#### Association between Blood Immature Platelet fragments and HELLP Syndrome

#### Thesis

Submitted for Partial Fulfillments of Master Degree in Obstetrics and Gynecology

Presented by Sanaa Talaat Rayyan

M.B., B.Ch (2009)

Under Supervision of

#### Dr. Ahmed Hamdi Nagib

Professor of Obstetrics and Gynecology Assistant Faculty of Medicine - Ain Shams University

#### Dr. Ayman Abd El-Kader

Lecture of Obstetrics and Gynecology Faculty of Medicine - Ain Shams University

#### **Dr. Mohammed Ahmed Faris**

Lecture of Obstetrics and Gynecology Faculty of Medicine - Ain Shams University

Faculty of Medicine Ain Shams University 2016

### Acknowledgment

First and foremost, I feel always indebted to Allah, the Most Kind and Most Merciful.

I'd like to express my respectful thanks and profound gratitude to **Prof. Dr. Ahmed Hamdi Magib**, Assistant Professor of Obstetrics & Gynecology, Ain Shams University, for giving me the honor and great advantage of working under his supervision.

My sincere thanks and utmost appreciation are humbly presented to **Dr Mohammed Ahmed Faris**, Lecture of Obstetrics & Gynecology, Ain Shams University, for his meticulous supervision, professional experience and tremendous assistance. It has been a long trip with him throughout this thesis. I really appreciate his patience and support.

My sincere thanks are due to **Dr. Ayman Abd El- Kader,** Lecturer of Obstetrics & Gynecology, Ain Shams

University for his brotherly advice, support and constant motivation.

Last, but certainly not least, my deepest gratitude goes to my family



### Tist of Contents

Subject	Page No.
List of Tables	I
List of Figure	II
Introduction	1
Aim of Work	6
<b>Review of Literature</b>	
Chapter (1): Preeclampsia	7
Chapter (2): HELLP Syndrome	26
Chapter (3): Platelet Production and Imm	nature
Platelet Fraction	45
Patients and Methods	59
Results	65
Discussion	94
Summary	121
Conclusion	127
References	128
Arabic Summary	

### Tist of Tables

Table	Title	Page
1	Main diagnostic criteria of the HELLP syndrome	30
2	Differential diagnosis of the HELLP syndrome	41
3	Difference between Groups regarding Initial Characteristics	66
4	Difference between Groups regarding Apgar Scores	69
5	Difference between Groups regarding Hb Concentration and Platelet Count	71
6	Difference between Groups regarding PT, aPTT and INR	74
7	Difference between Groups regarding Blood Chemistry	78
8	Difference between Groups regarding IPF and A-IPC	81
9	Correlation between IPF and A-IPC, and Other Variables in Groups	84
10	Area under ROC Curves for Measured Variables Differentiating Women with HELLP Syndrome from All Other Women	91
11	Area under ROC Curves for Measured Variables Differentiating Women with HELLP Syndrome from All Other Women	93

## List of Figures

Title	Page
Box-Plot Chart showing Difference between	67
Groups regarding Age	07
Box-Plot Chart showing Difference between	67
Groups regarding Parity	07
Box-Plot Chart showing Difference between	68
Groups regarding Gestational Age	08
Box-Plot Chart showing Difference between	69
Groups regarding Systolic Blood Pressure	09
Box-Plot Chart showing Difference between	70
Groups regarding Diastolic Blood Pressure	70
Bar-Chart showing Difference between	70
Groups regarding Albuminuria	70
Box-Plot Chart showing Difference between	72
Groups regarding Hb Concentration	12
Box-Plot Chart showing Difference between	72
Groups regarding Platelet Count	12
Box-Plot Chart showing Difference between	75
Groups regarding PT	75
Box-Plot Chart showing Difference between	75
Groups regarding aPTT	75
Box-Plot Chart showing Difference between	76
Groups regarding INR	70
Box-Plot Chart showing Difference between	79
Groups regarding Serum AST	1)
Box-Plot Chart showing Difference between	79
Groups regarding Serum ALT	
	Box-Plot Chart showing Difference between Groups regarding Age  Box-Plot Chart showing Difference between Groups regarding Parity  Box-Plot Chart showing Difference between Groups regarding Gestational Age  Box-Plot Chart showing Difference between Groups regarding Systolic Blood Pressure  Box-Plot Chart showing Difference between Groups regarding Diastolic Blood Pressure  Bar-Chart showing Difference between Groups regarding Albuminuria  Box-Plot Chart showing Difference between Groups regarding Hb Concentration  Box-Plot Chart showing Difference between Groups regarding Platelet Count  Box-Plot Chart showing Difference between Groups regarding PT  Box-Plot Chart showing Difference between Groups regarding aPTT  Box-Plot Chart showing Difference between Groups regarding INR  Box-Plot Chart showing Difference between Groups regarding Serum AST  Box-Plot Chart showing Difference between

Figure	Title	Page
14	Box-Plot Chart showing Difference between	80
	Groups regarding Serum Creatinine	80
15	Box-Plot Chart showing Difference between	80
	Groups regarding Serum Total Bilirubin	80
16	Box-Plot Chart showing Difference between	82
	Groups regarding IPF	02
17	Box-Plot Chart showing Difference between	82
	Groups regarding A-IPC	02
18	Scatter-Plot showing Correlation between	85
	IPF and Platelet Count in Group I	0.5
19	Scatter-Plot showing Correlation between A-	85
	IPC and Platelet Count in Group I	0.5
20	Scatter-Plot showing Correlation between	86
	IPF and Platelet Count in Group II	00
21	Scatter-Plot showing Correlation between A-	86
	IPC and Platelet Count in Group II	00
22	Scatter-Plot showing Correlation between	87
	IPF and PT in Group I	07
23	Scatter-Plot showing Correlation between	87
	IPF and Serum Creatinine in Group I	07
24	Scatter-Plot showing Correlation between A-	88
	IPC and Serum Creatinine in Group I	
25	Scatter-Plot showing Correlation between	88
	IPF and Serum AST in Group I	00
26	Scatter-Plot showing Correlation between A-	90
	IPC and Serum AST in Group I	70
27	ROC Curves for Measured Variables	
	Differentiating Women with HELLP	92
	Syndrome from All Other Women	

## Association between Blood Immature Platelet fragments and HELLP Syndrome

#### **Abstract**

**Background:** Preeclampsia was formerly defined as a multisystem disorder characterized by new onset of hypertension systolic blood pressure (SBP)  $\geq$  140 mmHg and/or diastolic blood pressure (DBP)  $\geq$ 90 mmHg) and proteinuria (> 300 mg/24 h) arising after 20 weeks of gestation in a previously normotensive woman. Aim: Aim of this to study the association between the quantitative assessment of immature platelet fragments (%-IPF), immature platelet count (A-IPC) and diagnosis of HELLP syndrome. Subjects: The study population will include 3 groups. Group 1: This include 28 patients who are pregnant more than 28 weeks and initially diagnosis as HELLP syndrome before taken any treatment. Group 2: This include 28 patients are pregnant more than 28 weeks and initially diagnosis as sever preeclampsia. Group 3: this will include women who are pregnant more than 28 weeks. Results: The current study showed significant negative correlation between platelet count and IPF, and a significant positive correlation between platelet count and A-IPC in included women of the three groups. But regarding to serum creatinine, the median serum creatinine was significantly higher in women of group with help syndrome when compared to those of group II and group III. Conclusion: There is a positive correlation between platelet count and A-IPC in patient initially diagnosed HELLP syndrome comparing to anther women diagnosed as severe preeclampsia and normal healthy pregnant women and also there is negative correlation between platelet count and IPF of the same comparing groups.

**Keywords:** SBP: systolic blood pressure, IPF, HELLP.



# Protocol





## Introduction





# Aim of Work





# Chapter (1) **Preeclampsia**





# Chapter (2) **HELLP Syndrome**





# Chapter (3) Platelet Production and Immature Platelet Fraction





# Patients and Methods





# Results

