

# To Determine Frequency of Intrauterine Growth Restriction in Pregnancy Induced Hypertension

SIDRA MAJEED, ASIFA KHAWAJA, N .A TUNIO, F. UNAR, FIZA ALI KHAN  
Department of Obs & Gynae, Gambat Medical College Gambat District Khairpur (MIRS)  
Correspondence to Dr. Asif Khawaja, Assistant Professor Email: drasifakhuwaja@gmail.com,

## ABSTRACT

**Aim:** To determine frequency of intrauterine growth restriction in gestational hypertension at tertiary care hospital.

**Study Design:** cross-sectional study.

**Place and Duration of study:** Department of Gynae / obs Peoples Medical University & Hospital Nawabshah, during Jan 2016 to June 2017

**Methods:** Total 133 patients were included in this study. All the multiparous women presented with pregnancy induced hypertension were included in this study and were assessed by ultrasound examination. After taking detail history, proforma were filled accordingly.

**Results:-**The average age of the patients was  $30.95 \pm 3.64$  years. Frequency of IUGR in gestational hypertension was found in 25.56% (34/133).

**Conclusion:** We conclude that pregnancy induced hypertension plays a significant role in IUGR. Unluckily no treatment is available to prevent and reverse the pathophysiologic events associated with pre-eclampsia, and also no effective treatment of intrauterine growth restriction is currently available. Hence early recognition of high risk women having pre-eclampsia and providing intensive antenatal care will be beneficial.

**Keywords:** Intrauterine fetal growth restriction, Pregnancy induced hypertension, pre-eclampsia.

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## INTRODUCTION

Intrauterine growth restriction is defined as the fetus failed to achieve its inherent growth potential. IUGR fetuses are at greatest risk of perinatal morbidity and mortality. This risk can be reduced with proper fetal surveillance and timely diagnosis and decision to deliver patient<sup>1</sup>. In spite of recent advance in antenatal care, hypertensive disorders is the main cause of maternal and fetal morbidity and mortality. PIH is defined as raise of blood pressure more than 140/90 mm of Hg on two occasions 6 hours apart, after 20th weeks of pregnancy in association with proteinuria and/or edema. Screening for pre-eclampsia and early detection may contribute vigilant antenatal surveillance and suitable timing of fetal delivery to avoid noxious sequelae to mother and baby<sup>2</sup>.

IUGR infants are those whose weight is less than 10 percentile for age<sup>3</sup>. They are also at risk of physical, mental and neurological impairment in comparison with appropriate gestational age<sup>4,5</sup>. IUGR is observed in 23.9% fetuses and approximately-30 million babies suffer from IUGR per year worldwide<sup>6</sup>. Prevalence of SGA infants is 10–25% in Pakistan<sup>7</sup> However females with chronic hypertension, PIH, pre-eclampsia are at increased risk of poor fetal growth<sup>8,9</sup>. However conclusively an association between pregnancy-induced hypertension and poor fetal growth exactly is not established<sup>10</sup>.

In 70% of fetuses with IUGR born to mothers have raised blood pressure. Incidence of IUGR is increasing with obesity and duration of hypertension. If hypertension is associated with proteinuria, IUGR risk is also increased. The uteroplacental hypo perfusion is initial point of pathophysiology to IUGR and maternal symptoms<sup>3</sup>. Exact etiology of pre-eclampsia and IUGR is not known, but both entities are characterized by defective placentation leading

to inadequate uteroplacental perfusion and decreased oxygenation. Normal placenta has trophoblastic invasion of spiral arteries, which cause reversible changes in arterial wall architecture. Physiological trophoblastic invasion starts from 8 weeks of pregnancy and is completed by 18 to 20 weeks<sup>11</sup>. Uterine artery Doppler and serum markers of abnormal placentation can recognize women at risk of preeclampsia and IUGR, even in first trimester of pregnancy<sup>12</sup>. Single measure of fetal size, amniotic fluid index, resistance of umbilical artery are poor predictors of IUGR<sup>13</sup>. Nevertheless growth rapidity of the fetal abdomen is beneficial measured during serial monitoring<sup>14</sup>. It's important to accurately recognize the growth restricted fetuses before delivery to reduce the incidence of intrapartum fetal death by serial monitoring and expediting deliveries<sup>15,16</sup>.

## MATERIALS AND METHODS

This study was conducted at the Department of gynecology obstetrics peoples Medical College Nawabshah. After taking history regarding age, parity, hypertension, special investigation series of ultrasound abdomen to assess biparital diameter (BPD), femur length (FL), abdominal circumference (AC), head circumference (HC) and amount of liquor for growth of fetus was done. Proforms attached was filled accordingly. After collection of data the analyses was conducted by using Statistical Package for Social Science (SPSS) software, Version 15. Mean and standard deviation was calculated for quantitative variables like age, gestational age and parity. Frequency and percentages was computed for intrauterine growth restriction. Effect modifier like age, gestational age and parity was controlled by stratification using Chi test < 0.05 was taken as significant.

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**RESULT**

Total of 133 multipara antenatal hypertensive mothers after 20 weeks of gestational age were assessed on ultrasound. The age ranges from 25 to 40 years with the average age of 30.95±3.64years. Rate of IUGR was not significant among different age groups as shown in table 1.IUGR was also assessed regarding the gestational age and parity. The rate of IUGR was also not significant with gestational age and parity as shown in table 2 and 3 respectively

Table 1: Frequency of intrauterine growth restriction in pregnancy induced hypertension with respect to age groups (n-133)

Age group (years)	Intrauterine Growth Restriction		Total
	Yes (n=34)	No (n=99)	
5 to 30	15(19.5%)	62(80.5%)	77
31 to 35	12(31.6%)	26(68.4%)	38
36 to 40	7(38.9%)	11(61.1%)	18

Chi-Square=3.90; p=0.142

Table 2: Frequency of intrauterine growth restriction in pregnancy induced hypertension with respect to gestational age (n-133)

Gestational age(weeks)	Intrauterine Growth Restriction		Total
	Yes (n=34)	No (n=99)	
≤28	15(28.8%)	37(71.2%)	52
28 to 30	7(21.9%)	25(78.1%)	32
>30	12(24.5%)	37(75.5%)	49

Chi-Square=0.55; p=0.75

Table 3: Frequency of intrauterine growth restriction in pregnancy induced hypertension with respect to parity

Parity	Intrauterine Growth Restriction		Total
	Yes (n=34)	No (n=99)	
1-2	25(22.2%)	67(72.8%)	92
2-5	9(22%)	32(78%)	41

Chi-Square=0.407; p=0.52

**DISCUSSION**

Intrauterine Growth Restriction (IUGR) fetuses are those having birth weight < 10th centile with gestational age<sup>17</sup>. Study carried out at Agha Khan University Hospital Karachi comprised of 206 subjects evaluated for suspected intrauterine growth restriction ,108 out of 206 subjects shows positive imaging while 40 were false positive and 20 were false negative. IUGR was seen in 22 subjects with oligohydramnios with amniotic fluid index below 5<sup>th</sup> percentile out of 108<sup>18</sup> while one study conducted at Jinnah hospital Lahore represents that out of 200 patients 46 cases (23%) were growth restricted<sup>19</sup>.

In our study we included total 133 multipara antenatal mothers after 20 weeks of gestational assess on ultrasound presented with hypertension. Most of the patients were 25 to 35 years of age, The average age of the patients was 30.95±3.64 years. Young age at time of pregnancy is a risk factor seen in study by Jamal *et al* in Pakistan and Ferraz *et al* in Brazil.<sup>[20,21]</sup>

Taj Muhammad *et al*<sup>22</sup> relation was found between PIH and primy parity . Primi parity was also a significant factor for IUGR/SGA at variable level. Same risk factors observed by Fikree *et al*<sup>17</sup> and Thompson *et al*<sup>23</sup>. In contrast to this in our study, IUGR was not significant with gestational age, gravid and parity .

Other study conducted by Attiya Ayaz total no of 73 cases of preeclampsia were recorded in study decreased

APGAR score was present in 33 cases due to hypertension in pregnancy<sup>24</sup>. In our study out of 133 women, occurrence of IUGR/SGA in gestational hypertension was found in 25.56%.

Haelterman *et al*<sup>25</sup> determined risk of intrauterine growth restriction is increased in chronic hypertension

**CONCLUSION**

We concluded that pregnancy induced hypertension plays a significant role in intrauterine growth restriction. Hypertensive disorder is complication of pregnancy and is associated with maternal and fetal complications and increased risk of peri-natal morbidity and mortality. Unfortunately, there is no treatment that effectively reverses the pathogenesis of pre-eclampsia, and also no significant treatment of intrauterine growth restriction is available. So that the early diagnosis of women having gestational hypertension, timely decision and the provision of serial antenatal monitoring may be beneficial.

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