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IUGR Pregnancies - Feto-Maternal Outcome

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Abstract

Intra-uterine fetal growth restriction (IUGR) is an important and common cause of neonatal morbidity and mortality. It is a multi-factorial phenomenon including many maternal and fetal factors. This study is a retrospective observational study carried out in tertiary care centre which mainly receives referral cases and patients from poor socio economic background .Our study included the patients who were antenatally diagnosed as having IUGR fetus on basis of ultrasound findings and later delivered a baby weighing less than 2.5 kg. The study assessed the maternal and fetal outcome of IUGR pregnancies. The incidence of Intra-uterine growth restriction in our study was 4%. The pregnancy induced hypertension (PIH) was the most common factor associated with IUGR. The 60% of the IUGR neonates required admission to neonatal ICU. The majority of those admitted to neonatal ICU were born to mothers without adequate antenatal care. We concluded that apart from PIH, anemia, poor weight gain during pregnancy and the poor antenatal period care were major risk factors for IUGR.

Keywords: IUGR; Low birth weight babies; Small for date babies; PIH

Introduction

IUGR is a global phenomenon which is associated with significant neonatal morbidity and mortality. IUGR is a term used for fetuses with birth weight less than 10th percentile of those born at the same gestational age or two standard deviations below the population mean are considered as growth restricted [1]. Low birth weight (LBW) is another term used to define growth restricted babies but it includes preterm babies as well. The World Health Organization (WHO) definition of LBW babies is the babies weighing less than 2500 gm at birth [2]. The Prenatal diagnosis of IUGR is based on clinical and ultrasonographic (USG) examination. USG is considered more accurate with less intra-observer variations. Sonographically fetus with estimated weight <10th percentile for gestational age is considered growth restricted [3]. The incidence of IUGR varies between 4-7% in developed countries and up to 30% in poor resource settings [4]. Various maternal factors like vascular insufficiency, poor maternal nutrition, poor maternal weight gain during pregnancy are considered to be risk factors for IUGR. The growth restricted fetuses are at increased risk for respiratory distress, low Apgar score, necrotizing entero-colitis, hypoxic ischemic encephalopathy and other long term complications. This study was carried out to find out the feto-maternal outcome of such pregnancies.

Material and Methods

Study design- Retrospective record based study.

Study period- Study included data for a period of 12 months from January 2016 to January 2017.

Study place - Study was carried out in a tertiary care hospital at Navi Mumbai. The hospital is mainly treating the patients from poor socio-economic status and referral cases.

Study population- Study population consisted of 60 patients who delivered babies less than 2.5 Kg and were diagnosed to have IUGR fetuses by ultrasound antenatally.

IUGR- It was defined as estimated fetal weight (EFW) or abdominal circumference (AC) less than 10th percentile of those born at the same gestational age [5] or two standard deviations below the population mean for that gestational age. Prenatal diagnosis of intrauterine growth restriction is defined as sonographically estimated fetal weight <10th percentile for gestational age.

Study included the maternal factors such as weight gain during pregnancy, high risk factors like PIH, anemia, oligo-hydraminos. The other less common medical disorders in mother like thyroid, diabetes were also studied. The maternal outcome in the form of those requiring Cesarean section and those who had vaginal delivery were recorded. Fetal outcome in terms of neonates requiring NICU admission with or without any ventilatory assistance, those who suffered intra uterine fetal demise, neonatal mortality and those born without any immediate morbidity were also assessed.

Results

The results are described in table 1-5 and corresponding statistical charts (Figures 1-4) are as follows.

Discussion

IUGR is an important cause of perinatal mortality and morbidity in developing countries. In our study, the Incidence of pregnancy induced hypertension (mild, moderate, severe) with IUGR was 33.66% (22/60) which is comparable to a study conducted by Arora et al. [6] who found PIH in 24% patients with IUGR. Similar percentage and number that is 22/60 cases (33.66%) was shared by oligo-hydraminos as an antenatal

Sr.no	Antenatal risk factors	Number of cases	Percentage
1	Pregnancy induced hypertension (mild, moderate, severe)	22	36.66%
2	Oligohydraminos	22	36.66%
3	Anemia	8	13.33%
4	Others	4	6.66%
5	None	4	6.66%

In our study 22(36.66%) cases had pregnancy induced hypertension as an antenatal risk factor and similar number was shared by oligo-hydraminos. Anemia was also present in 8 cases (13.33%) of IUGR and 4(6.66%) cases had other medical disorders like hypothyroidism, gestational diabetes mellitus while remaining 4(6.66%) cases did not have any risk factor or medical illness.

Table 1: Distribution of IUGR according to maternal risk.

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Sr. No	Maternal outcome	Number of cases	Percentage
1	LSCS	48	80%
2	Normal vaginal delivery	12	20%

In our study 48(80%) cases of IUGR underwent cesarean section and 12(20%) cases had normal vaginal delivery.

Table 2: Distribution of IUGR cases according to maternal outcome.

Sr. No	Fetal outcome	Number of cases	Percentage
1	Normal without any immediate morbidity	10	16.66%
2	NICU admissions	36	60%
3	NICU admissions requiring ventilatory assistance	8	22.22%
4	IUFD	3	5%
5	Neonatal mortality	3	5%

Table 3: Distribution of IUGR according to fetal outcome.

Sr no.	Maternal factor	No of cases	Percentage
1	Parity		
	Primi	32	53.30%
	Multi	28	46.66%
2	Weight gain		
	Less than 6 kg	34	56.66%
	More than 6 kg	26	43.33%
3	Registered cases		
	with regular follow up	8	13.33%
	No follow up	12	20%
	Referral cases	40	66.66%
4	Doppler		
	Normal	8	13.33%
	Abnormal	2	3.33%

In our study we saw that 34(56.66%) mothers had poor weight gain of less than 6 kg during complete pregnancy. We also observed that majority of cases of IUGR i.e. 40 out of 60 were seen for the first time in our centre as referred cases. Out of 20 registered cases only 8(13.33) cases followed up in antenatal period and remaining 12 did not come for follow-up. Eight patients who regularly followed up were advised fetal umbilical artery doppler. Two out of these eight patients had abnormal doppler findings.

Table 4: The Distribution of IUGR cases as per maternal parameters.
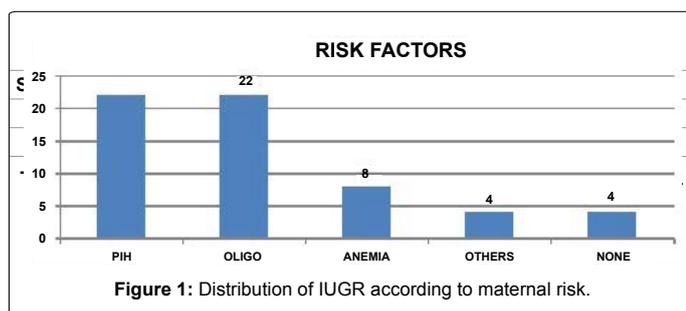

Figure 1: Distribution of IUGR according to maternal risk.

risk factor for IUGR. We saw that anemia was present in 11% (8/60) of the cases with IUGR which is in line with the findings of Philip, Radhakrishnan, Anand and Garg [7-9]. Color Doppler was done/available only with 8/60 patients who followed up regularly and was normal in 13.33% (8/60) with 3.33% (1/30) patient having it abnormal.

Out of all mothers affected by IUGR 53.33% (32/60) were primigravida while 46.66% (28/60) were multigravida which is in line with findings of Arora et al. [10]. In our study out of total 60 cases observed in our study only 20 patients were registered and out of these registered cases only 13.33% (8/60) followed up regularly and remaining

20% (24/60) did not follow up after the initial registration which shows that less antenatal visits leads to inadequate care during pregnancy and is a significant risk factor for IUGR in babies [11]. Majority of cases of IUGR i.e. 66.66% (40/60) were unregistered, unbooked and referred and were seen for the first time in late third trimester. In respect to weight gain it was observed that 56.66% (34/60) gained less than 6 kg during the course of pregnancy while only 43.33% (26/60) gained more than 6 kg. The weight gain was comparable to the study conducted by Arora et al. who found that patients with IUGR had less weight gain during

Sr. no	Gestational age	No of cases	Percentage
1	Less than 34 weeks	48	80%
2	34 -37 weeks	12	20%

Table 5: The distribution of IUGR cases according to gestational age at delivery.
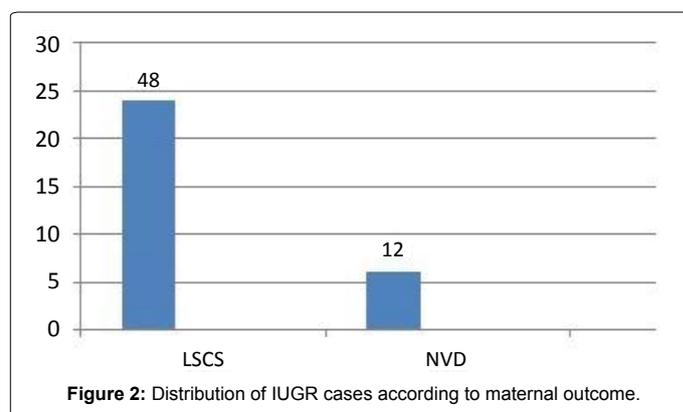

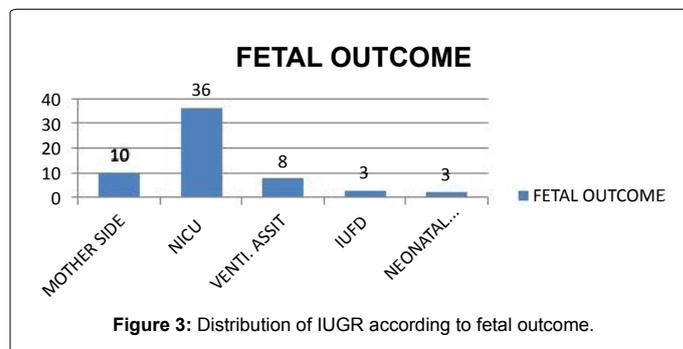**Figure 2:** Distribution of IUGR cases according to maternal outcome.

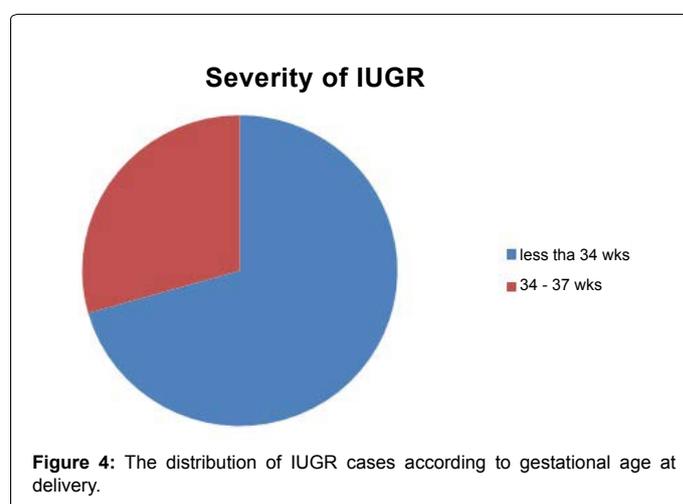**Figure 3:** Distribution of IUGR according to fetal outcome.

Figure 4: The distribution of IUGR cases according to gestational age at delivery.

pregnancy [12]. Another study conducted by Abrams et al showed that women with poor weight gain during pregnancy have greater risk of delivering IUGR babies [13].

Good fetal surveillance in antenatal period by fetal movement count, non-stress test, biophysical profile allow most cases of IUGR to do well. Mode of termination of pregnancy, observed in our study was, that the majority of patients i.e. 80% (48/60) required caesarean section while only 20% (24/60) delivered by vaginal route, this finding is consistent with other observational studies which showed that detection of growth restriction may be associated with an increased incidence of obstetric interventions [14].

Assessment of IUGR according to gestational age revealed that 80% (48/60) of these pregnancies were less than 34 weeks of gestation and only 20% (12/60) went beyond 34 weeks. This shows that majority of IUGR babies were delivered before term. The planned preterm deliveries in IUGR pregnancies are conducted to avoid intra-uterine fetal demise in cases of placental insufficiency or due to some obstetrical indication like PIH in mother.

Analysis of fetal outcome in our study showed that 60% (36/60) of neonates required NICU admission while 13.33% (8/60) of it required ventilatory assistance. Intrauterine fetal death occurred in 5% (3/60) of neonates, two of these happened in fetuses with severe pre-eclamptic mothers. Another 5% (3/60) had neonatal mortality. Fetal and neonatal mortality data can be compared to other studies that have reported the incidence of IUFD due to IUGR from 2.2% to 18.4%.

Conclusion

From the observed data it is concluded that IUGR is an important cause of perinatal morbidity and mortality. The commonest maternal cause for IUGR was pregnancy induced hypertension. The other contributing factors were anemia, lack of awareness (unregistered, unbooked cases) among mothers, poor maternal nutrition and poor weight gain during pregnancy. The majority of the babies (60%) needed NICU admission, 13.33% required ventilatory assistance and prolonged neonatal ICU stay. The total mortality i.e. IUFD (5%) and neonatal death (5%) contributed equally.

We conclude that some of the causes of IUGR and subsequent fetal morbidity and mortality are preventable. Awareness among pregnant patients about nutrition, antenatal checkups are of upmost importance. The hospital also need to be equipped with facilities for antepartum fetal surveillance, facilities of operative delivery, availability of NICU and ventilatory support for the low birth weight babies in case required.

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