A STUDY TO EVALUATE PLACENTAL AND FOETAL WEIGHT IN DIFFERENT GRADES OF TOXEMIA OF PREGNANCY

INTRODUCTION:
The placenta is a unique organ, short lived by design. Its existence is vital for the persistence of human embryo/foetus in the intra uterine environment. The placenta performs variety of functions, extending from anchoring the fertilized ovum, preventing its rejection by the maternal immune system to permit the transport of nutrients and wastes between the mother and the embryo/foetus. (Emin m et al.,2010). Structural and functional instability of placenta arouses a considerable interest, as this may be the only yardstick to measure adequacy of the foetal environment. Hypertensive disorders generating complications during pregnancy (Toxaemia of pregnancy) which are common and forming deadly characters along with haemorrhage and infection. Maternal hypertension (toxaemia of pregnancy) is diagnosed in 6-10% of all deliveries which is related with 22% of perinatal foetal deaths and 30% of maternal death. The present study has done in 100 pregnant mothers, divided into four groups 20 cases of mild preeclampsia, 20 cases of severe preeclampsia, 20 cases of Eclampsia, 40 cases of control (Normotensive) pregnant women admitted in Department of Obs and Gynae, Rama Medical College, hospital and research Centre, Mandhana, Kanpur, U.P(India). The placentae were weighed with a standard weighing machine. The fetoplacental weight ratio was higher in cases of mild and severe preeclampsia when compared with control group but the difference is insignificant.

KEYWORDS:
Preeclampsia, Eclampsia, Placenta weight, Foetal weight, fetoplacental weight ratio.

ABSTRACT
The placenta is a unique organ, short lived by design. Its presence is vital for the survival of human embryo/foetus in the intra uterine environment. The placenta performs variety of functions, extending from anchoring the fertilized ovum, preventing its rejection by the maternal immune system to permit the transport of nutrients and wastes between the mother and the embryo/foetus. (Emin m et al.,2010). Structural and functional instability of placenta arouses a considerable interest, as this may be the only yardsticks to measure adequacy of the foetal environment (Benrischke k and Kauffmann p 1990). As the placenta is the direct connection between mother and foetus, the investigation of placenta gives a clear idea of what had happened with it, when it was in the mother’s womb and what is going to happen with the foetus in future (Burke CJ and Tannenberg AE 1995).

Hypertensive disorders (Toxaemia of pregnancy) are generating complications during pregnancy which are common and forming fatal characters along with haemorrhage and infection (ACOG 2002). Preeclampsia (PE) is a disease occurs during the pregnancy which is specified by the commencement of hypertension and the presence of protein in the urine in large amount (Eiland, Elosha, Nzerue, et al.,2012). Pre-eclampsia is considered if one or more of the following criteria are present: Blood pressure140 mm Hg or higher systolic or 90 mm Hg or higher diastolic after 20 weeks of gestation in a woman with previously normal blood pressure. Proteinuria: 0.3g or more of protein in a 24-hours urine collection (usually correspond with 1+ or greater on a urine dipstick test) known as mild preeclampsia (ACOG 2002). When systolic blood pressure of 160 mm of Hg or higher or 110mm of Hg or higher diastolic on two occasions at least six hours apart in a woman on bed rest, it is associated with proteinuria and oliguria, cerebral or visual disturbances, pulmonary oedema of cyanosis, epigastric pain or right upper quadrant pain, impaired liver function, thrombocytopenia, foetal growth restriction condition is known as severe preeclampsia. Eclampsia considered by presence of seizures during the pregnancy along with the signs and symptoms of severe preeclampsia (ACOG 2002).

Toxaemia of pregnancy is an important reason for large number of maternal deaths and there of foetal deaths. Maternal hypertension (toxaemia of pregnancy) is diagnosed in 6-10% of all deliveries which is associated with 22% of perinatal foetal deaths and 30% of maternal death (Fernando arias 2000).

Perinatal outcome powerfully influenced by gestational age and the severity of hypertension as expressed by the need for antihypertensive treatment, irrespective if the underlying syndrome preeclampsia and eclampsia is associated with degree of fetal injury. The main impact on the fetus is under nutrition as a result of uto- placental vascular insufficiency, which leads to growth retardation and low birth weight. Long term follow-up studies have demonstrated that babies who suffered intra uterine growth retardation are more likely to develop diabetes mellitus, hypertension, coronary artery disease in adult life due to catecholamine released from the mother at the time gestational period (Alicia M and Lapidus MD 2011, Perloff D 1998).

MATERIALS AND METHODOLOGY
The present study has done in 100 pregnant mothers, divided into four groups 20 cases of mild preeclampsia, 20 cases of severe preeclampsia, 20 cases of Eclampsia,40 cases of control (Normotensive) pregnant women admitted in Department of Obs and Gynae, Rama Medical College, hospital and research Centre, Mandhana, Kanpur, U.P(India). The placentae were weighed with a standard weighing machine. The fetoplacental weight ratio was higher in cases of mild and severe preeclampsia when compared with control group but the difference is insignificant.

All the cases and controls pregnant women have filled written consent form for willing to give their samples for this study. Inclusion criteria: Antenatal mothers diagnosed with toxemia of pregnancy with their blood pressure of 140/90 mm of Hg or more in to case group. Standard questionnaire was prepared to get the past and present medical/surgical history of cases and controls. In questionnaires, several parameters were taken such as history of renal, liver failure, seizures, mother who has the hypertensive disorder before the pregnancy and other medical problems. The permission has taken from the institution ethical committee prior to conduction of this study. The placenta with cord and membranes were collected and examined immediately after the delivery for abnormality of the umbilical cord and membranes. The amnion and chorion were trimmed from all placenta. The umbilical cord was cut at a distance of 10 centimeters from the site of insertion. Placentae were washed in slow running tap water, dried with the help of blotting paper. The placenta along with the umbilical cord were given code numbers and were preserved in 10% formalin solution. The placentae were weighed with a standard weighing machine. The fetal weight was noted from the case records provided by the department of obstetrics and gynecology.
RESULTS:
The study sample was 100. Distributed in to 20 samples of mild preeclampsia, 20 samples of severe preeclampsia, 20 samples of eclampsia and 40 cases of normotensives mothers. For comparing the placenta, fetal weight and fetoplacental weight ratio to determine its increasing or decreasing trends, the mean value for each group was determined.

TABLE.1 Comparison of placenta, fetal weight and fetoplacental weight ratio in between control and case with sub groups.

<table>
<thead>
<tr>
<th>Groups</th>
<th>No of samples</th>
<th>Placental weight mean±S.Dev (Grams)</th>
<th>Fetal weight mean±S.Dev (kg)</th>
<th>Fetoplacental weight ratio mean±S.Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Control</td>
<td>40</td>
<td>445.15±101.0</td>
<td>2.81±0.42</td>
<td>6.54±1.32</td>
</tr>
<tr>
<td>II. Mild PET</td>
<td>20</td>
<td>381±96.9</td>
<td>2.57±0.61</td>
<td>6.99±1.49</td>
</tr>
<tr>
<td>II. Severe PET</td>
<td>20</td>
<td>298±68.80</td>
<td>2.08±0.60</td>
<td>7.41±2.40</td>
</tr>
<tr>
<td>IV. Eclampsia</td>
<td>20</td>
<td>258±93.4</td>
<td>1.89±0.74</td>
<td>6.38±1.52</td>
</tr>
</tbody>
</table>

DISCUSSION:
Mohanty et al (1989) reported in that mean placental, foetal weight and fetoplacental weight ratio were less in preeclampsia and eclampsia groups when compared with control group and also noticed placental, fetal weight and fetoplacental weight ratio reduced significantly as the severity of the disease increases. (Table.5)

Das et al (1996) reports also suggested that placental, fetal weight and fetoplacental weight ratio reduces significantly as the severity of the disease increases. (Table.5) In their study mentioned majority of birth weights in severe PET and eclampsia groups were ~2.5kg due to the very low placental weight leads to intra uterine growth retardation (IUGR).

Summit Gupta et al (2013) study also revealed that placental, birth weights were significantly reducing in mild, severe preeclampsia groups when compared with control group.

Table 5: Comparison of the mean placental, fetal weight and fetoplacental weight ratio between present and previous studies.