

CLINICAL ASSESSMENT OF INTRAUTERINE GROWTH RESTRICTION AND ITS CORRELATION WITH FETAL OUTCOME

Sudha Chourasia¹, Juhi Agarwal², Monika Dudve³

HOW TO CITE THIS ARTICLE:

Sudha Chourasia, Juhi Agarwal, Monika Dudve. "Clinical assessment of intrauterine growth restriction and its correlation with fetal outcome". Journal of Evolution of Medical and Dental Sciences 2013; Vol. 2, Issue 41, October 14; Page: 7944-7950.

ABSTRACT: IUGR is one of the most serious challenges in both developed and developing contraries. It is the single most important factor that determines in chances of child survival. In our country PGRF remain one of the commonest cause of neonates morbidity and mortality 30% of neonatal death are done to IUGR. Despite of all efforts by government 100% antenatal care is poor but women are seeking health facility for delivery at time ever more important to identify such high risk pregnancy and manage for better met and fetal examination (one step) in 3rd trimester can be used as a screening procedure for detection of IUGR babies. **MATERIAL AND METHODS:** all pregnant women coming to the facility diagnosed to have IUGR by clinical method (SFH, AG, clinical assessment of liquor) were included in the study for duration of one year.

Maternal and fetal outcome was noted in terms of mode of delivery and neonatal death, still birth, SGA, AGA. Apgar score of all the babies was noted to assess morbidity. **OBSERVATION:** Of the total antenatal women 200 were identify as IUGR by clinical method out of which most of were from age group 21-25 years comprising 72.4% of total cases. Maternal weight and height influence weight of the babies 75% IUGR babies were noted in height less than 145 cm. 78.5% were unbooked and 64 belong to rural population. various risk maternal factors like hypertensive disorder 26%, anemia 16.5%, previous history of IUGR 9%, antepartum haemorrhage 6%, diabetes 1%, rh negative 4.5%, heart disease 1%, recurrent abortion 5% in 17% no identified risk factors were found, 80% were delivered vaginal, 67.5% babies were SGA after birth as assessed by clinical method, 68%, had Apgar score less than 7. Perinatal mortality constituted 27.3% of the babies. **DISCUSSION:** Intrauterine growth restriction is one of the common abnormality encountered by the obstetrician, when present it increases perinatal morbidity and mortality. it is a multifactorial disease with varying degree of severity as in our study the noted 68% of babies with Apgar less than 7 and only 32 had Apgar more than 7 with perinatal mortality of 27.3%. IUGR per se is a major problem in India, nearly million low birth weight babies are born annually in India and it account for more than half of neonatal death.

This is evidenced in our study that we were able to screen and detect 67.5% of babies who were SGA out of total screen as IUGR. This study also emphasizes the fact that IUGR as cause of neonatal morbidity and mortality can be reduced if proper antenatal care prompting early detection of high risk factor and IUGR is done.

One step method of clinical assessment of IUGR can be included in maternal health programs focusing on early detection of IUGR and associated maternal risk during antenatal period and early referral to more complete health care centres where they can be benefited by more sophisticated diagnostic and therapeutic methodology such as colour doppler and ultrasound.

INTRODUCTION: IUGR is one of the most serious challenges in both developed and developing countries. It is the single most important factor that determines the chances of child survival.

ORIGINAL ARTICLE

Incidence of intrauterine growth retardation in our country varies from 16% to 40% depending upon the type of population. Despite the efforts by Government of India and other agencies, neonatal mortality and morbidity continues to be high. Intrauterine growth retardation is a fetal growth disorder most commonly defined on the basis of weight below the 10th percentile for gestational age¹. The concept of intrauterine growth retardation was introduced by Mc Burney in 1947 described that large discrepancies may exist between birth weight and gestational age. It may be the result of short gestational period or growth retardation. Approximately 1/3rd of babies of birth weight 2500 gm or less at term will always be due to intrauterine growth retardation. A new science of perinatal medicine has been developed accompanied by the large number of biochemical and biophysical techniques to study placental function and assess fetal wellbeing in utero. Fetal surveillances is one of major component of antenatal care. It is the antenatal care which governs the further perinatal outcome. Each method has its own limitations and also they are costly for patients belonging to low socio-economic group and of rural area. In developing country like ours, such methods have limited value.

A simple clinical examination which is inexpensive and available to all does not require much skill can be used as screening procedure for detection of intrauterine growth restriction at rural and primary health care level.

AIMS AND OBJECTIVES:

1. To detect the intrauterine growth restriction using clinical parameters.
2. To study the determinants of intrauterine growth restriction.
3. To assess the fetal outcome.

MATERIAL AND METHODS: The present study is a cross sectional study has been carried out in the Department of Obstetrics and Gynaecology and Gandhi Medical College, Bhopal from 1st August 2011 to 31st July 2012.

Study Design: Cross Sectional Observational Study.

Study Period: 1st August 2011 to 31st July 2012.

Study Setting: Department of Obstetrics and Gynaecology, Sultania Zanana Hospital and Gandhi Medical College, Bhopal.

Study Population: Antenatal cases suspected of having IUGR (intrauterine growth restriction) based on SFH (symphysiofundal height) were admitted during the study period. All those who had less SFH Abdominal girth and clinical assessment of liquor were done.

Inclusion Criteria

- Singleton gestation with Cephalic presentation.
- The LMP (Last Menstrual Period) of the patient was well known
- The gestational age of patient was between 31-41 weeks (delivered from LMP)

Exclusion Criteria

- Multiple pregnancies.

ORIGINAL ARTICLE

- Premature rupture of membrane.
- Wrong dates or unsure of dates.
- Presentation like breech and transverse lie.
- Obese women.

General Examination:

Height & Weight of the mother

Results were confirmed by weighting the baby after delivery and Apgar score of the baby at birth also by characteristic features of IUGR.

OBSERVATIONS: The present study was carried out in the Department of Obstetrics and Gynaecology, Sultania Zanana Hospital, Gandhi Medical College, Bhopal from 1st August 2011 to 31st July 2012

The study comprises of 200 pregnant women suspected to have IUGR based on clinical parameters. All patients were examined between 31 to 41 weeks of gestation. Only those patients with known dates of last menstrual period were included in this study. All the cases had singleton pregnancy. The gestational age was calculated from the first day of last menstrual period upto the day of examination and this was taken as known gestational age.

Various observations recorded in the present study are as follows:

S. NO	AGE GROUP IN YEARS	NO. OF CASES	PERCENTAGE
1	16-20	40	20
2	21-25	109	54.5
3	26-30	34	17
4	31-35	12	6
5	36-40	5	2.5
	TOTAL	200	100

TABLE 1: AGEWISE DISTRIBUTION OF CASES

S. NO	PARITY	NO. OF CASES	PERCENTAGE
1	PRIMIPARA	120	60
2	MULTIPARA	72	36
3	GRANDMULTIPARA	8	4
	TOTAL	200	100

TABLE 2: DISTRIBUTION ACCORDING TO PARITY

CLASS	NO OF PATIENTS	PERCENTAGE
I	5	2.5
II	25	12.5
III	53	26.5
IV	108	54
V	9	4.5
TOTAL	200	100

TABLE 3: SHOWING DISTRIBUTION OF IUGR ACCORDING TO MATERNAL SOCIO ECONOMIC STATUS (MODIFIED PRASADS CLASSIFICATION)

Height	No. of Patients	IUGR at Birth	Percentage
>145 cm	172	114	66.27%
<145 cm	28	21	75%

TABLE 4: SHOWING DISTRIBUTION OF CASES ACCORDING TO MATERNAL HEIGHT

ORIGINAL ARTICLE

Weight	No. of Patients	IUGR at Birth	Percentage
>45 kg	177	118	66.66%
<45 kg	23	17	73.2%

TABLE NO. 5: SHOWING DISTRIBUTION OF CASES ACCORDING TO MATERNAL WEIGHT

SFH	SGA at birth	AGA at birth
Reduced SFH (200)	135	65

TABLE NO. 6: IUGR PREDICATABILITY BY SFH

SGA- short for gestational age.

AGA- adequate for gestation age.

Total Cases	Reduced Abdominal Girth	IUGR at Birth	Percentage
200 Cases	138	98	71.01%

TABLE NO. 7: IUGR PREDICATABILITY BY ABDOMINAL GIRTH

Total Cases	Reduced amount of Liquor	IUGR at Birth	Percentage
200 Cases	90	35	38.8%

TABLE NO. 8: IUGR PREDICATABILITY BY CLINICALLY REDUCED AMOUNT OF LIQUOR

S. No.	Risk Factors	No. of Cases	Percentage
1	Pregnancy induced hypertension (PIH)	52	26%
2	Anemia	33	16.5%
3	Previous IUGR	18	9%
4	Oligohydramnios	16	8%
5	Antepartum haemorrhage	12	6%
6	Recurrent abortion	10	5%
7	Rh-ve pregnancy	9	4.5%
8	UTI	7	3.5%
9	Short stature	4	2%
10	Heart disease	3	1.5%
11	Diabetes	2	1%
12	No risk factors	34	17%
	Total	200	100%

TABLE NO. 9: DISTRIBUTION OF CASES ACCORDING TO RISK FACTORS

S. No.	Perinatal outcome	No. of Cases	Percentage
1	Low birth weight (SFD)	135	67.5%
2	Normal birth weight (AFD)	65	32.5%
	Total	200	100%

TABLE NO. 10: DISTRIBUTION OF PERINATAL OUTCOME

Neonates	Total	Alive & Healthy	Admission in NICU	Still birth	Neonatal death
IUGR	135	64 (47.4%)	57 (52.2%)	14 (10.3%)	23 (17.03%)
AGA	65	56 (86.15%)	9 (13.84%)	01 (1.53%)	02 (3.01%)

TABLE NO. 11: COMPARISON OF NEONATAL OUTCOME IN IUGR AND AGA NEONATES

ORIGINAL ARTICLE

RESULTS AND DISCUSSION: During the study period of one year from 1st August 2011-31stJuly 2012 carried out in Department of Obstetrics & Gynecology, Sultania Zanana Hospital a total of 200 patients with IUGR were identify.

Intrauterine growth retardation is one of the most important cause of low birth weight babies and constitutes 52% of perinatal mortality in our country (Fogsi 1981)². Perinatal mortality is about 4-8 times higher for growth retarded fetuses as compared to normal for date babies. In this study most of the patients were between 21-25yrs of age comprising 72.4% of total cases.

According to Huggett young mothers and those above 35 years appear to give birth to lighter babies. Sen in his studies observed that birth weight is at its peak when mother age is between 26 - 37 years. It shows that maximum no. of cases were primipara that was 60% (102 cases) of total cases. Butler and Alberman observed incidence of low birth weight more in primi gravida³.

Shrivastava et al in their study of low birth babies found an incidence of 40% in primi gravida⁴. IUGR noted in 75% cases in which maternal height were < 145 cm 17 cases of < 45 kg of maternal weight were IUGR (73.2%). In the study of Simpson it is noted that small women typically have smaller infants. If a woman begins pregnancy weighing less than 100 pounds, the risk of delivery an SGA infants is increased at least two fold⁵. Majority of the patients were unbooked (78.5%) who were unaware of antenatal care. Caria soto IL - observed that women with an inadequate number of visit for gestational age had 63% greater risk of IUGR. Majority of patients belonged to rural population (64%). Villar in 1982 reported the incidence of low birth weight babies in India to be 30.5% of which IGUR account for 77%. In India 72.2% belongs to rural area⁶. Out of the total cases 37.5% were referred patients, as ours is a tertiary care centre .Most of the patients belong to class-IV (54%) and class-III (26.5%) of modified Prasad classification. Achar et al have reported that there is a direct relationship between the economic status of families. The babies with birth weight below 2500 gm are three times more in the lower socio - economic group than the higher ones. In our group of patients, gestational age at the time of examination in majority of cases was 37 wks - 40 wks (53.5%). Among the maternal risk factors analysed in mothers, hypertensive disorders was 26% as a leading factor followed by anemia 16.5% as the second most common cause. Other associated risk factors were previous IUGR (9%), antepartum haemorrhage (6%), oligohydramnios (8%), recurrent abortions (5%), Diabetes (1%), Rh-ve pregnancy 4.5%, urinary bad infection 3.55, Heart Disease (1%) and (17%) had no identified risk factors. In these conditions, IUGR can occur in the absence of risk factors, requiring high degree of clinical suspicion. Bhide, 2007 observed that in clinical practice in India, pre-eclampsia has been reported to be associated with a 10 - 25% incidence of IUGR¹. In this study most of the patients had vaginal delivery (80%) Out of 200 with reduced SFH, 135 were SGA babies and 65 were AGA i.e. 67.5% cases. In this study measurement of symphysio-fundal height was taken as the index of diagnosing IUGR along with other clinical parameters.

ACOG (American College of Obstetrics and Gynaecology) quotes that SFH measurement at 32-34 wks has 70-85% sensitivity in detecting IUGR⁷.

According to RCOG (Royal College of Obstetrics and Gynaecology) SFH has a sensitivity of 27%⁸.

Cochrane review shows SFH has 27% - 86% of prediction for IUGR⁹.

SFH can used as screening modality to refer patients to better equipped centre.

ORIGINAL ARTICLE

We had total of 90 cases which has clinical reduced amount of liquor in which IUGR was noted in 35 babies i.e. 38.8%. Elliott found that failure to gain weight before term and without hypertension was associated with low liquor volume and placental insufficiency.

Out of 138 who had decreased abdominal girth 98 were IUGR i.e. 71.01%. 67.5% of cases were found to have SGA babies.

In our study female fetus 59.5% were more common, same results observed by Mackenzie (1972) in his study. Out of 24 babies with 5 min APGAR <4, 15 babies were stillbirth and 9 were referred to NICU. 112 babies (27.10%) with 5 min APGAR between 4-7; 42 were sent to NICU and 16 had neonatal death. 64 babies (49.53%) with 5 min APGAR >7 were healthy babies.

One study (Maora, 1980) found that approximately 20% of all still births show signs of growth restrictions.

CONCLUSION: Intrauterine growth restriction is one of the common abnormalities encountered by the obstetrician, when present it increases perinatal morbidity and mortality. It is a multifactorial disease with varying degree of severity as in our study the noted 68% of babies with Apgar less than 7 and only 32 had Apgar more than 7 with perinatal mortality of 27.3%. IUGR per se is a major problem in India, nearly million low birth weight babies are born annually in India and it account for more than half of neonatal death. Though colour doppler and USG biometry are gold standard to diagnosed IUGR clinical methods are in expensive and lesser skill is require hence such methods can be used to screen IUGR at primary health care system and rural areas where antenatal care is provided by anganwadi and workers an ANM. This is evidenced in our study that we were able to screen and detect 67.5% of babies who were SGA out of total screen as IUGR. This study also emphasizes the fact that IUGR as cause of neonatal morbidity and mortality can be reduced if proper antenatal care prompting early detection of high risk factor and IUGR is done. In our study we were able to save majority of them. Decades will pass to control socio - demographic factors responsible for this clinical condition; what we clinicians have in our hands is to go for this secondary mode of prevention of neonatal morbidity.

One step method of clinical assessment of IUGR can be included in maternal health programs focusing on early detection of IUGR and associated maternal risk during antenatal period and early referral to more complete health care centres where they can be benefited by more sophisticated diagnostic and therapeutic methodology such as colour doppler and ultrasound.

REFERENCES:

1. Practical guideline to high risk pregnancy and delivery: Fernando Arias, 3rd ed. Chapter-4, Shirish N. Daftary & Amarnath G. Bhide. Page 105-134.
2. Fogsi 1981: J. of Obstetrics and Gynecology of India.
3. Butler and Alberman 1969; Birth Perinatal mor. Survey.
4. Shrivastava et al. 1972. J. of Obstetrics and Gynecology of India 2:231.
5. Simpson JW, Lawless RW, Mitchell AC: Relationship of the obstetrician to the fetus, 2. Influence of pregnancy weight and pregnancy weight gain on birth weight. *Obstet Gynecol* 1975; 45: 481.
6. Villar J. et al. Monitoring of fetal growth in rural area, an alternative for use by the non - professional personnel - *Bol of Sanit Panam* 1980; Mar 88 (30): 197-205.

ORIGINAL ARTICLE

7. American college of obstetricians and Gynaecologists. Intrauterine growth restriction. ACOG Practice bulletin No. 12 Washington, DC7 American College of Obstetrics and Gynecologist 2000.
8. Royal College of Obstetrics and Gynecologist. The investigation and management of the small for gestational age fetus. Guidelines No. 31. London: RCOG; 2002.
9. Cochrane review: Screening diagnosis and management of intrauterine JOGC, 2012, By Lausman.

AUTHORS:

1. Sudha Chourasia
2. Juhi Agarwal
3. Monika Dudve

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Obstetrics and Gynaecology, Gandhi Medical College.
2. Assistant Professor, Department of Obstetrics and Gynaecology, Gandhi Medical College.
3. Resident 3rd Year, Department of Obstetrics and Gynaecology, Gandhi Medical College.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Juhi Agarwal,
109, Old Safia College Road,
Ballabh Hospital, Bhopal.
Email – drjuhiagarwal@gmail.com

Date of Submission: 25/09/2013.
Date of Peer Review: 26/09/2013.
Date of Acceptance: 05/10/2013.
Date of Publishing: 10/10/2013