To determine frequency of intrauterine growth restriction in pregnancy induced hypertension.

Fozia Unar[1], Abdul Malik Sangri[2], Bushra Noor khuhro[3], Zahoor Hussain Bheelar[4], Kulsoom Azad Lashari[5]

ABSTRACT

Objectives: To determine frequency of intrauterine growth restriction in gestational hypertension.

Methods: This cross sectional study was conducted indepartment of obstetrics and Gynecologykhairpur medical college Khairpur Mirs, sindh,fromDated 01st August 2019 to 30July 2019.

Total patients 133 multipara antenatal mothers after 20 weeks of gestational assess on ultrasound presented with hypertension were included in the study .Detail history was taken and filled in proforma accordingly.

Results:-The average age of the patients was 30.95±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. Hypertensive disorders of pregnancy are common medical problem andare associated with significant maternal and fetal complications. Unluckily no treatment is available to prevent and reverse the pathophysiology events associated with preeclampsia, and also no effective treatment of intrauterine growth restriction is currently present.Therefore early recognition of high risk women having preeclampsia and the providing intensive antenatal care will be beneficial.

Key Words: Intrauterine fetal growth restriction, Pregnancy induced hypertension, preeclampsia.

1. Senior Registrar, Department of Obse and Gynae Lady willingdon Hospital, Khairpur Medical College Khairpur Mirs
2. Associate Professor ,Surgical Department, Khairpur Medical College Khairpur Mir's Sindh Pakistan
3. Assitant Professor, Department of Gynae and Obstetrics, Khairpur Medical college Khairpur Mirs
4. Assitant Professor, Surgical Department, Khairpur Medical College Khairpur mirs
5. Professor of Department of Gynae and Obstetric, Khairpur Medical college Khairpur Mirs

Correspondence : Fozia Unar (Senior Registrar, Department of Obbs: and Gynae Lady willingdon Hospital, Khairpur Medical College Khairpur mirs

Email: drfoziaunar@gmail.com

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. [1]. Hypertensive disorders are main cause of maternal and fetal morbidity and mortality Inspite of recent advances in antenatal care. 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 preeclampsia and early detection may grant vigilant antenatal surveillance and suitable timing of fetal delivery to avoid noxious sequelae to mother and baby[2].

IUGR infants are those whose weight is less than 10 percentile for age. In 70% of fetuses with IUGR born to mothers have raised BP.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 [3].Study don at Agha Khan University Hospital Karachi IUGR was 22%. [4] study conducted at Jinnah hospital Lahore out of 200 patients 46 cases (23%) were growth restricted [5] and another study conducted by Attiya Ayaz was reported IUGR present in 9.5% of cases due to hypertension in pregnancy [6].

Exact etiology of preeclampsia 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. [7]Uterine artery Doppler and serum markers of abnormal placentation can recognize women at risk of preeclampsia and IUGR, even in first trimester of pregnancy [8]. Single measurement of fetal size, amniotic fluid index and resistance of umbilical artery are poor predictors of IUGR [9]. Nevertheless growth rapidity of the fetal abdomen is beneficial measured during serial monitoring [10]. 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 [11,12].

The rationale of this study is to see the occurrence of intrauterine growth restriction in gestational hypertension at tertiary care hospital on the basis of regional variations, make early diagnosis, timely interventions and treatment strategies to be taken to reduce perinatal morbidity and mortality.

Methods:This cross sectional study was performed in the Department of gynaecology and obstetricsKhairpur Medical College Khairpur Mirs from.The study was performed after the permission of ethical committee of hospital and written informed consent for the study was obtained from the patient whofulfilledthe inclusion criteria. All patients take detail history regarding age, parity, hypertension and special investigation series of ultrasound abdomen ,assess biparital diameter (BPD), femur length (FL), abdominal circumference (AC), head circumference (HC) and amount of liquor for growth of fetus was done. Proforma attached was filled accordingly. The sample calculation was done using the Raosoft software for "Sample size calculation" by using the proportion of (AttiyaAyaz was reported IUGR present in 9.5% of cases due to hypertension in pregnancy)[6] with 95 % confidential interval and 5 % of margin of error , the sample size stands to be n = 133.SAMPLING TECHNIQUE: Non-Probability consecutive.

After collection of data analyses was done by using Statistical Package for Social Science (SPSS) software, Version 17. 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.

Occurrence of IUGR in pregnant patients with hypertension was found in 25.56% (34/133) as shown in figure 1. . A total of 133 multipara antenatal mothers after 20 weeks of gestational assess on ultrasound presented with hypertension were included

in the study. Most of the patients were 25 to 35 years of age as presented table 1. The average age of the patients was 30.95±3.64 years similarly mean gestational age and parity of the patients is also shown in table 2 and table 3.

Frequency of intrauterine growth restriction in pregnancy induced hypertension was found in 25.56% (34/133) as shown in figure 1. Rate of IUGR was not significant among different age groups as shown in table 1. Similarly rate of IUGR was also not significant with gestational ageand parity as shown in table 2 and 3 respectively.

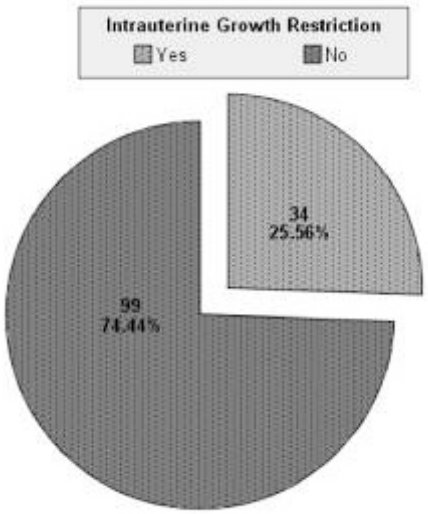

Table 1. Frequency of intrauterine growth restriction in pregnancy induced hypertension N=133

Age Groups (Years)	INTRAUTERINE GROWTH RESTRICTION		Total
	Yes n=	No n=	
35 to 30 Years	15(19.5%)	62(80.5%)	77
31 to 35 Years	12(31.6%)	26(68.4%)	38
36 to 40 Years	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 withrespect to gestational age

Gestational Age (Weeks)	INTRAUTERINE GROWTH RESTRICTION		Total
	Yes n=	No n=	
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 withrespect to parity

Parity	Intrauterine growth restriction		Total
	Yes N=34	No N=99	
1 to 2	25(27.2%)	67(72.8%)	92
2 to 5	9(22%)	32(78%)	41

Chi-square=0.407; p=0.52

DISCUSSION:

Intrauterine Growth Restriction (IUGR) fetuses are defined birth weight < 10th centile with gestational age[13]. IUGR Fetuses or Small for gestational age (SGA) ishigh riskfor perinatal morbidity and mortality. They are also at risk of physical, mental and neurolgical impairment in comparisons with appropriate gestational age.[14,15] IUGR is observed in 23.9% fetuses and approximately30 million babies suffer from IUGR per year worldwide. [16]Prevalence of SGA infants is 10–25% in Pakistan[17]However females with chronic hypertension ,PIH ,preeclampsia are at increased risk of poor fetal growth,[18,19] However conclusively an association between pregnancy-induced hypertension and poor fetal growth exactly is not estabilished.[20]

In our study we included total of 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 also study by Jamal *et al* in Pakistan and Ferraz*et al* in Brazil.[21,22]Taj Muhammad et al[23] relation was found between PIH and primy parity . Primiparity was also a significant factor for IUGR/SGA at variable level. Same risk factors observed by Fikreeet al[17] and Thompson et al[24] In contrast to this in our study, IUGR was not significant with gestational age, gravid and parity.

Hypertensive disorders classified in pregnancy are, gestational hypertension, chronic hypertension preeclampsia, eclampsia, and superimposed preeclampsia on chronic hypertension.However pathogenesis, diagnosis prognosis, and management is different for all types of hypertention.[18,19] Haelterman et al,[25] determined risk of intrauterine growth restriction is increased in chronic hypertension. In our study out of 133 women, occurrence of IUGR/SGA in gestational hypertension was found in 25.56%.

CONCLUSION:

We concluded that pregnancy induced hypertension plays a significant role in intrauterine growth restriction. Hypertensive disorder is complication of pregnancy and is associatedwith maternal and fetal complications and increased risk of perinatal morbidity and mortality. Unfortunately, there is no treatment that effectively reverses the pathogenesis of preeclampsia, and also no siginificant treatment of intrauterine growth restriction is available. Early diagnosis of women having gestational hypertention ,timelydecision and the provision of serial antenatal monitoring may be benificial.

REFERNCES:

1. Zafar H, Naz M, Fatima U, Irshad F. Frequency of IUGR in pregnancy induced hypertension. J University Med Dent Coll. 2012;3(2):8-13.
2. Puri MS, Deshpande H, Kohli S, Sharma K, Singhania S. A study of uterine artery colour doppler at 20-24 weeks gestation as a predictor of pregnancy induced hypertension and intra uterine growth restriction from industrial town in western India. Rese J Pharma Biol Chemical Sci. 2013;4(1):698-705.
3. Jasovic-Siveska EI, Jasovic VI. Real time ultrasound in the detection of intrauterine growth retardation in preeclampsia. Bratisl Lek Listy. 2008;109(9):405-11.
4. Burhan D, Khan A. Ultrasound in diagnosis and management of

intrauterine growth retardation. J Coll Physician Surg Pak. 2004;14:601-4.
5. Khanum Z, Malik AS. Clinical assessment: a screening tool for IUGR. Ann King Edward Med Coll. 2001;7:32-4.
6. Ayaz A, Muhammad T, Hussain SA, Habib S. Neonatal outcome in pre-eclamptic patients. J Ayub Med Coll Abbottabad. 2009;21(2):53-5.
7. Bujold E, Roberge S, Lacasse Y, Bureau M, Audibert F, Marcoux S, et al. Prevention of preeclampsia and intrauterine growth restriction with aspirin started in early pregnancy. Obstet Gynecol. 2010;116:402–14.
8. Cnossen JS, Morris RK, ter Riet G, Mol BW, van der Post JA, Coomarasamy A, et al. Use of uterine artery Doppler ultrasonography to predict pre-eclampsia and intrauterinegrowth restriction: a systematic review and bivariable meta-analysis. CMAJ. 2008;178:701–11.
9. Owen P, Khan KS, Howie P. Single and serial estimates amniotic fluid volume and umbilical artery resistance. Ultrasound Obstet Gynaecol. 1999;13:415-9.
10. Owen P, Khan KS. Fetal growth velocity in the prediction of intrauterine growth retardation in a low risk population. Br J Obstet Gynaecol. 1998;105.
11. Gupta LM, Gaston L, Chuhan SP. Detection of fetal growth restriction with preterm severe preeclampsia: experience at two tertiary centres. Am J Perinatol. 2008;25(4):247-9.
12. Jain K, Kavi V, Raghuveer CV, Sinha R. Placental pathology in pregnancy–induced hypertension (PIH) with or without intrauterine growth retardation. Indian J Pathol Microbiol. 2007;50(3):533-7.
13. Cochran WD, Lee KG. Assessment of the newborn. In: Cloherty JP, Eichenwald EC, Stark AR. Manual of eonatal care. Philadelphia: Lippincott Williams & Wilkins; 2004. p. 49–54.
14. Allen MC. Developmental outcome and follow-up of small-forgestational infants. Semin Perinatol. 1984;8:123–56.
15. Fitzhardinge PM, Steven EM. The small-for-date infant. II. Neurological and intellectual sequelae. Pediatrics. 1972;50:50–7.
16. Kleijer ME, Dekker GA, Heard AR. Risk factors for intrauterine growth restriction in a socio-economically disadvantaged region. J Matern Fetal Neonatal Med. 2005;18:23–30.
17. . Fikree FF, Berendes HW, Midhet F, Souza R, Hussain R. Risk factors for intrauterine growth retardation: results of a community-based study from Karachi. J Pak Med Assoc. 1994;44:30–4.
18. National High Blood Pressure Education Program Working Group Report on High Blood Pressure in Pregnancy. Consensus report. Am J Obstet Gynecol. 1990;163:1689-712.
19. Cunningham FG, MacDonald PC, Gant NF. Williams' obstetrics. 18th ed. Norwalk (CT): Appleton & Lange; 1989. p. 653-94.
20. Misra DP. The effect of the pregnancy-induced hypertension on fetal growth: a review of the literature. Paediatr Perinat Epidemiol. 1996;10:244-63.

21. Jamal M, Khan N. Maternal factors associated with low birth weight. J Coll Physicians Surg Pak. 2003;13:25–8.
22. Ferraz EM, Gray RH, Cunha TM. Determinants of preterm delivery and intrauterine growth retardation in North-East Brazil. Int J Epidemiol. 1990;19:101–8.
23. Muhammad T, Asmat Ara Khattak, Shafiq-ur-Rehman, Khan MA, Khan A, Khan MA.Maternal factors associated with intrauterinegrowth restriction.J Ayub Med Coll Abbottabad. 2010;22(4):256.
24. Thompson JMD, Clark PM, Robinson E, Pattison NS, Glavish N, Wild CJ, *et al*. Risk factors for small-for-gestational-age babies: the Auckland birthweight collaborative study. J Paediatr Child Health. 2001;37:369–75.
25. Haelterman E, Breart G, Paris-Liado J, Dramaix M, Tchobrousky C. Effect of uncomplicated chronic hypertension on the risk of small-for-gestational age birth. Am J Epidemiol. 1997;145:689-95.