POTENTIAL ROLE OF ENDOTHELIN-1 IN NORMAL AND HYPERTENSIVE PREGNANCIES

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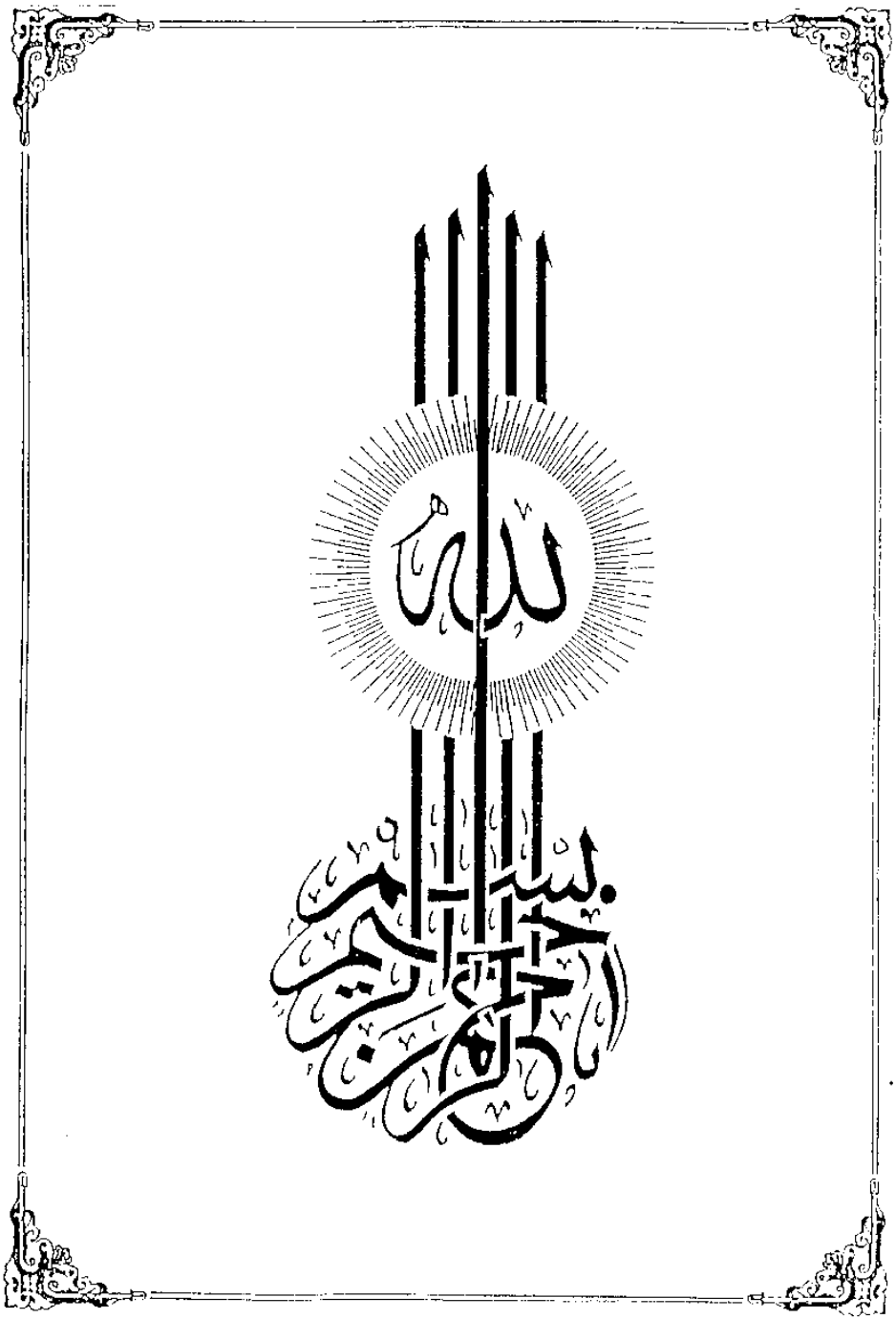

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Endothelin is a potent endogenous vasoconstrictor peptide produced by endothelial cells. It is thought to participate in the regulation of vascular tone, but its normal physiologic and pathophysiologic role is unknown ***(Yanagisawa et al., 1988)***.

High levels of endothelin-1 have been detected in the sera of patients with essential hypertension and acute renal disorders, whereas endothelin-1 activity was recently shown to interact with vasoactive prostaglandins. Therefore one might expect endothelin-1 to play a role in the pathophysiologic composition of pregnancy induced hypertension, a disorder characterized by hypertension in pregnancy, impaired renal function, systemic vasospasm, and altered production of vasoactive prostaglandin, platelets and endothelial tissue ***(Lois et al., 1992).***

The aim of this work is to study the potential role of endothelin-1 in patients with pregnancy induced hypertension (PIH) and its correlation with various parameters of kidney function in comparison to normotensive pregnant and non pregnant women. The effect of magnesium sulfate infusion on endothelin-1 will also be studied. In addition mixed cord blood samples were taken to study the possible role of endothelin-1 in fetal hemodynamic changes and its relation to stress of labor

REVIEW OF LITERATURE

PREGNANCY INDUCED HYPERTENSION (PIH)

I - Definition :

Hypertension associating pregnancy represents a common and serious problem in obstetrics. Investigations into the pathophysiological mechanisms of PIH has been hindered over the years because of the lack of uniform definition for this disease process. The introduction of such a definition by the International Society for the Study of Hypertension in Pregnancy **(ISSHP)** ***(Davey and Mac Gillivray, 1986)*** should ensure that scientists involved in research on this subject are at least comparing like with like. In this synopsis, the basic definitions given by **ISSHP** are used, those being:

A. **None-proteinuric PIH-** an arterial blood pressure of at least 140 mm Hg systolic and 90 mm Hg diastolic on two occasions 24 h apart after 20 weeks'gestation, with a total protein excretion of less than 300 mg / 24 h.

B. **Pre-eclampsia**-an arterial blood pressure of at least 140 mm Hg systolic and 90 mm Hg diastolic on two occasion 24 h apart after 20 weeks'gestation, with a total protein excretion of greater than 300 mg / 24h.

II - Classification and differential diagnosis:

According to Practical Guide to high risk pregnancy by ***Fernardo Arias (1993)***. The committee on terminology of the ***American College of Obstetricians and Gynecologists*** modified the classification of hypertensive states complicating pregnancy in order to separate hypertension generated by pregnancy from that merely coexisting with it ***(Hughes, 1972).***

A - Pregnancy Induced Hypertension **(PIH)**:

PIH is hypertension which develops as a consequence of pregnancy and regresses postpartum. This may be one of two types:

1.Without proteinuria or edema (Gestational hypertension)

2. With proteinuria and/ or edema. which divided to: -Preeclampsia: mild, moderate or fulminating.

-Eclampsia: the same as preeclampsia along with convulsions.

B - Pregnancy Aggravated Hypertension:

It is an underlying hypertension which becomes worsened by pregnancy i.e. superimposed, this is either:superimposed preeclampsia or superimposed eclampsia.

C - Coincidental Hypertension:

It is a chronic underlying hypertension which antecedes pregnancy or persists postpartum, this may be essential hypertension or secondary hypertension.

III.- Etiology:

A - Incidence:

The incidence of pregnancy induced hypertension in most obstetric populations is 5-10% ***(Mac Gillivary, 1993)***. This incidence makes pre-eclampsia one of the mostly frequent pregnancy associated complications ***(Prichard et al., 1984)***.

However this incidence depends upon a group of ***predisposing factors***.

B - Predisposing factors

(1) Age:

Preeclampsia is more common below the age of 17 years and above 35 years ***(Vollman, 1970)***. This may be due to poor immune capacity at that age.

(2) Parity :

It is well accepted that pre-eclampsia and eclampsia are essentially a disease of first pregnancy and even if it occurs in subsequent pregnancies, it will be much less severe ***(Vollman, 1970)***. Many workers reported that

the combination of primigravida and an average age at or above 35 years leads to a higher risk of pre-clampsia ***(Campell and Mac Gillevary, 1985).***

(3) Racial factors :

There is probably a difference in the incidence of preeclampsia among the different racial groups as its incidence in white races is 6.2% while it is 8.5% in black ones. This variation is mostly due to genetic factors that relate the underlying chronic hypertension ***(Mac Gillivary, 1993).***

(4) Familial factors:

Several studies of ***WHO*** reported that there is a familial tendency of both preeclampsia and eclampsia because detailed studies of pregnancy in daughters, grand daughters, daughters in law and sisters of preeclamptic women showed that the incidence of preeclampsia in those ladies will be at least 26% and the incidence of eclampsia is 2% ***(Chesley, 1986).***

(5) Blood group:

An early report from USA suggested the role of blood group incompatibility between the mother and the fetus as a predisposing factor for preeclampsia. however, most of other studies denied the existence of this relationship. More recently, it was found in the Federal Republic of Germany by ***Krauss et al., 1978*** that preeclampsia in blood group A is 14.4 % while it is