

EARLY SECOND TRIMESTER DYSLIPIDEMIA FOR PREDICTION OF OCCURRENCE OF PREECLAMPSIA

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Introduction

Pregnancy-related hypertensive disorders are still a major global health concern for both mothers and their unborn children.

Preeclampsia is defined: systolic blood pressure (SBP) greater than or equal to 140 mm Hg, diastolic blood pressure (DBP) more than or equal to 90 mm Hg, on two occasions as a minimum four hours apart in a patient who was previously normotensive patient and the co-occurrence of one or both of the resulting new-onset conditions:

- Urine protein: creatinine ratio ≥ 30 mg/mmol.
- Additional signs of maternal organ dysfunction, such as involvement of the kidneys or the liver, neurological or hemorrhagic issues, or uteroplacental dysfunction.
- Lipid metabolic abnormalities have been identified as possible risk factors for the onset and progression of preeclampsia. These risk variables are also present in atherosclerosis, which may indicate a shared pathogenesis.

The pathophysiology and development of preeclampsia are significantly influenced by lipids and lipid metabolism, including:

- Vascular dysfunction
- Defective trophoblastic invasion
- Triggering inflammatory processes
- Driving ferroptosis

Inclusion criteria:

1. age between 20-40 years old
2. Primigravida
3. Multigravida
4. Multiple pregnancy.

Exclusion criteria:

1. Diabetes mellitus
2. Chronic kidney disease
3. Chronic liver disease
4. Chronic hypertension
5. Thyroid disorders (hypothyroidism or hyperthyroidism)
6. Obese female (BMI > 30 kg/m²).

The pregnant females under the study were subjected to the following:

1. Detailed history taking (gynecological, obstetric, medical and surgical).
2. General and abdominal examination.
3. Ultrasound assessment(US):

Routine laboratory investigations:

Assessment of total serum lipid profile (TG, TC, HDL-C, LDL-C after 12 hours fasting at 14th-16th weeks of gestations to include those with abnormal lipid profile. Cut off values are ≥ 240 , ≥ 160 , < 40 , ≥ 200 mg/dl for TC, LDL-C, HDL-C and TG respectively.

Lipid profile was measured using fully automated chemistry analyzer Dimension RxL Max (Siemens Healthineers, Germany).

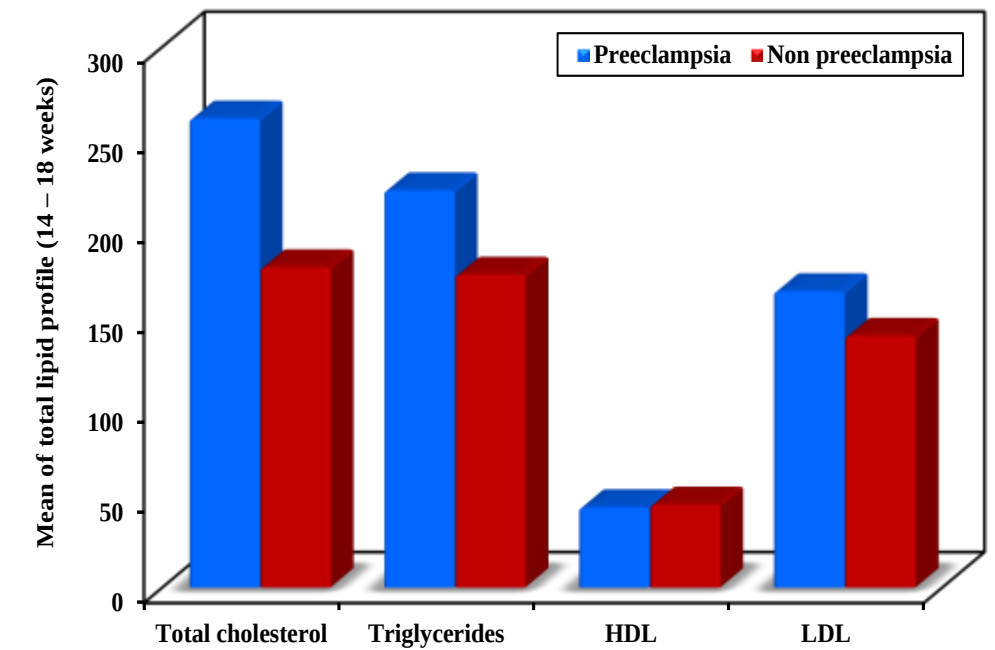


Figure: Comparison between the two studied groups according to lipid profile (14 – 18 weeks).

Results

Table: Comparison between the two studied groups according to lipid profile (14–18 weeks).

Lipid profile (14 – 18 weeks)	Preeclampsia (n = 53)	Non preeclampsia (n = 207)	t	p
Total cholesterol (mg/dl)				
Min. – Max.	127.0 – 317.0	100.0 – 240.0	9.935	<0.001*
Mean ± SD.	260.43 ± 57.84	177.8 ± 35.27		
Triglycerides (mg/dl)				
Min. – Max.	115.0 – 270.0	60.0 – 230.0	9.265	<0.001*
Mean ± SD.	220.58 ± 32.9	173.7 ± 32.42		
HDL-cholesterol (mg/dl)				
Min. – Max.	31.0 – 56.0	34.0 – 66.0	1.609	0.111
Mean ± SD.	44.55 ± 5.80	46.03 ± 6.63		
LDL-cholesterol (mg/dl)				
Min. – Max.	100.0 – 218.0	89.00 – 207.0	5.049	<0.001*
Mean ± SD.	164.5 ± 33.68	139.7 ± 24.41		

t: Student t-test

*: Statistically significant at $p \leq 0.05$

p: p value for comparing between preeclampsia and non - preeclampsia

SD: Standard deviation

Conclusion

From this study we conclude that:

- Preeclampsia has an association with hypertriglyceridemia, hypercholesterolemia and, elevated LDL-cholesterol level.
- The detection of dyslipidemia before 20 weeks of gestation is a simple, non-invasive and economical test for prediction of pre-eclampsia and would help us to recognise pregnancies at high-risk for preeclampsia even before the clinical syndrome.

Aim of the Work

The study's objective was to assess the relationship between an abnormal lipid profile in the early second trimester, between weeks 14 and 16, and the occurrence of preeclampsia.

Patients and Methods

This was a prospective observational study conducted on 260 pregnant females at gestational age 14th to 16th weeks attending obstetrics clinic of ELShatby University Hospital, after approval of the local Ethical committee and having informed written consent for every female included in the study.