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A STUDY ON THE DETERMINANTS OF INTRAUTERINE FETAL DEATH AT TERTIARY CARE HOSPITAL

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ABSTRACT

Objectives: To find out the prevalence of IUFD and the risk factors associated with it.

Design: Cross-sectional study.

Setting: This study was carried out at Gynecology and Obstetrics department unit I, Liaquat University of Medical and Health Sciences from June 2015 to May 2016.

Methods: Out of 1500 deliveries conducted, 92 pregnancies were recruited after applying exclusion criteria and using convenient non-probability sampling technique. Pregnant women with singleton IUFD, having a gestational age of 24 weeks and beyond were included whereas, multiple pregnancies were excluded. Data was analysed using Microsoft Excel. Descriptive data were given as frequency and percentage.

Results: The prevalence of IUFD was found to be 6.1%. Majority of the IUFD were reported in illiterate mothers (60.9%) and in age group between 20 to 30 years (73.9%). Majority of the presented women were multigravida (37%), presented between 30 to 36 weeks of gestational age (37%) and received only 1 to 2 antenatal visits (41.3%). Most of the patients complained of abdominal pain (32.6%), reduced fetal movements (30.4%) and per vaginal

bleeding (19.6%). The main risk factors identified were preeclampsia/eclampsia (17.4%), placenta abruptio (15.2%) and history of previous abortions (15.2%).

Conclusion: It was found in our study that major risk factors involved in IUFD in our setup are preventable and to reduce rates of IUFD, thorough evaluation and prenatal care may be provided to prevent untoward outcomes.

Key words: Intrauterine fetal death, Pregnancy, Prevalence, Risk factors

INTRODUCTION:

Intrauterine fetal death (IUFD) is defined as the death of the fetus weighing greater than 500 grams in utero after 20 weeks of gestation and before the onset of labour (1). It is the major contributor of perinatal mortality; where antepartum fetal death contributes 2/3rd of it (2). Its risk factors include maternal disorders such as diabetes mellitus, hypertensive disorders of pregnancy, previous stillbirth and abortions, maternal age above 35 years, previous caesarean delivery, antepartum haemorrhage, and lack of antenatal care; whereas fetal causes include intrauterine growth restrictions (IUGR), cord accidents and congenital malformations (2-4). The causes of fetal death are often complex and sometimes unknown (5). In cases of unexplained fetal death, family history should be reviewed to identify possible inherited causes of fetal death. Familial disorders, a history of recurrent spontaneous abortion, child born with congenital anomaly, abnormal karyotyping, venous thromboembolism must be taken into account in this matter(6).

It is important to understand that majority of risk factors if identified and consequently treated earlier in the antepartum period may reduce the perinatal mortality. Furthermore, improvement can be augmented by proper provision of antenatal care and better health care facilities, counselling regarding proper antenatal visits and feto-maternal monitoring especially in high risk pregnancies.

The present study was conducted with objectives to determine the risk factors associated with IUFD and to find out the prevalence of IUFD in our setup.

MATERIALS AND METHODS:

A cross sectional study was conducted at the Department of Obstetrics and Gynaecology unit I, Liaquat University Hospital Hyderabad from June 2015 to May 2016by using convenient non-probability sampling technique. An informed consent from the patients was taken to participate in the study. Sample size was calculated in Open Epi software (http://www.openepi.com/SampleSize/SSPropor.htm) with prevalence of 3.6% reported

earlier (7), the sample size was calculated to be *N*=53 at 95% confidence interval with5% margin of error. All pregnant women with singleton IUFD, having a gestational age of 24 weeks and beyond were included, according to the criteria defined by recent clinical practice investigation guidelines (RCPI)(8), whereas multiple pregnancies were excluded. Age, gravidity, level of education, gestational age, number of antenatal visits, associated risk factors, family history and previous history of miscarriage/IUFD, were recorded.

Diagnosis was made through history and examination followed by hearing fetal heart sounds with Pinnard's fetoscope and ultra sonography was done for confirmation. Complete investigations like blood group, hemoglobin level, blood sugar, urine analysis, HBsAg, LFT, RFT were analysed, whereas special investigations were done relevant to the case. No autopsy was performed on any fetus. Data was collected on predesigned proforma and calculations performed in Microsoft Excel. Descriptive data were given as frequency and percentage

RESULTS:

During our study period 1500 deliveries were conducted in unit I, during which 92 IUFD were reported showing prevalence of 6.1%. Majority of IUFD were reported in illiterate mothers and in age group between 20 to 30 years. Majority of the presented women were multigravida in our study and presented between 30 to 36 weeks of gestational age. Most of the cases received only 1 to 2 antenatal visits during their entire pregnancy (table I). The main complaints with which patients presented were abdominal pain and reduced fetal movements followed by per vaginal bleeding (table II). The main risk factors identified were preeclampsia/eclampsia, placenta abruptio and history of previous abortions (table III).

Table I: Age, level of education, frequency of antenatal visits, gravidity and gestational age at presentation in pregnant women with IUFD

VARIABLES	GROUPS	FREQUENCY(*N*=92)	PERCENTAGE
1.Age (years)	a. <20	4	4.3
	b. 20-30	68	73.9
	c. 31-40	18	19.6
	d. >40	2	2.2
2.Level of education	a. Illiterate	56	60.9
	b. Primary	32	34.8
	c. Undergraduate	4	4.3
	d. Graduate	0	0
3.Antenatal visits	a. 0 visit	34	37
	b. 1-2 visits	38	41.3
	c. 3-5 visits	20	21.7

	d. >5 visits	0	0
4.Gravidity	a. Primigravida	24	26.1
	b. Multigravida	34	37
	c. Grand multigravida	30	32.6
	d. Great grand multigravida	4	4.3
5.Gestational age (weeks)	a. 24-29	36	39.1
	b. 30-36	34	37
	c. 37-40	22	23.9

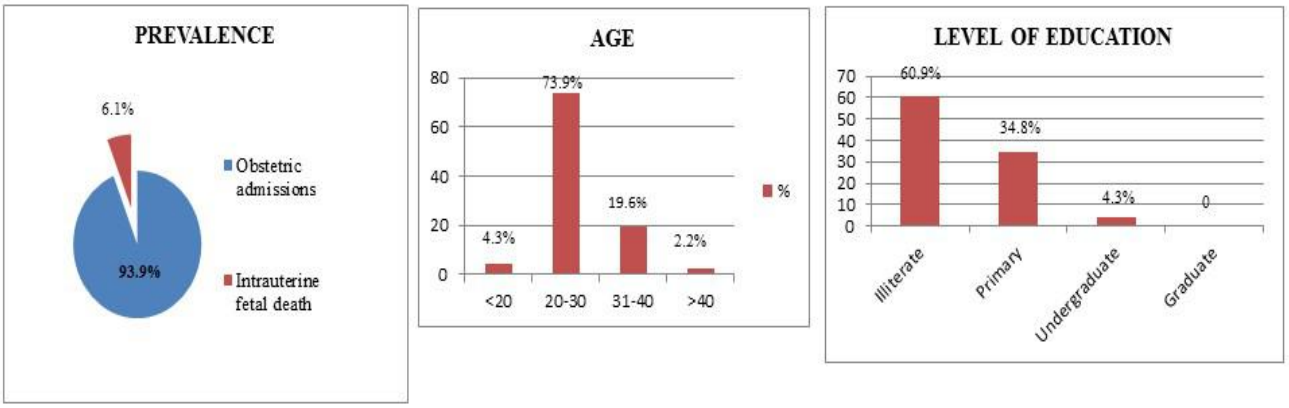

Figure I: Prevalence, age group and level of education in patients presented with IUFD

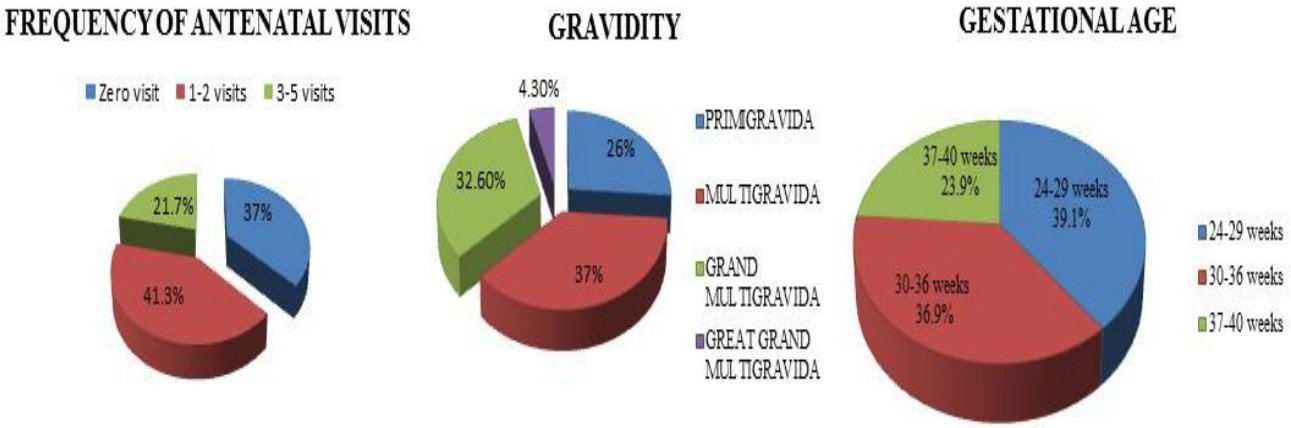

Figure II: Frequency of antenatal visits, gravidity and gestational age of patients presented with IUFD

Table II: Presenting symptoms of patients with IUFD

PRESENTING SYMPTOMS	FREQUENCY (*N*=92)	PERCENTAGE
1. Abdominal pain	30	32.6%
2. Reduced fetal movements	28	30.4%
3. Per vaginal bleeding	18	19.6%
4. Per vaginal leaking	10	10.9%
5. Fits	6	6.5%

Table III: Risk factors identified in patients with IUFD

RISK FACTORS	FREQUENCY(*N*=92)	PERCENTAGE
1. Preeclampsia/Eclampsia	16	17.4%
2. Abruptio placenta	14	15.2%
3. History of previous abortions	14	15.2%
4. Severe anemia	10	10.9%
5. Fetal anomaly	10	10.9%
6. More than 1 risk factor	10	10.9%
7. Cord accidents/anomolies	6	6.5%
8. Uterine rupture due to the previous 3 caesarean	4	4.3%
9. Unexplained	4	4.3%
10. Placenta Previa	2	2.2%
11. Uterine rupture due to the obstructed labor	2	2.2%

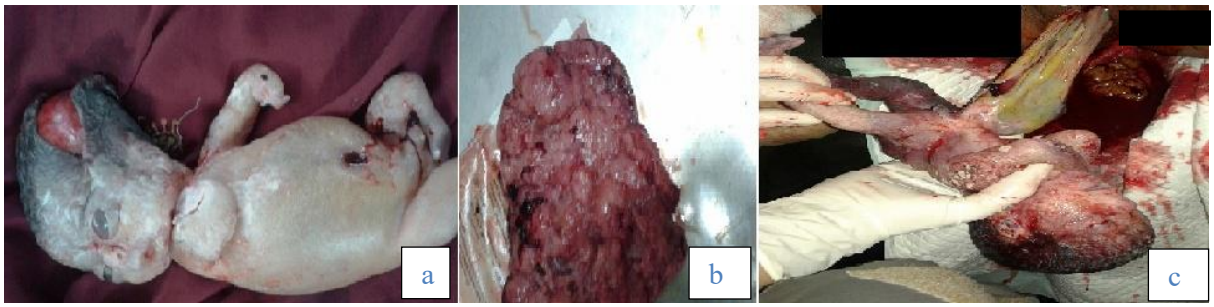

Figure III: (a) Macerated fetus, (b) abnormal placenta and (c) cord abnormality found in IUFD in present study

DISCUSSION:

In the developing countries, the IUFDs are mainly presented in the intrapartum period with high prevalence and are associated with avoidable factors, whereas it has considerably low prevalence in the developed countries(9, 10). A study from Bangladesh reported incidence of combined IUFD and still births to be 26/1000 births, whereas in western countries range of 4.7% to 12.0% has been reported(10). Higher prevalence in developing countries may be due to illiteracy, lower socioeconomic status and lack of antenatal care and facilities. In our study, we found 6.1% of the prevalence of IUFD alone, which is the comparatively higher prevalence observed in the developing countries. An Indian study by Jamal S et al, reported 5.62% prevalence of IUFD in their set up. The majority of the patients in their study were unbooked, below 20 years of age,

primigravida and presented between 20 to 24 weeks of gestational age. In comparison to their study majority of the patients in our set up, although had 1 to 2 antenatal visits, but they are less than recommended antenatal visits by WHO(11). Additionally, our patients were mainly above the age of 20 years, and only 4 patients had less than 20 years of age. In contradiction to their study findings, the majority of the patients present in this study were multigravida and presented between 24-29 weeks of gestational age. In agreement with their study, we also found more illiterate patients with IUFDs compared to other groups(12).The differences in the results for certain parameter may be due to differences in inclusion criteria as in their study, cases were included from 20 weeks of gestational age. The reason for increase in IUFD's in multigravida's in our set up may be due to a factor that multigravida rarely seek prenatal care due to thinking of, knowing enough about pregnancies due to their previous experiences and utilizing their time in taking care of their families.

Another Indian study reported the prevalence of IUFD and still births to be 3.6%; in which majority of the women were primigravida, unbooked, belonged to lower socio economic group, in 21-25 year age group. Though some of the findings are consistent with our study, however, it was interesting to find that in their study majority of the women (35.2%) were presented with IUFD in between 37-40 weeks of gestational age(13) which contradicts our findings, this indicates poor knowledge and access to health care facilities of people belonging to rural areas and lower socioeconomic status as the majority of the patients did not receive any antenatal visit in their study.

Safarzadeh A et al noted decreased rate of IUFD with increase in gestational age with majority (62.7%) of IUFD reported to be presented between 22-32 weeks in their study, which are consistent with our findings; however, they also reported an inverse relation of IUFD with parity which negates our results. Furthermore, in their study majority (41.38%) of the IUFD were unexplained, whereas congenital malformations (38%) and premature rupture of membranes (22%) constituted next major risk factors for IUFD. Other risk factors included preeclampsia (14.1%), abruption placenta(13.87%), diabetes mellitus (12.76%), meconiumstain (12%) and IUGR(8.1%) (14). We found preeclampsia/eclampsia as the major risk factor of IUFD's followed by abruption placenta and a history of previous abortions in our study, demonstrating that proper antenatal care may decrease the risks of IUFD's in current and subsequent pregnancies.

In another large scale study comprising 228,239 pregnancies reported 1694 IUFD cases giving an incidence of 7.4/1000 births. The independent risk factors observed in the study were oligo- and polyhydramnios, previous unfavourable perinatal outcomes, congenital malformations, cord abnormalities, meconium stained liquor and meconium aspiration syndrome, placental abruption, increased maternal age, and hypertensive disorders of pregnancy(4).

We found abdominal pain, reduced fetal movements and per vaginal bleeding as the main presenting complaints of patients presenting with IUFD in our set up. Kumar et al reported absent of fetal movements and prolonged per vaginal leaking as chief complaints of patients presented with IUFD in their set up. They also found abruption placenta and preeclampsia/eclampsia as the major risk factors for IUFD (15).

CONCLUSION:

As observed in this study majority of the cases were illiterate and did not have proper antenatal care, so better antenatal care and identification of high risk pregnancies and timely management may prevent from untoward consequences. Genetic factors involved in congenital malformations though cannot be avoided, however early screening and genetic counselling can be effective. Hypertensive disorders and antepartum hemorrahge are common risk factors in our set up which can be prevented. Although there is advancement in diagnostic and therapeutic techniques even though in some cases cause remained unexplained. We strongly recommend that to reduce rate of IUFD, thorough evaluation and investigations and proper antenatal care may be provide to prevent unfavourable outcomes.

CONFLICTS OF INTEREST: The authors declare no conflict of interest.

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