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Research Article

Study of Obstetric Outcome of Pregnancies with Intrauterine Growth Restriction in a Teaching Hospital in Rural Area of Telangana State in India

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Abstract: Intrauterine growth restriction is an important cause of perinatal mortality & morbidity next to prematurity. The present study shows that high suspicion, early diagnosis & proper management of intrauterine growth restriction can result in the prolongation of pregnancy till fetal maturity and can lead to birth of an uncompromised fetus. The study was conducted at Bhaskar Medical College & Bhaskar General Hospital, Yenkepally, Telangana between 2011 & 2014. About 63 patients with intrauterine growth restriction were enrolled into the study. Fundal height by clinical examination & gestational ages from last menstrual period & ultrasound before 20wks were correlated. Pregnant women with diagnosed growth retarded fetuses were admitted, treated & followed upto delivery. Majority of pregnant women were primigravidae (47.6%) in the age group of 21-30yrs (63.5%). The commonest cause of intrauterine growth restriction was anaemia (25.4%). Next common cause being pregnancy induced hypertension (23.4%) & there was no specific etiology in 46% of cases. Hospitalization with absolute bed rest, amino acid therapy & antenatal fetal surveillance with Doppler, nonstress test & biophysical profile allowed pregnancy to continue till fetal maturity (34-36wks) in 96% of cases. 51% of cases had LSCS & 49% delivered vaginally. Majority of babies were healthy in the immediate neonatal period. In conclusion, pregnancies with intrauterine growth restriction are high risk cases with high prenatal mortality & morbidity in India. Timely intervention like hospitalization, bed rest, oral/parenteral amino acid therapy, intake of high protein diet & fetal surveillance with Doppler, nonstress test & biophysical profile can result in good obstetric outcome.
Keywords: Intrauterine growth restriction (IUGR), Ultra sonogram (USG), Obstetric outcome.

INTRODUCTION

Intrauterine growth restriction is the term used to describe a fetus with a birth weight at/below 10th percentile for gestational age & sex [1]. Intrauterine growth restricted fetus is one that does not reach its growth potential [2]. Two components are required to define an intrauterine growth retarded fetus. Apart from less than 10th percentile birth weight, inadequate interval growth in sequential screening is also diagnostic [3].

Fetal weight is predetermined by genetic factor, health of fetus & placental perfusion. Placenta is the life line of the fetus and when challenged, it has a remarkable ability to adapt [4]. To diagnose intrauterine growth restriction, it is essential to estimate gestational age accurately. Although it is calculated from last menstrual period when known with certainty, reliability of this estimate is low as timing of ovulation is variable. First trimester ultra sonogram can date pregnancy more reliably. Serial fundal height measurement is a simple technique for assessing fetal growth. Ultrasonogram measurements of biparietal diameter, head circumference, abdominal circumference & fetal length of less than 10th percentile are highly suspicious and measurements below 3rd percentile are an unequivocal evidence of fetal growth restriction.

Growth of abdominal circumference of less than 1cm over 14days is also indicative of intrauterine growth restriction. Doppler assessment of uterine, umbilical, middle cerebral vessel is used to identify placental insufficiency and fetal wellbeing [5, 6]. Grade III placenta before 36wks is corroborative evidence of intrauterine growth restriction. Adverse long term neurological sequelae in fetuses subjected to hypoxia for even short duration have been noted [7].

Doppler flow study is used to relate the Doppler changes to metabolic situation of the fetus and thus optimally time the delivery without intrauterine injury. Main antepartum complications are increased incidence of oligohydramnios, fetal distress and stillbirth. Neonatal complications include hypoglycemia, hyperbilirubinemia, meconium aspiration, persistent fetal circulation, hypoxic ischaemic encephalopathy,

hypocalcemia, hyperviscosity & necrotizing enterocolitis.

METHODOLOGY

Study was conducted at Bhaskar Medical College & Bhaskar General Hospital, Telangana between 2011 & 2014 in the department of Obstetrics & Gynaecology in collaboration with the department of Radiology & department of Paediatrics.

Data of obstetric patients attending the obstetrics & gynaecology outpatient department, like age, parity, socioeconomic status, last menstrual period, previous obstetric history, presence of pregnancy induced hypertension, diabetes mellitus, anaemia, hypothyroidism, TORCH infections were collected from case records. Ultrasound findings before 20wks of gestation & after 20wks of gestation were noted. Fundal heights from clinical examination were noted. Gestational ages from last menstrual date, fundal heights, from dating scan were correlated. A lag of 4weeks in the gestational age calculated by fundal height & that calculated by ultrasound parameters were taken as criteria for diagnosing intrauterine growth restriction.

About 63 such cases of diagnosed intrauterine growth restriction were enrolled into the present study after their consent. All the pregnancies with unknown last menstrual date, irregular menses, multiple pregnancy & preterm fetuses were excluded from the study. The present study was approved by institutional ethics committee.

All these were hospitalized, treated empirically with bed rest, amino acid therapy, high protein & adequate calories in the diet and fetus was under surveillance with Doppler, nonstress test &/or biophysical profile. Fetuses were followed up to delivery. Gestational age at which pregnancies were terminated, mode of delivery, birth weights of fetuses, APGAR scores, presence of meconium & liquor quantity & quality were documented. Not only birth weights of 2.5kg & less were labelled as intrauterine growth restriction but also fetal weights not reaching the targeted weight at particular gestational age were also called so.

RESULTS

Data was analysed & tabulated into tables, graphs & pie charts as below:

Table 1: Distribution of age, parity & etiology

Age in years	**No. of patients(n=63)**	**%**
<20yrs	23	36.5%
21-30yrs	40	63.5%
31-40yrs	0	0%
>35yrs	0	0%
Parity		
Primi	30	47.6%
Gravida 2	23	36.5%
>gravida 3	10	15.9%
Etiology		
Anaemia	16	25.39%
PIH	15	23.8%
Hypothyroidism	03	4.76%
Diabetes	02	3.17%
Oligohydramnios(5-7)	13	20.63%
Maternal weight		
45 kg & <45kg	5	8%
46 kg - 50kg	7	11.11%
51kg - 70kg	49	77.78%
>70kg	02	3.17%
Bad Obstetric History	06	9.5%
Arcuate uterus	01	1.5%
Urinary tract infection (klebsiella)	01	1.5%
Recurrent IUGR	01	1.5%
No specific etiology	29	46%
Antenatal fetal sureillance		
Doppler flow studies		
normal	60	95.24%
abnormal	03	4.76%
NST		
Reactive	57	90.48%
nonreactive	06	9.52%

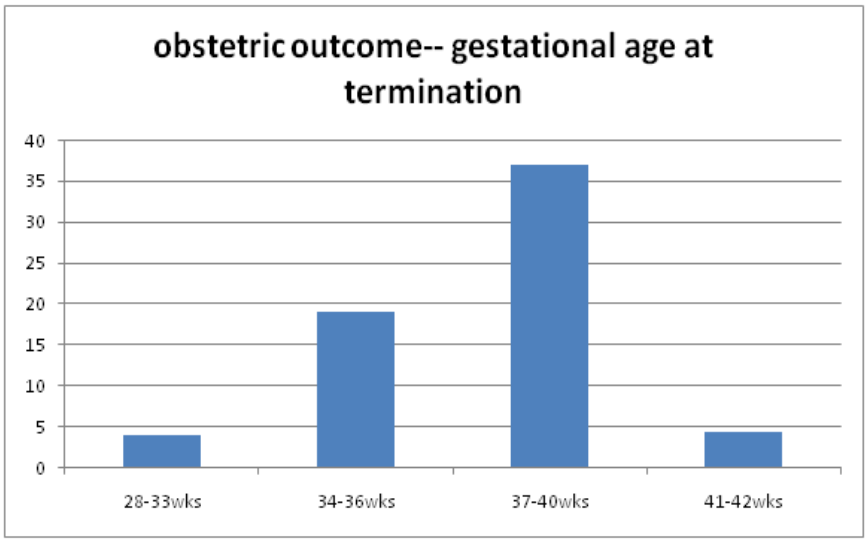

Fig. 1: Obstetric outcome-gestational age at termination

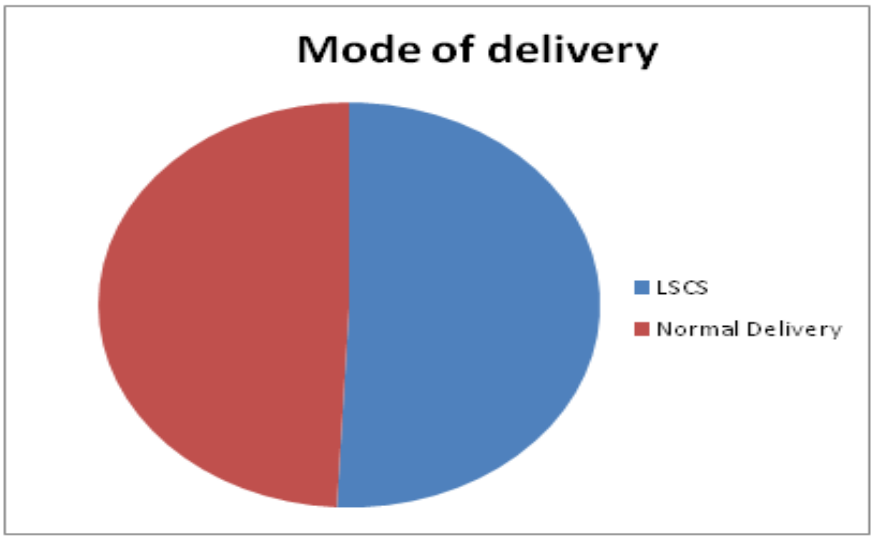

Fig. 2: Mode of delivery

Table 2: Fetal outcome

Fetal outcome	No. of patients (n=63)	%
APGAR score Good APGAR (>7 at 5min)	62	98.41%
Poor APGAR (<7 at 5min)	01	1.5%
Meconium stained liqour	09	14.28%
Mild respiratory distress	12	19.05%
Blood stained liquor	04	6.35%
NICU admissions	22	34.9%

From Table 1, we see that intrauterine growth restriction is common in primigravidae (30%) between age groups of 21-30yrs (63.5%) in the studied population. Commonest etiology is anaemia (25.39%), next in order is pregnancy induced hypertension (23.8%). Growth restriction was late in onset (beyond 28wks) in 96% of cases. Women with their weights less than 45kg in pregnancy had increased risk (8%) of fetal growth restriction. Doppler flow studies were abnormal in 3.17% of cases, nonstress test was nonreactive in 9.52% of cases. Oligohydramnios (<5) was seen in 20.63% of cases indicating that intrauterine growth restriction & oligohydramnios coexist. With good nutrition, hospitalization with aminoacid therapy, 86% of pregnancies could be terminated at 37wks & beyond, 9.52% were delivered preterm due to various reasons. 4.76% of intrauterine growth restriction was seen in postdated pregnancies. 34.92% of fetuses weighed 2 kg and below at birth. As we see in the pie chart, 50.79% were delivered by LSCS for various indications like

abnormal Doppler/nonstress test, preeclampsia, and failed induction. 1.5% of fetuses had poor apgar, 14.28% of fetuses had meconium stained liqour but 98.41% had good apgar indicating that proper antenatal fetal surveillance & timely intervention can prevent fetal hypoxia (Table 2).

DISCUSSION

Intrauterine growth restriction is common cause of perinatal mortality & morbidity in developing countries. It is a social burden to the nation & financial burden to the family as it causes long term neurological sequelae. Hence the present study was aimed at analyzing the causes of intrauterine growth restriction & the fetal outcome of these pregnancies. Incidence of low birth weight babies is 16.8% in some studies in India [8]. Primiparity is an independent risk factor for intrauterine growth restriction [9]. This coincides with our present study analysis where most pregnant women with IUGR were primigravidae (30%). Pregnancy induced hypertension & uteroplacental insufficiency are the common causes of intrauterine growth restriction. The studied group also had this as the common etiology for growth restriction of fetuses.

Incidence of low birth weight babies in hemoglobin of 8-10gm% is 24% [10]. This is again consistent with results in the study population. As we have observed in the present study where most women with IUGR had weight of less than 45 kgs. Pregnant women with weights of less than 40kg & height <145cms can have intrauterine growth restriction [11]. Developed & developing countries & for all racial & ethnic groups, there is a positive relation between total weight gain in pregnancy & fetal birth weight [14]. Incidence decreases in women who consumed minimum of 2,400 Kcal/day, with one and half hour post lunch rest in left lateral position in the last trimester.

According to perinatal mortality survey (1958), infants with low birth weights born after full duration or prolonged pregnancy had higher mortality than those weighing more than 2.5kg at the same gestational ages [12]. Hence careful monitoring of the fetal condition with judicious continuation / termination of pregnancy is crucial.

Most important tests to follow the fetus with IUGR are fetal heart rate monitoring & umbilical & middle cerebral artery doppler. As long as fetal Doppler does not show fetal decompensation in the form of absent/reversed end diastolic flow in the umbilical artery, expectant management is preferred till fetus attains maturity. More stress is on the fetal surveillance for good obstetric outcome [13]. Hence pregnant women in the study group had antepartum fetal surveillance that enabled to continue pregnancies till fetal maturity. In the studied population, nearly 1/3rd (30.16%) of pregnant women had delivery around 34-36wks & nearly ½(50.76%) had delivered between 37-40wks.

The mode of termination of pregnancy either by caesarian section or normal delivery had equal chances of good fetal outcome in the present study. Timely termination of pregnancies with appropriate method leads to the birth of uncompromised babies with good APGAR score (98.41%). Mode of delivery may not alter the fetal outcome. Most of the cesarean sections were done for other obstetric indications like preeclampsia in the mother, fetal distress & abnormal Doppler flow studies. Most of the babies (80%) fared well in the first week of life after delivery. They could not be followed up for prolonged period for various practical reasons.

CONCLUSION

Intrauterine growth retardation in pregnancy is common cause of perinatal mortality & morbidity in rural population. Adequate calories with high proteins in the diet & bedrest in left lateral position especially in the last trimester can prevent intrauterine growth retardation. Early diagnosis with serial clinical & ultrasound examinations, timely hospitalization, active management, antepartum fetal surveillance with nonstress test & fetal Doppler can allow expectant management of affected pregnancies.

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