Sys Rev Pharm 2020; 11(3): 752 – 755
A multifaceted review journal in the field of pharmacy
E-ISSN 0976-2779 P-ISSN 0975-8453

# Interactions between Interleukin-6 and MDA in Women with Preeclampsia

Dr. Abeer Nahy Hamdy[1], Dr.Maysoon Khaleefah Abbas[2], Dr. Maysaloon Ahmed Khudhair[3], Dr. Nihad Khalawe Tektook*[4]

[1]Lectured, Department of Gynecology & Obstertrics, College of Medicine, Tikrit University
[2]lecturer - Microbiology -Mustanisiriyah University, College of Science
[3]Assist Lecturer (MSC), Department of Family & Community, College of Medicine, Tikrit University
[4*]Assist prof., Middle Technical University, College of Medical & Health Technology, Medical laboratory techniques department, Baghdad-Iraq.

*Article History:* *Submitted: 12.03.2020* *Revised: 21.04.2020* *Accepted: 26.05.2020*

## ABSTRACT

This study is cross-sectional and conducted from March to July 2019 .in Baghdad city to compare the levels of IL-6 and MDA in healthy and pre-eclamptic pregnant wome. The number of pregnant women understudy were 60 women 30 normal pregnant women at the full term of pregnancy. Autamatic blood pressure monitoring was performed Blood pressure readings were taken at 30minute intervals. Blood were collected from each subject in this study, sera were then extracted and stored for determination of IL-6 and MDA by ELISA technique. The study showed no statistically variance between studied groups regarding patient age and gestational age at sampling and parity (P>0.05) while there was a significant difference between studied cases and the control group regarding systolic and diastolic blood pressure (P <0.05). The study presented that the highest mean level of MDA was found in pregnant women with preeclampsia (4.15±2.34 pg/ml) as compared with healthy women (1.71±0.44 pg/ml), (P<0.01). The study demonstrated that IL-6 mean was significantly elevated in pregnant women with Pre-eclampsia as compared with the control group (5.71±1.14 and 1.66 ± 0.41 pg/ml) respectively (P. value <0.01). The study showed strong positive correlation between MDA and IL-6 levels in pregnant women under preeclampsia

**Keywords:** Preeclampsia; IL-6; MDA; Pregnancy.

**Correspondence**:
Dr. Nihad Khalawe Tektook
Assist prof., Middle Technical University / College of Medical & Health Technology, Medical laboratory techniques dep. -Baghdad-iraq.
E-mail: Drnihadkhalawe@gmail.com

**DOI:** 10.31838/srp.2020.3.104



## INTRODUCTION

Elevated blood pressure in pregnancy is a condition women life, described in the beginning of elevated blood pressure and presence of albumin in urin in the last 50% of growth. Preeclampsia is traditionally viewed as an infection influencing the principal pregnancy, yet it likewise happens in multiparas, particularly if there are inclining hazard factors, for example, DM interminable elevated blood pressure , or an adjustment in spouse/partner(1-3). At the point when it emerges in the early second trimester (14 to 20 weeks), a hydatidiform mole or choriocarcinoma ought to be thought of. The accompanying two rules are basic for the determination of preeclampsia(4,5) . Where the high pressure in pregnant women leads to many conditions and conditions such as progression at birth, postpartum disorders and childbirth problems for the fetus, such as low weight and congenital deformities (6). Albumin in urine is characterized as more than or equivalent to 0.3 g protein in a planned 24-hour pee assortment. This normally connects with a urinalysis report of 30 mg/dL (1+ on dipstick) or more prominent on a perfect catch pee sample(7). Expanded degrees of oxidative pressure markers and IL-6 in pre-eclamptic ladies propose that oxidative pressure markers assume a critical job in the pathophysiology of pre-eclampsia, and that supplemental dietary cancer prevention agents may have an advantageous job in the counteraction of pre-eclampsia in ladies at high-risk for this condition [(8-10)]. The aim of this study was to compare the levels of IL-6 and MDA in healthy and pre-eclamptic pregnant women.

## MATERIAL AND METHODS

This cross-sectional study was conducted on a group of pregnant women who were attending women's advisory halls in the Baghdad hospital from tenth of March 2019 to tenth of July 2019 . The quantity of pregnant ladies understudy were 60 ladies 30 ordinary pregnant ladies at the full term of pregnancy. Hypertensive issue were characterized by characterization of The National High Blood presure Education program Working gathering on High Blood pressure in pregnancy . Twenty-four-hour autamatic pulse checking was performed Blood pressure readings were taken at 30minute spans. For patients who was admitted to the clinic ,and two readings of pulse was taken for patients who was not admitted to the medical clinic and analyzed as hypertensive issue rely upon history and assessment and circulatory strain readings that record on antenatal card in each antenatal visit. Estimation of Bp done by sphygmomanometer in sitting situation, with sleeve size fitting to patients arm boundary was utilized, and to take out a potential stressor for the patients,the visual review of pulse estimation was evacuated. Where the study included the withdrawal of blood samples from all patients and correct women in both groups, where three ml of blood was withdrawn for a while, and the blood was isolated and stored serum extracted in the freeze in order to measure the amount of IL-6 and MDA by ELISA technique

## STATISTICAL ANALYSIS

Computerized statistically analysis was performed using IBM SPSS ver 23.1 statistic program for extraction of *P.* value( < 0.05 significant).

## FINDINGS

As shown in Table 1. There was no critical contrast between contemplated cases and the benchmark group in regards to tolerant age and gestational age at examining and equality (P>0.05) while there was a noteworthy distinction between considered cases and the benchmark group with respect to systolic and diastolic circulatory strain (P <0.05).

Table 1: General properties of planned women

| Parameters (Mean±SD) | Pre-eclampsia | Control group |
|---|---|---|
| No. | 20 | 22 |
| Maternal age (yeas) | 32.2±5.9 | 32.2±6.2 |
| Gestational age | 34.1±3.2 | 35.4±6.6 |
| Parity, median (Range) | 1 (1–6) | 2 (1–6) |
| Mean SBP, mm Hg | 148.6±14.3* | 110.8±7.4 |
| Mean DBP, mm Hg | 96.6±12.9* | 69.4±8.3 |
| Maximal SBP, | 177.9±24.1* | 119.0±10.2 |
| Maximal DBP, | 118.8±12.8* | 74.7±13.3 |

The study presented that the maximum mean of MDA stayed found in pregnant women with preeclampsia (4.15±2.34 pg/ml) as compared with healthy women (1.71±0.44 pg/ml).

Table 2: MDA levels in enrolled women

| Studied group | No. | MDA (pg/ml) (Mean±SD) | T. test | P. Value |
|---|---|---|---|---|
| Preeclampsia women | 60 | 4.27±2.34 | 6.3 | 0.006* |
| Control group | 30 | 1.71±0.44 | | |

It was demonstrated that IL-6 was significantly elevated in study cases as compared with the control group (5.71±1.14 and 1.66 ± 0.41 pg/ml) respectively.

Table 3: Level of IL-6 in enrolled women

| IL-6 (pg/ml) | Pre-eclampsia | Control group |
|---|---|---|
| Mean | 5.71 | 1.66 |
| SD | 1.14 | 0.41 |
| SEM | 0.25 | 0.08 |
| N | 60 | 30 |

T. Test: 15.4 P. value: 0.001 (Significant)

The study showed strong positive correlation between MDA and IL-6 levels in pregnant women under preeclampsia (Figure 1).

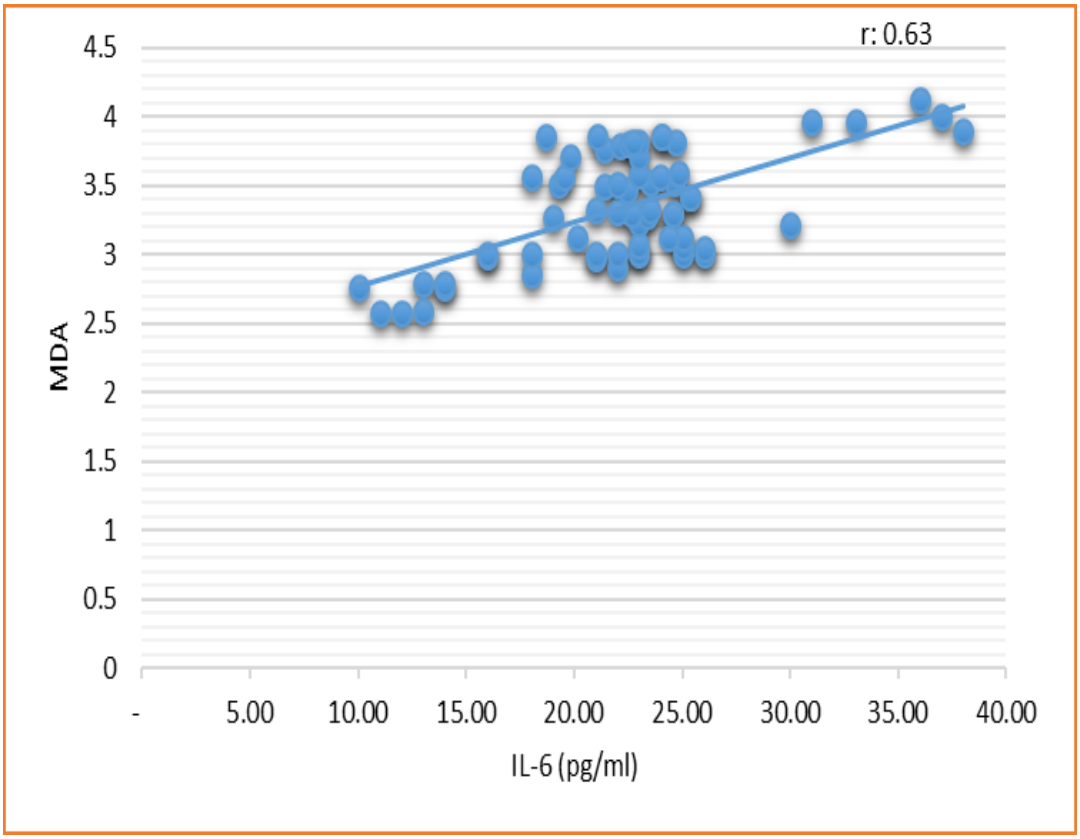


Figure 1: Correlation between MDA and IL-6 levels in pregnant women with preeclampsia.

## DISCUSSION

In the present study, IL-6 uncovered an exceptionally critical rise when recognized in ladies with preeclmsia in examination with sound benchmark group. It is the chemokine which has been required in intense contamination and inflamamtion disease (9). Sevveral study detailed a noteworthy increment in the serum centralizations of IL-6, in ladies with preeclamisa, inferred that the expanded cytokines were identified with the aggravation and numerous variables may assume a specific job in the cells harm (11,12). It was accounted for that hypertesion pregnancy is related with the creation of a wide scope of proinflammatory cytokines and chemokines, Where the high pressure in pregnant women leads to many conditions and conditions such as progression at birth, postpartum disorders and childbirth problems for the fetus, such as low weight and congenital deformities. [13,14].

Regarding MDA level, several studies indicated that patients groups had higher MDA levels compared to controls suggesting that MDA production is increased when preeclampsia was occur in pregnant women [15]. Yeni *et al*[16] demonstrated that a positive correlation between MDA and IL-6 levels since it is obscure for preeclampsia in the third trimester of pregnancy. The assessment reinforces the theory that there is sheltered brokenness in preeclampsia, with an extension in the production of expert ignitable cytokines IL-6 and TNF-an, and a compensatory (17). It was shown by an other examination that interleukin-6 treatment prompts an expanded pace of preeclampsia in pregnant ladies in the last trimester(18). since it is dubious for preeclampsia in the third trimester of pregnancy. The assessment reinforces the theory that there is immune brokenness in preeclampsia, with an extension in the production of expert inflammatory cytokines like IL-6 and oxidative pressure markers in preeclampsia (19). These outcomes may affirm that IL-6 and oxidative pressure markers plasma fixation could mirror the seriousness of endothelial harm in this gathering of females. Almost certainly, the danger of appearance and movement of some cardiovascular infections in preëclampsia patients with ultrasound fea¬tures of placental inadequacy being a lot higher compared with preëclampsia ladies without such abnormalities [20-22].

## CONCLUSIONS

It was concluded that there was a significant relation of IL-6 and MDA in occarance of preeclampsia in pregnant.

## REFERENCES

1. Cudihy D, Lee R. The pathophysiology of pre-eclampsia: current clinical concepts. J Obstet Gynaecol 2009;29:576–82.
2. Laurenti R, Jorge M, Gotlieb S. A mortalidade materna nas capitais brasileiras: algumas caracteri´sticas e estimativa de um fator de ajuste. Rev Bras Epidemiol 2004;7:449–60.
3. American College of Obstetrics and Gynecology – ACOG. Practice Bulletin Committee. Diagnosis and management of preeclampsia and eclampsia. Obstet Gynecol 2002;99:159–67.
4. NHBPEP. Report of the National High Blood Pressure Education Program Working Group on high blood

pressure in pregnancy. Am J Obstet Gynecol 2000;183:S1–22.
5. Ouyang W, Rutz S, Crellin N, et al. Regulation and functions of the IL-10 family of cytokines in inflammation and disease. Annu Rev Immunol 2011;29:71–109.
6. Powe CE, Levine RJ, Karumanchi SA. Preeclampsia, a disease of the maternal endothelium. The role of antiangiogenic factors and implications for later cardiovascular disease. Circulation 2011;123:2856–69.
7. Cabral AC, La´zaro JF, Vitral ZN. Concentrac¸a˜o se´rica materna da prote´na C reativa em gestac¸o˜es complicadas pela pre´-ecla^mpsia. RBGO 2002;24:9–13.
8. Serdar Z, Gur E, Develioglu O, Colakogullari M. Placental and decidual lipid peroxidation and antioxidant defenses in preeclampsia. Lipid peroxidation in preeclampsia. Pathophysiology 2002;9:21–5.
9. Grotto D, Valentini J, Boeira S, et al. Avaliac¸a˜o da estabilidade do marcador plasma´ tico do estresse oxidativo – malondialdeı´do. Quim Nova 2008;31:275–9.
10. Dikensoy E, Balat O, Pence S, et al. The changes of plasma malondialdehyde, nitric oxide, and adrenomedullin levels in patients with preeclampsia. Hypertens Pregnancy 2009;28:383–9.
11. Brown MA, Lindheimer MD, de Swiet M, van Assche A, Moutquin JM. The classification and diagnosis of the hypertensive disorders of pregnancy: statement from the International Society for the Study of Elevated blood pressure in Pregnancy (ISSHP). Hypertens Pregnancy 2001; 20:IX–XIV.
12. Bodnar LM, Ness RB, Harger GF, Roberts JM. Inflammation and triglycerides partially mediate the effect of prepregnancy body mass index on the risk of preeclampsia. Am J Epidemiol 2005; 162:1198–1206.
13. Walsh SW, Vaughan JE, Wang Y, Roberts J. Placental isoprostane is significantly increased in preeclampsia. FASEB J 2000; 14:1289–1296.
14. O'Brien TE, Ray JG, Chan WS. Maternal body mass index and the risk of preeclampsia: a systematic overview. Epidemiology 2003; 14:368–374.
15. Torrance HL, Krediet TG, Vreman HJ, Visser GH, Van Bel F. Oxidative stress and proinflammatory cytokine levels are increased in premature neonates of preeclamptic mothers with HELLP syndrome. Neonatology. 2008;94(2):138-42.
16. Yeni CM, Fauziah PN, Maskoen AM, Ruslami R, Mose J. Effect of Curcumin in Decreasing MDA Level in Preeclampsia-Induced Human Umbilical Vein Endothelial Cell (HUVEC). International Journal of PharmTech Research. 2017;10(2):69-73.
17. Xu Q, Fan D, Li F, Zhang Z. Influence of serum HMW adiponectin level in patients with pregnancy-induced elevated blood pressure syndrome on the occurrence of eclampsia in secondary pregnancy. Experimental and therapeutic medicine. 2017 Nov 1;14(5):4972-6.
18. Ouyang YQ, Li SJ, Zhang Q, Cai HB, Chen HP. Interactions between inflammatory and oxidative stress in preeclampsia. Elevated blood pressure in pregnancy. 2009 Jan 1;28(1):56-62.
19. Tayal D, Goswami B, Patra SK, Tripathi R, Khaneja A. Association of inflammatory cytokines, lipid peroxidation end products and nitric oxide with the clinical severity and fetal outcome in preeclampsia in Indian women. Indian Journal of Clinical Biochemistry. 2014 Apr 1;29(2):139-44.
20. Yeni CM, Fauziah PN, Maskoen AM, Ruslami R, Mose J. Effect of Curcumin in Decreasing MDA Level in Preeclampsia-Induced Human Umbilical Vein Endothelial Cell (HUVEC). International Journal of PharmTech Research. 2017;10(2):69-73.
21. Jain A, Schneider H, Aliyev E, Soydemir F, Baumann M, Surbek D, Hediger M, Brownbill P, Albrecht C. Hypoxic treatment of human dual placental perfusion induces a preeclampsia-like inflammatory response. Laboratory investigation. 2014 Aug;94(8):873-80.
22. Uzun M, Gencer M, Turkon H, Oztopuz RO, Demir U, Ovali MA. Effects of Melatonin on Blood Pressure, Oxidative Stress and Placental Expressions of TNFa, IL-6, VEGF and sFlt-1 in RUPP Rat Model of Preeclampsia. Archives of medical research. 2017;48:592e598.