SERUM FERRITIN IN PREGNANCY-INDUCED HYPERTENSION

Thesis

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Obstetrics and Gynaecology

by

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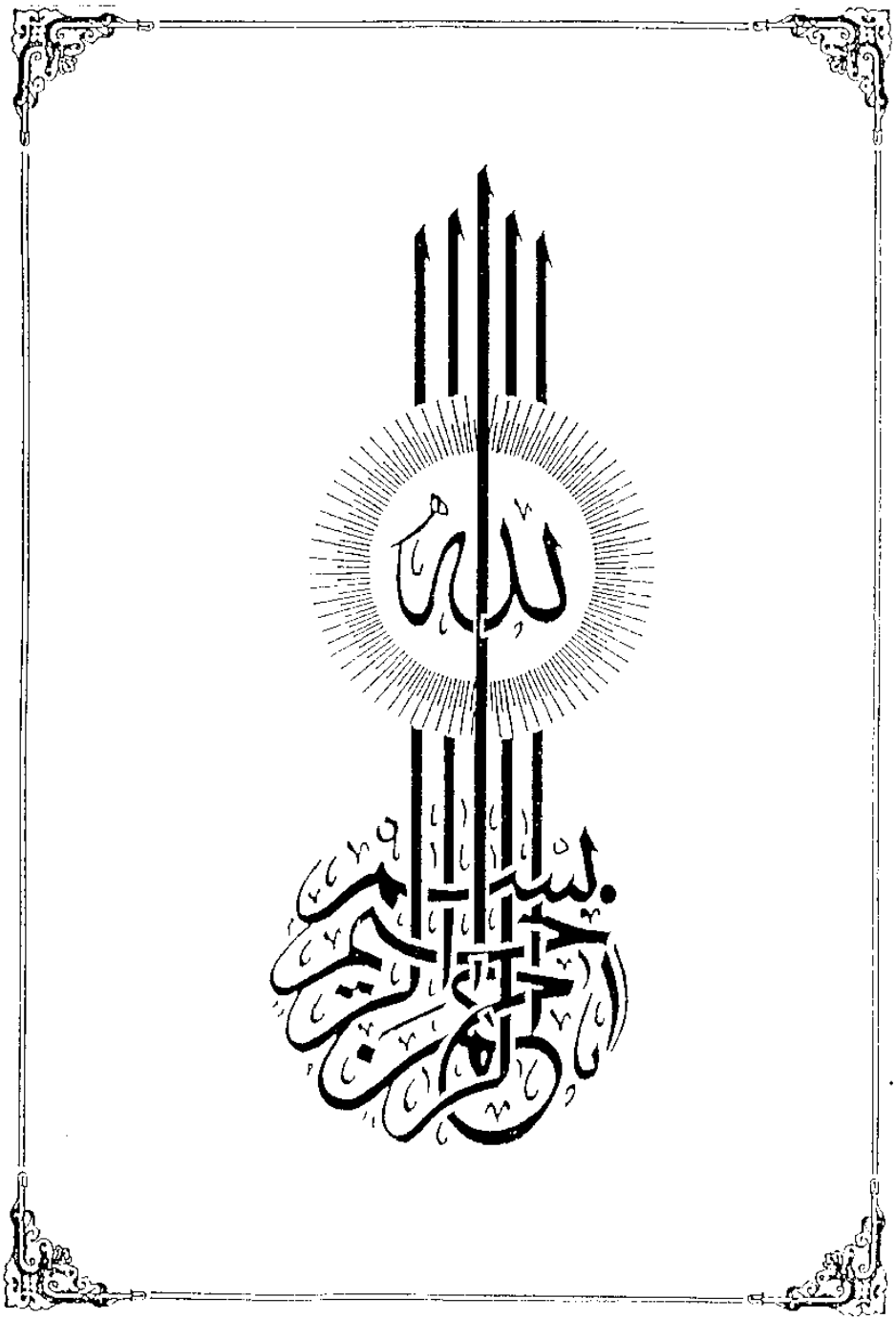

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Introduction:

Hypertension is one of the commonest complication of pregnancy and it is a common cause of foetal and maternal morbidity and mortality particularly in underdeveloped countries ***(National High Blood Pressure Education Working Group, 1990)***.

In 5-15% of the cases it is associated with proteinuria and the foetal and maternal risk are then significantly increased. Proteinuria without hypertension is less common and it often due to chronic renal disease ***(Davey, 1995)***.

In the past, oedema was believed to be closely associated with hypertension and proteinuria constituting a triad of signs the was so called toxaemia of pregnancy. Oedema occurs in about 80% of normal pregnant women ***(Robertson, 1971)*** and even when associated with hypertension and proteinuria it is of no prognostic significance ***(Friedman and Neff, 1977)***.

The concept of one disease characterized by a triad of hypertension, proteinuria and oedema is misleading and should be abandoned. Hypertension is a chief clinical manifestation of several different disorders which may either pre-exist or be caused by pregnancy, and which are often difficult to separate in clinical practice. Proteinuria is similarly another variable manifestation.

These different disorders with different aetiologies, pathophysiologies and prognosis are best described as "hypertensive disorders of pregnancy".

Pregnancy induced hypertension (PIH) is a well known for its contradictory and controversial clinicopathological findings. The triad of hypertension, oedema and/or proteinuria has a great potential for clinical confusion as non of these clinical findings alone or in combination are specific of PIH.

The accurate diagnosis of PIH has immense importance because of the problems associated with this disorder of pregnancy. Many clinical and bio-chemical parameters have been used to detect

PIH and to assess its severity. Unfortunately, most of the available parameters to date are neither specific nor always sensitive.

Aim of the work:

The first objective of this study is to show if there is a possible change in serum ferritin in patients with pregnancy-induced hypertension.

Our second objective is to find out if there is a correlation between these changes and the severity of the disease.

REVIEW OF LITERATURE

CLASSIFICATION AND NOMENCLATURE

More than 100 names used in the English and German literature to describe the different hypertensive disorders of pregnancy ***(Rippmann, 1969)*** and there have almost been as many different classifications. Until the aetiology and pathology are better understood and better methods of diagnosis become available, no classification will be entirely satisfactory.

Among of these classifications, that of ***Fernando Arias (1993)***:

1. American Collage of Obstetricians and Gynaecologists (ACOG):

Hypertension in pregnancy is classified into the following groups:

1. Pregnancy induced hypertension:

a. Pre-eclampsia

b. Eclampsia

2. Chronic hypertension of whatever cause, but independent of pregnancy.

3. Pre-eclampsia or eclampsia superimposed on chronic hypertension.

4. Transient hypertension.

5. Unclassified hypertensive disorders.

Each of these forms of hypertension are defined by ACOG as follows:

Pre-eclampsia:

Hypertension associated with proteinuria, greater than 0.3 g/l in a 24 hour urine collection or greater than 1g/l in a random sample, generalized oedema greater than 1+ pitting oedema after 12 hours of rest in bed or a weight gain of 5 lb or more in 1 week, or both after 20 weeks of gestation.

Eclampsia:

Convulsions in patient with pre-eclampsia.

Chronic hypertension:

The presence of sustained blood pressure of 140/90 mmHg or greater before pregnancy or before 20 week.

Pre-eclampsia or eclampsia superimposed on chronic hypertension:

The occurrence of pre-eclampsia or eclampsia in a women with chronic hypertension. To make this diagnosis, it is necessary to document a rise of 30 mmHg or more in a diastolic blood pressure, associated with proteinuria, generalized oedema or both.

Transient hypertension:

The development of hypertension during pregnancy or the early puerperium in a previously normotensive women whose pressure normalizes within 10 days postpartum. There must be no evidence of pre-eclampsia.

Unclassified hypertensive disorders:

Those in whom there is no enough information for classification.

According to the ACOG, the diagnosis of hypertension in pregnancy is made by any one of the following criteria:

1. A rise of 30 mmHg or more in systolic blood pressure.
2. A rise of 15 mmHg or more in diastolic blood pressure.
3. A systolic pressure of 140 mmHg or more.
4. A diastolic blood pressure of 90 mmHg or more.

These alteration in blood pressure should be observed on at least two different occasions at least 6 hours apart.

Many authors recognize that pre-eclampsia may be mild or severe, but some also describe a moderate subgroup. The most

important criterion for differentiation is the magnitude of the blood pressure elevation.

Table (1):

Variable	Mild	Moderate	Severe
- Diastolic blood pressure	90-100	100-110	>110 mmHg
- Convulsions	Absent	Absent	Present
- Blindness	Absent	Absent	Present
- Headaches	Minimal	Mild	Marked, persistent
- Visual symptoms	Minimal	Mild	Marked, persistent
- Oliguria	Absent	Absent	Present
- Upper abdominal pain	Absent	Absent	Present
- Foetal distress	Absent	Absent	Present
- Foetal growth retardation	Absent	Absent	Present
- Intravascular haemolysis	Absent	Absent	Present
- Thrombocytopenia	Absent	Absent	Present
- Blood urea nitrogen (BUN), creatinine, uric acid level	Normal	Mildly elevated	Markedly elevated
- Serum glutamic-oxaloacetic transaminase (SGOT),serum glutamic-pyruvic transaminase (SGPT), lactate dehydrogenase (LDH)	Normal	Mildly elevated	Markedly elevated

2. International Society for the study of hypertension in pregnancy (ISSHP):

This classification follows those of American Committee on Maternal Welfare, modified by Committee on Terminology ***(Chesley, 1978 and Gant & Worley, 1980)*** and has been approved by ISSHP.

1. Gestational hypertension and/or proteinuria:

Hypertension and/or proteinuria developing during pregnancy, labor or the puerperium in a previously normotensive, non proteinuric women.

This group of patients is subdivided into:

1. Gestational hypertension (without proteinuria)
   a. Developing antenatally.
   b. Developing for the first time in labor.
   c. Developing for the first time in puerperium.

2. Gestational proteinuria (without hypertension)
   a. Developing antenatally.
   b. Developing for the first time in labor.
   c. Developing for the first time in puerperium.

3. Gestational proteinuric hypertension (pre-eclampsia):
   a. Developing antenatally.
   b. Developing for the first time in labor.
   c. Developing for the first time in puerperium.

2. Chronic hypertension and chronic renal disease:

Hypertension and/or proteinuria in pregnancy in a women with chronic hypertension or chronic renal diseases diagnosed before, during or after pregnancy, this group is subdivided into:

1. Chronic hypertension (without proteinuria):
2. Chronic renal disease (proteinuria with or without hypertension).
3. Chronic hypertension with superimposed pre-eclampsia,

Proteinuria developing for the first time during pregnancy in a women with known chronic hypertension.

3. Unclassified hypertension and/or proteinuria:

Hypertension and/or proteinuria found:

1. At first examination after 20th week of pregnancy (140 days) in a women with known chronic hypertension or chronic renal disease.
2. During pregnancy labor or puerperium in a case in which information is insufficient to permit classification. This group is subdivided into:

1. Unclassified hypertension (without proteinuria).
2. Unclassified proteinuria (without hypertension).
3. Unclassified proteinuric hypertension.

The diagnosis of hypertension in pregnancy according to ISSHP, is made by either of the following criteria:

1. One measurement of diastolic blood pressure equal to or greater than 110 mmHg.
2. Two consecutive measurements of diastolic blood pressure equal or greater than 90 mmHg 4 or more hours apart.

These criteria of ISSHP classification don't have the deficiencies of those proposed by Committee on Terminology of ACOG that uses rises in systolic and diastolic blood pressures, as well as absolute levels in both pressures, as a diagnostic criteria.

The ACOG definition is imprecise because of the natural tendency of the blood pressure to rise during the third trimester and the variability of systolic pressure values during normal pregnancy.

The ISSHP does not consider degrees of severity of hypertension in pregnancy. However, it may be suggested that severe hypertension occurs when:

1. A diastolic blood pressure equal to or greater than 120 mmHg is present on any one occasion.
2. A diastolic blood pressure equal to or greater than 110 mmHg is present on two or more consecutive occasion 4 hours apart.

The ISSHP Classification has not been universally accepted. Many consider that it is cumbersome and has little clinical value.