons of maternal, fetal and neonatal morbidity and mortality. As preeclampsia is a multisystem disorder with different clinical characteristics, prevention, early management of this disease requires a close interdisciplinary cooperation[1].

It affects about 5-10% of all pregnancies and is a major cause of maternal, fetal and neonatal mortality and morbidity[3] as amniotic fluid levels, decreased fetal growth, placental abruption, and intrauterine fetal demise[2].

The etiology of preeclampsia is unknown but thought to be related to placental hopxia[3]. Many theories have attempted to explain why preeclampsia arises, and have linked the syndrome to the presence of the following:

- Endothelial cell injury.
- Immune rejection of the placenta.
- Compromised placental perfusion.
- Altered vascular reactivity.
- Imbalance between prostacyclin and thromboxane.
- Decreased glomerular filtration rate with retention of salt and water.
- Decreased intravascular volume.
- Increased central nervous system irritability [4]

Preeclampsia is a syndrome, which affects virtually all-maternal organ systems [5], it is a multisystem disorder and lead to a lot of cellular death and endothelial injury.

Dysfunction of endothelial cells can contribute to inappropriate vasoconstriction and platelet aggregation which are early signs of atherosclerosis, hypertension and coronary vasopasm[6].

Serum amyloid A (SAA) is one of the acute phase proteins predominantly produced and secreted by hepatocytes. Other cells including lymphocytes, monocytes, and macrophages can also produce this protein.

The induction of SAA synthesis is triggered by a number of cytokines, chiefly IL-6 and TNF- predominantly released from macrophages and monocytes at the inflammatory sites[7]. The synthesis is influenced by steroid hormones and adipose tissue (due to IL-6 production in the adipocytes) [8,9]. Increased baseline level of SAA analyzed by high-sensitivity assays has been recognized as markers of vascular wall inflammation and as clinical marker for the prediction of cardiovascular events[10].

Since preeclampsia is associated with widespread endothelial dysfunction, proposed to be provoked by an increased maternal systemic inflammatory response, the

maternal plasma levels of SAA might be expected to be increased when compared to normal pregnancy levels.

The maternal plasma levels of SAA in normal pregnancy could differ from non-pregnant levels due to increased hormone levels, increased adipose tissue and/or secondary to modifications of the inflammatory response in normal pregnancy[11].

Aim of the work

The aim of this study is to correlate plasma levels of serum amyloid A protein in pregnant women with preeclampstic women inorder to get a new biochemical marker for preeclampsia and explore possible correlation with maternal and neonatal morbidity & mortality.

Preeclampsia

Overview

Preeclampsia is a disorder of widespread vascular endothelial malfunction and vasospasm that occurs after 20 weeks' gestation and can present as late as 4-6 weeks postpartum. It is clinically defined by hypertension and proteinuria, with or without pathologic edema.

In developing nations, the incidence of the disease is reported to be 4-18%,[12, 13] with hypertensive disorders being the second most common obstetric cause of stillbirths and early neonatal deaths in these countries.[14]

Medical consensus is lacking regarding the values that define preeclampsia, but reasonable criteria in a woman who was normotensive before 20 weeks' gestation include a systolic blood pressure (SBP) greater than 140 mm Hg and a diastolic BP (DBP) greater than 90 mm Hg on 2 successive measurements, 4-6 hours apart. Preeclampsia in a patient with preexisting essential hypertension is diagnosed if SBP has increased by 30 mm Hg or if DBP has increased by 15 mm Hg.

Classification and Characteristics of Hypertensive Disorders

Preeclampsia is part of a spectrum of hypertensive disorders that complicate pregnancy, the classification is as follows[15] :

- Gestational hypertension
- Chronic hypertension
- Preeclampsia/eclampsia
- Superimposed preeclampsia (on chronic hypertension)

Although each of these disorders can appear in isolation, they are thought of as progressive manifestations of a single process and are believed to share a common etiology.

Gestational hypertension

The characteristics of gestational hypertension are as follows:

- BP of 140/90 mm Hg or greater for the first time during pregnancy.
- No proteinuria.
- BP returns to normal less than 12 weeks' postpartum.
- Final diagnosis made only postpartum.