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Administration of Dydrogesterone in first trimester of pregnancy will increase the level of PIGF (Placental Growth Factor)

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ABSTRACT. Early placental development can be determined by measuring placental growth factor or Placental growth factor (PIGF) through the mother's blood since the first trimester of pregnancy. The purpose of this study was to determine the effect of supplementation on the development didrogesteron placenta in pregnancy by measuring the levels of PIGF. This study is a randomized double-blind clinical trial (Randomized Controlled Clinical Trial) held at the Antenatal Clinic (ANC) at the General Hospital dr. Zainoel Abidin (RSUZA), Banda Aceh to women of reproductive age in the first trimester in RSUZA ANC checkup. Nonprobability sampling sampling with consecutive sampling. In this study there were two groups of women of reproductive age who are not in pairs is given didrogesteron group A while group B received placebo. Measurement of PIGF levels in both groups performed before and after treatment. PIGF levels prior to treatment in Group A 25.95 pg/ml while Group B 40.80 pg/ml. PIGF levels after the measurement results given didrogesteron in Group A for 4 weeks gained increasing levels of PIGF is 212.15 pg/ml, whereas in group B were given a placebo for 4 weeks was 89.60 pg/ml. Data analysis was performed using bivariate analysis between supplementation didrogesteron and PIGF levels using SPSS 17. Analysis of data for comparative analytical numerical information unpaired two groups: Group A: the results of a PIGF levels in pregnant subjects were given didrogesteron and Group B: the results of a PIGF levels in pregnant patients given placebo. Unpaired t-test results of the two groups showed that the group receiving didrogesteron have elevated levels of PIGF were significantly ($p = 0.000$ or $p < 0.05$) compared with the placebo group were only given alone. From these results it can be concluded that the administration can trigger didrogesteron PIGF levels in women of reproductive age.

Key words: Dydrogesterone, Folic acid, PIGF, Reproductive aged woman.

Introduction

Currently, there are more than 80% incidence of spontaneous miscarriages occurs at less than 12 weeks gestation. Previous studies also shows that the incidence of spontaneous miscarriages occurs in approximately 15% of all couples who is trying to conceive. It means that at least 1 of 6 couples who has successfully conceive is going to have a miscarriage. However 40-50% incidence of miscarriage causes are not yet known. Lately, there is a popular suggestion concerning a possible link between the incidence of miscarriage with maternal immune response to fetal antigen. Maternal immune system response against fetal antigens can occur because fetus and placenta consist of paternal antigens. Progesterone can induce tolerance of maternal immune system to the fetal paternal antigen. Progestin use during first trimester of pregnancy has been widely used either by physicians or midwives. However, routine progestin use in normal pregnant women has never been investigated before. Placental Growth Factor (PIGF) is a homodimer glycoprotein that is homologous to Vascular Endothelial Growth Factor (VEGF) produced by trophoblastic cells. Therefore, currently PIGF commonly used as an indicator on placental development and can also being used as predictor on obstetric complications related to placental disorders such

as pre-eclampsia and intra-uterine growth retardation (IUGR). This study is trying to observe the effect of progestin treatment during first trimester to normal pregnant women on placental development that will be measured by the level of PIGF.

Materials and Methods

A randomized controlled clinical trial was done to women who were having routine antenatal care at 6-8 weeks of gestation, at RSU Zainoel Abidin (RSUZA), Banda Aceh, from April to November 2012. Study participants have been divided randomly into group A (Dydrogesterone 2x10 mg and Folic acid 1x5 mg for 4 weeks), and group B (Folic acid 1x5 mg for 4 weeks). Blood specimen was taken before drug administration and at 18th weeks of gestation for PIGF measurement.

Result and Discussion

40 pregnant women were recruited for this study. The mean age between group A and B is 28.60 vs. 27.85, which is not statistically significant ($p > 0.05$). The mean number of pregnancy between group A and B is 2.35 vs. 2.15, which is not statistically significant ($p > 0.05$). The mean number of parity between group A and B is 1.35 vs. 1.15, which is not statistically significant ($p > 0.05$). The mean of gestational age between group A and B is 6.85 vs. 7.25 weeks, which is not statistically significant ($p > 0.05$). The mean body weight between group A and B is 58.95 vs. 56.85 kilogram, which is not statistically significant ($p > 0.05$).

Table 1. Data on research population based-group.

Indicator	Group A	Group B	P value
Age (years)	28.60 (20-40)	27.85 (20-37)	0,659 ($p>0.05$)
Gravida (no. Of pregnancy)	2.35 (1-5)	2.15 (1-5)	0.649 ($p>0.05$)
Parity (no. Of live child)	1.35 (0-4)	1.15 (0-4)	0.649 ($p>0.05$)
Gestational Age (weeks)	6.85 (6-8)	7.25 (6-8)	0.202($p>0.05$)
Weight (Kg)	58.95 (38-80)	56.85 (40-72)	0.468 ($p>0.05$)

The mean levels of PIGF between each groups before medication shows no significant difference 25.95 vs. 40.80 pg/mL ($p = 0091$ or $p > 0.05$). The mean levels of PIGF in group A after receiving medication is 212.15 pg/mL, which shows an elevation of 186.20 pg / mL. The results of a paired t test for PIGF levels in group A before and after treatment shows significant difference ($p = 0.000$ or $p < 0.05$). The mean levels of PIGF in group B after receiving medication is 89.60 pg/mL, which shows an elevation of 48.8 pg/mL. The results of a paired t test for PIGF levels in group B before and after treatment shows significant difference ($p = 0.000$ or $p < 0.05$). Group A shows higher increase on PIGF level increase compared to group B after medication (186.20 vs. 48.80 pg/mL), and the difference on PIGF

level after being treated between each group shows significant difference ($p = 0.000$ or $p < 0.05$).

Table 2. Data on PIGF level between each group before and after treatment

	Pre	Post	P value
Group A	25.95	212.15	0.000 ($p < 0.05$)
Group B	40.80	89.60	0.000 ($p < 0.05$)

Table 3. Data on PIGF level increase after treatment

	Group A	Group B	P value
The level of increase on PIGF level	186.20	48.80	0.000 ($p < 0.05$)

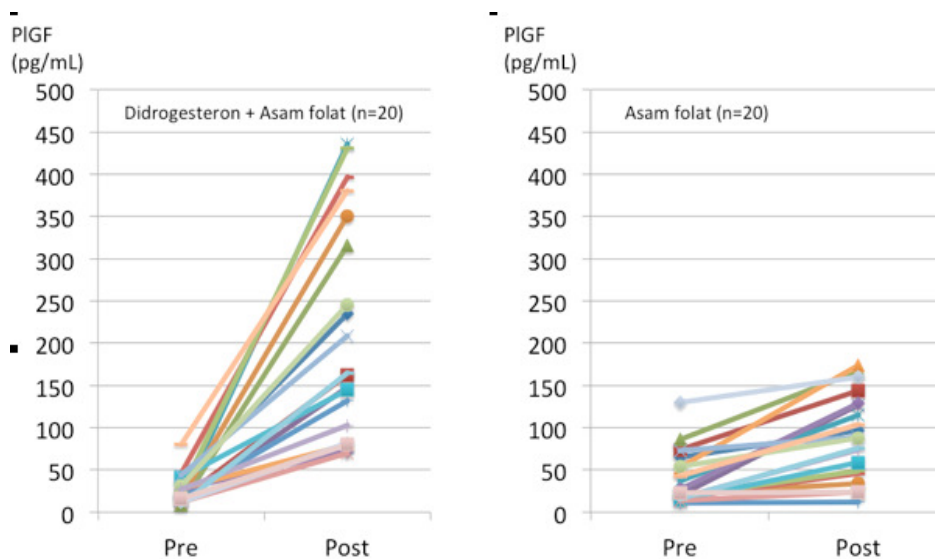


Figure 1. Individual changes on PIGF level between each group before and after treatment

Conclusion

This study demonstrated that the administration of Dydrogesterone during first trimester of pregnancy in normal pregnant women can induce higher PIGF level in 18th weeks of gestation.

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