Random Urinary Albumin-To-Creatinine Ratio For The Diagnosis Of Significant Proteinuria During Pregnancy

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ACR Albumin/creatinine ratio

AFP Alfa fetoprotein

ANP Atrial naturitic peptide

AT1 Angiotensin II type 1 receptor

BMI Body Mass Index

BP blood pressure

cGMP Cyclic Guanosine Monophosphate

CSF Cerebrospinal fluid

DIC Disseminated Intravascular Coagulopathy

FDP Fibrin Degradation Products

GCP Good Clinical Practice

GFR Glomerular Filtration Rate

HDL High-Density Lipoprotein

HCG Human chorionic gonadotrphine

HELLP syndrome. H = Hemolysis, EL Elevated Liver enzymes and LP = Low Platelet count syndrome.

HPL Human placental lactogen

ICAM Intercellular adhesion molecul

IgM Immunoglobulin M

IL Interleukin

ISSHP The International Society for the Study of Hypertension in Pregnancy

LDH Actic Dehydrogenase

LDL Low-Density Lipoprotein

MAP Mean arterial pressure

NHBPEP National High Blood Pressure Education Program Working Group.

NO Nitric Oxide

NOS nitric oxide synthetase

NPV negative predictive value

PA Plasminogen Activator

PAI-1 Plasminogen Activator Inhibitor-I

PAF platelet activating factor

PCR protein/creatinine ratio

PECAM-I placental endothelial cells adhesion molecule-I

PGF Placental Growth Factor

ROC receiver operating characteristic curve .

SGOT Serum Glutamic-Oxaloacetic Transaminase

SGPT Serum GlutamicPyruvic Transaminase

sFLT-1 Soluble fms-Like Tyrosine kinase-1

SPSS Statistical Program for Social Science

TAT Thrombin-Antithrombin III complex.

TNF-a Tumour Necrosis Factor alpha

VCAM vascular endothelial cell adhesion molecule .

VWF VonWelbrand factor

INTRODUCTION

When preeclampsia is suspected because of an elevated blood pressure and the development of a positive urine dipstick for protein, initial management often includes an 24-hour urine collection to determine if there is 300 mg of proteinuria and hospitalization for observation. ***(Papanna et al,2008).***

Preeclampsia is a syndrome defined by gestational hypertension and proteinuria. Gestational hypertension is defined as a systolic blood pressure level of 140 mm Hg or higher or a diastolic blood pressure level of 90 mm Hg or higher that occurs after 20 weeks of gestation in a woman with previously normal blood pressure. ***(NHBPEP, 2000).***

Proteinuria is defined as presence of 300 mg or more protein in a 24-hour urine specimen. ***(Saudan P, 1998).***

Reported incidence of preeclampsia ranges from 2% to 7% depending on the diagnostic criteria and the population studied. It is principally a disease of primigravidas and rarely presents before 20 weeks of gestation. Early presentation is more likely to be associated with unrecognized renal disease. ***(Sibai BM, 200٥).***

Risk factors for the development of preeclampsia include diabetes (particularly poorly controlled pregestational diabetes mellitus), obesity, nulliparity or primiparity, extremes of age (more common in teenagers and women with advanced maternal age, i.e., ≥ 35 years old), renal insufficiency or chronic renal disease, preexisting hypertension, personal history of preeclampsia, family history of preeclampsia, molar pregnancy, multifetal gestation, thrombophilia, and fetal hydrops. The risk factors may be present prior to conception or may appear during pregnancy ***(Sibai BM.200٥).***

A familial factor has been established in the pathogenesis of preeclampsia. **(Dawson LM, 2002).** There is evidence that abnormal placental angiogenesis occurs in pregnancies complicated by preeclampsia.***(Taylor RN, ٢٠٠٣).***

Although a single mid-stream urine sample is used to screen for proteinuria, studies have shown that urinary dipstick is a poor predictor of the 24-hour urine total protein level. ***(Kuo VS et al,1992).***

Compared with a qualitative dipstick result, a quantitative analysis of a random urine sample is called a random urine albumin creatinine ratio (albumin /creatinine ratio). Use of a albumin / creatinine ratio in a nonpregnant patient population

has been validated in the literature as an estimator of 24-hour urine protein levels.***(Ginsberg JM et al,1983).***

However, there is no consensus regarding accuracy of albumin /creatinine ratio in predictions of 300 mg of protein in 24-hour urine collection during pregnancy. ***(Chan P et al ,2005).***

The standard practice of collecting a 24-hour urine for protein is cumbersome, time consuming, and inconvenient. ***(Papanna et al,2008).***

Although many women with suspected preeclampsia are hospitalized, some women are managed as outpatients and collect a 24-hour urine sample. The burden of collecting a complete sample, which needs to be refrigerated between each void, may lead to noncompliance. Early diagnosis of preeclampsia with a albumin /creatinine ratio would be a valuable diagnostic tool if the accuracy is acceptable. It could prevent unnecessary hospitalizations, testing, and lead to earlier diagnosis. Currently, different providers use different cut points of albumin / creatinine ratio for the diagnosis of preeclampsia. ***(Papanna et al,2008).***

Aim of the work

To assess the correlation between urine albumin/creatinine ratio (ACR) and 24-hour urine albumin excretion in women with pre-eclampsia.

Preeclampsia

Introduction:

Preeclampsia is a pregnancy-specific hypertensive disorder that usually occurs after 20 weeks of gestation but can occur earlier with fetal hydrops or hydatiform-mole, preeclampsia unlike gestational hypertension in which there is associated proteinuria and edema. ***(DeCherney et al. , 2003).***

Definition:

Preeclampsia is defined, according to the National High Blood Pressure Education Program Working Group, as a syndrome consisting of hypertension and proteinuria that may be also associated with myriad other signs and symptoms, such as edema, visual disturbances, headache and epigastric pain ***(NHBPEP, 2000).***

Endure preeclampsia are at a great risk for cardiovascular disease than nonpreeclamptic women and the men who fathered those preeclamptic pregnancies syndrome and a suite of contributing circulating factors, the mechanisms underlying the pathogenesis of this troubling condition remain nebulous. Interestingly, it has been proposed that not only are increased circulating factors responsible for much of the preeclamptic

syndrome, but they may also predispose the maternal cardiovascular system to subsequent endothelial dysfunction as the mother age ***(Jeffrey et al., 2007).***

Hypertension is defined as persistent blood pressure elevation to 140 mmHg systolic or greater, or 90 mmHg diastolic or greater on two occasions > 6 hours apart. Significant proteinuria is defined as more than 0.3 gm a 24-hour urine collection or 0.1 gm per L (more than 2+ on the dipstick) in at least two random samples collected 6 hours or more apart. . Since the development of edema is subjective and considered pathologic only if it is generalized (involving hands, face and legs), currently this sign is not accepted as necessity in the definition ***(Wiltin and Sibai, 1999).***

Types of preeclampsia:

According to **Working Group of the NHBPEP (2000),** preeclampsia are classified into:

1)Preeclampsia:

Preeclampsia refers to the new onset of hypertension and proteinuria after 20 weeks of gestation in a previously normotensive woman. ***(NHBPEP ,2000).***

2)Preeclampsia superimposed upon chronic hypertension:

The superimposed preeclampsia is diagnosed when woman with chronic hypertension develops new onset proteinuria after 20 weeks of gestation. Women with chronic hypertension on preexisting proteinuria (before 20 weeks) are considered preeclamptic if there is an exacerbation of blood pressure to the severe range (systolic 160 mmHg and diastolic 110 mmHg) in the latter part of pregnancy especially if accompanied by symptoms or a sudden increase in proteinuria. ***(NHBPEP ,2000).***

3)Eclampsia:

Eclampsia refers to the development of seizures (grand mal) in a woman with preeclampsia. These seizures should not be attributed to another cause. ***(NHBPEP ,2000).***

Incidence:

Preeclampsia, which affects 3-6% of pregnancies, is a major cause of perinatal and maternal morbidity and mortality ***(Papageorghiou et al., 2005).***

The likelihood of developing preeclampsia is increased in women who are nulliparous, aged 30 years or over, those with