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ANALYSIS OF DIFFERENT BLOOD BIOMARKERS OF ALLERGY DURING PREGNANCY IN PAKISTAN

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Abstract:
Introduction: *Pregnant ladies constitute a critical subpopulation with a hoisted danger of obesity because of over the top weight pick up. To help ideal pregnancy results, the World Health Organization (WHO) prescribed that the Institute of Medicine (IOM) create rules for weight pick up amid pregnancy.* ***Aims and objectives:*** *The basic aim of the study is to analyze the different blood biomarkers of allergy during pregnancy in Pakistan.* ***Methodology of the study:*** *This study was conducted at ANMC, Lahore during 2017 with the permission of ethical committee of department. This study was conducted to analyze the different blood biomarkers of allergy during pregnancy. For this purpose, we select the 100 pregnant women which was at different stages of pregnancy. Then we collect the blood samples of each woman for further biochemical analysis and antioxidants analysis.* ***Result:*** *Serum allergy biomarkers shows that in pregnancy women become more sensitive to allergy as compared to normal condition. The level of inflammatory biomarkers in blood is at increased level as compared to normal women. The levels of IL-6 and IL-8 were significantly higher in pregnant women.* ***Conclusion:*** *We report a positive, statistically significant association between maternal allergy biomarkers exposure and elevated cord blood concentrations of the epithelial cell derived cytokines TSLP and IL-6 and 8. Our results indicate that both GWG and diet are related to inflammatory status of pregnant women.*

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INTRODUCTION:

Pregnant ladies constitute a critical subpopulation with a hoisted danger of obesity because of over the top weight pick up [1]. It has been demonstrated that maternal obesity and inordinate gestational weight pick up (GWG) are related with unfriendly obstetric and neonatal results including unconstrained fetus removal, gestational diabetes mellitus (GDM), cesarean conveyance, preeclampsia, neonatal macrosomia, and agent and soporific entanglements [2]. To help ideal pregnancy results, the World Health Organization (WHO) prescribed that the Institute of Medicine (IOM) create rules for weight pick up amid pregnancy. In any case, the IOM suggestions on gestational weight pick up depend on pre-pregnancy BMI without mulling over various race/ethnicity, age, or existing pregnancy inconveniences [3]. Ladies with GDM are at expanded danger of maternal and fetal intricacies including preeclampsia, preterm birth, cesarean segment and conveyance of huge for gestational age (LGA) newborn children. As obesity and GDM are much of the time comorbid conditions, obesity and over the top gestational weight pick up may intensify these dangers in GDM. Since fat is an endocrine organ and collaborates with diabetes, it is conceivable that the expanded amassing of fat differentially affects perinatal results for ladies with GDM [4].

The significance of inflammation during pregnancy on maternal physiological responses and fetal programming is an important area of research. Pregnancy is considered a natural inflammatory state, as it can give rise to proinflammatory and anti-inflammatory conditions depending on the stage of gestation [5]. On the other hand, a heightened maternal inflammatory response has been associated with pregnancy complications, e.g., raised maternal high-sensitivity C-reactive protein (hsCRP) concentrations have been associated with hypertension, gestational diabetes, and premature birth. Studies have also indicated that maternal inflammation might contribute to fetal programming of obesity [6].

Aims and objectives

The basic aim of the study is to analyze the different blood biomarkers of allergy during pregnancy in Pakistan.

METHODOLOGY OF THE STUDY:

This study was conducted at ANMC, Lahore during 2017 with the permission of ethical committee of department. This study was conducted to analyze the different blood biomarkers of allergy during pregnancy. For this purpose we select the 100 pregnant women which was at different stages of pregnancy. Then we collect the blood samples of each women for further biochemical analysis and antioxidants analysis. We designed a study to associate maternal BMI and GWG with pregnancy outcomes in local women of Pakistan with biomarkers of allergy and antioxidants and examine whether these are predictive of adverse perinatal outcomes in Pakistani population.

Statistical analysis

Student's t-test was performed to evaluate the differences in roughness between group P and S. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

RESULTS:

Serum allergy biomarkers shows that in pregnancy women become more sensitive to allergy as compared to normal condition. The levels of inflammatory biomarkers in blood are at increased level as compared to normal women. The levels of IL-6 and IL-8 was significantly higher in pregnant women.

Table 01: Serum Allergy biomarkers analysis in pregnant women

Outcome (%)b	*β*(%)	95% CI	*P*	*β* (%)	95% CI	*P*
hsCRP	3	1 to 5	<0.01	3	1 to 5	<0.01
SAA	2	1 to 4	<0.01	3	1 to 4	<0.001
IL-8	−2	−3 to −0	0.02	−2	−4 to −1	<0.01
IL-6	0	−1 to 2	0.36	0	−1 to 1	0.71
Il-1β	−1	−2 to 1	0.25	−1	−3 to 0	0.16
TNF-α	1	−0 to 1	0.19	1	−0 to 2	0.11

Tables 2 show the effects of pre-pregnancy BMI and GWG on pregnancy outcomes, expressed as the odds of each outcome occurring relative to that in women of normal weight or adequate GWG, respectively.

Table 02: Effects of pre-pregnancy body mass index on pregnancy outcomes

Variables	Over weight		obese		
	AOR (95% CI)	N (%)	N (%)	AOR (95% CI)	P
Cesarean section[a]	41 (42.7)	0.165	282 (50.5)	86 (64.2)	1.95 (1.29–2.96)
PPH[a]	12 (12.5)	0.501	88 (15.8)	31 (23.1)	1.60 (0.99–2.59)
Preterm delivery[b]	3 (3.1)	0.937	19 (3.4)	2 (1.5)	0.39 (0.09–1.70)
PPROM[b]	21 (21.9)	0.153	89 (15.9)	23 (17.2)	1.05 (0.63–1.75)
GHT[c]	1 (1.0)	0.499	10 (1.8)	8 (6.0)	4.10 (1.56–10.81)
Macrosomia[c]	2 (2.1)	0.031	41 (7.3)	15 (11.2)	2.02 (1.05–3.88)
SGA[b]	3 (3.1)	0.967	17 (3.0)	3 (2.2)	0.59 (0.17–2.13)
LGA[b]	10 (10.4)	0.001	132 (23.7)	47 (35.1)	2.14 (1.40–3.26)

DISCUSSION:

Maternal, perinatal and neonatal complications are strongly associated with GDM. The frequency of GDM in China has expanded since 2000 and this has turned into a critical open issue [7]. A Chinese national review had detailed predominance of the IADPSG criteria-characterized GDM of 14.7% [8]. This occurrence of GDM is like different investigations in Asian populaces, yet higher than the rate of GDM in the United Kingdom (3.5%) and the United States (8.6%). Occurrence of GDM appears to rely upon variables, for example, ethnicity and geological areas. In 2007 through 2008, about 60% of conceptive age American ladies were accounted for to be overweight or corpulent, with the predominance of overweight or obesity announced at around 21.4% in our investigation [9].

HsCRP, as well as SAA, are acute-phase reactants (nonspecific inflammatory markers). Although largely produced by hepatocytes, hsCRP and SAA are also produced by adipocytes. IL-8 is, however, a chemokine produced by a variety of tissue and blood cells. IL-8 induces chemotaxis in target cells and phagocytosis at the site of inflammation. There is extensive evidence of a relation between weight gain and low-grade inflammation in the nongravid population[10]. In line with our results, weight gain during pregnancy has been related to maternal hsCRP levels in some, but not all, previous reports. It is generally accepted that inflammation associated with weight gain is related to secretions of proinflammatory biomarkers from adipose tissue [11]. However, there are some suggestions that low-grade inflammation may also precede weight gain, possibly by promoting adipose accumulation or indirectly through disturbances of the gut microbiota, which may influence metabolic pathways by modulating inflammation, satiety control, and extraction of calories [12]. It has also been suggested that the placenta may promote an increase in systemic inflammation and a decrease in insulin sensitivity, thereby influencing GWG. However, the reverse could also be true as maternal weight status is associated with placental size and function. Conversely, we observed an inverse association between weight gain and IL-8, indicating that low weight gain during pregnancy may also induce some aspects of inflammation [13]. The present findings are also consistent with literature from animal models reporting that in utero exposure to pollutants, including diesel and particulate matter, promotes susceptibility to asthma and allergic sensitization and induces the release of pro-inflammatory mediators, such as IL-8, from lung tissue. Maternal air pollution exposure may also stimulate placental production of pro-inflammatory cytokines and subsequently influence fetal immune system development. We therefore speculate that the observed association between NO_2 and IL-33 and TSLP is mediated by air pollution induced inflammatory responses in maternal airway tissue [14].

CONCLUSION:

We report a positive, statistically significant association between maternal allergy biomarkers exposure and elevated cord blood concentrations of the epithelial cell derived cytokines TSLP and IL-6 and 8. Our results indicate that both GWG and diet are related to inflammatory status of pregnant women.

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