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Original Research Article

Study of feto-maternal outcome in patients with intra uterine fetal death

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ABSTRACT

Background: Intra Uterine Fetal Death (IUFD) is an important issue in modern obstetrics. This study has been undertaken to find out the incidence of IUFD, socio-demographic factors, probable etiological factors, mode of delivery, its outcome and complications if any.

Methods: This retrospective observational study was carried out at a tertiary care hospital. Data was collected from case papers of patients who have delivered beyond 20 weeks and/or baby weighing more than 500 grams and having IUFD prior to onset of labor or during labor with singleton pregnancy.

Results: Incidence of IUFD was 17.2 per 1000 births. Majority of the patients 93 (48.1%) were in age group of 26-30 years, 115 (59.5%) came as an emergency and 94 (48.7%) were primi gravida. Majority 89 (46.1%) patients had not taken any antenatal visit. IUFD occurred due to unexplained etiology, pre-eclampsia-eclampsia, anemia, uncontrolled diabetes, jaundice, antepartum haemorrhage and congenital malformation in 77 (39.9%), 51 (26.4%), 10 (5.1%), 7 (3.6%), 4 (2%), 29 (15%) and 2 (1%) respectively. Vaginal delivery occurred in 151 (78.2%). Majority of dead babies 111 (57.5%) were male, 71 (36.7%) were weighing 1kg or less and 92 (47.6%) were macerated. Emotional upset, DIC, PPH and ARF occurred in 193 (100%), 21 (10.8%), 15 (7.7%) and 1 (0.5%) respectively.

Conclusions: Majority of patients were unregistered and had not taken antenatal care or had inadequate antenatal care. Pre-eclampsia-eclampsia, APH, anemia and diabetes were the leading cause of IUFD along with unknown causes. A significant proportion of IUFD can be prevented by health education regarding adequate antenatal care, warning signs and institutional deliveries.

Keywords: Intra uterine fetal death, IUFD, Primi gravida, Pre-eclampsia

INTRODUCTION

Intrauterine fetal death (IUFD) is the death of a fetus prior to complete expulsion or extraction from the mother of a product of human conception irrespective of the duration of pregnancy and which is not induced termination of pregnancy. The death is indicated by the fact that after such expulsion or extraction, fetus does not breathe or show any other evidence of life such as beating of heart, pulsation of umbilical cord or definite movement of voluntary muscle. Defined variously after

20th or 28th weeks of gestation.¹⁻³ (The definition of length of gestation varies between countries).

IUFD is an important problem in modern obstetrics that affect the obstetrician, patient and her family. Rate of incidence of IUFD varies in different parts of the world. The prevalence of IUFD has been decreased in developed countries but it still remains very high in underdeveloped and developing countries. In this modern era, we should concentrate our resources towards providing antenatal care to all expectant mothers and towards organising our

reproductive maternity and child health care system to reduce stillbirth and perinatal mortality. In 21st century, fetus is considered as a separate patient, though in utero and therefore, fetal medicine is evolving as an upcoming branch. There are ample modern facilities for antenatal and intra natal fetal wellbeing assessment along with pre-conceptional care, prenatal diagnosis, identification of high-risk pregnancies and its management, selective termination of fetus having congenital anomalies etc can help to reduce incidence of IUFD. This study has been undertaken to find out the incidence of IUFD, probable etiological factors, mode of delivery and its outcome, complications and its management.

METHODS

This retrospective observational study was carried out at a tertiary care hospital during July 2015 to June 2017.

Inclusion criteria

Data was collected from case papers of patients who have delivered beyond 20 weeks and/or baby weighing more than 500 gram and having intra uterine fetal demise prior to onset of labor or during labor with singleton pregnancy.

Exclusion criteria

Patients who have delivered beyond 20 weeks and/or baby weighing more than 500 gram and having intra uterine fetal demise prior to onset of labor or during labor with multiple pregnancy.

Data included demographic details, obstetric and medical-surgical history, residence, number of antenatal visits, risk factors, examination findings, investigations, mode of delivery, outcome and complications if any. Analysis of data was done with appropriate statistical tool.

RESULTS

During the study period there were 193 patients of IUFD out of 11,192 deliveries. Hence, incidence of IUFD at our institute was 17.2 per 1000 birth. As shown in Table 1, majority of patients 93(48.1%) were in age group of 26-30 years and only 6(3.1%) of patients were in age group of ≥ 36 years. In the age group of 21-30 years there were 145(75%) patients. Majority of patients 115(59.5%) came as an emergency, while 78(40.4%) were registered patient. Majority of patients 152 (78.7%) were from lower socio-economic class. Majority of patients 94(48.7%) were primigravida, while 30(15.5%) patients were gravid four or more. More than half, 103(53.3%) patients had no significant past obstetric history. History of abortion and IUFD was present in 62(32.1%) and 28(14.5%) respectively. Majority of IUFD, 82(42.4%) occurred between 26 to 31 weeks of gestation and only 3(1.5%) IUFD occurred at 37 weeks of gestation or more.

Table 1: Maternal characteristics (N=193).

Maternal characteristics	Number	Percentage
Age (years)		
21-25	52	26.9
26-30	93	48.1
31-35	42	21.7
≥ 36	6	3.1
Type of admission		
Emergency	115	59.5
Registered	78	40.4
Socio-economic status		
Lower	152	78.7
Middle	41	21.2
Gravida		
Primi	94	48.7
Second	37	19.1
Third	32	16.5
\geq Fourth	30	15.5
Past obstetric history		
No significant history	103	53.3
H/O abortion	62	32.1
H/O IUFD	28	14.5
Weeks of gestation at the time of admission		
20-25	74	38.3
26-31	82	42.4
32-36	34	17.6
≥ 37	03	1.5

Table 2: Number of antenatal visits (N=193).

Number of antenatal visits	Number	Percentage
0	89	46.1
1	82	42.4
2	15	7.7
≥ 3	7	3.6

Table 3: Etiology (N=193).

Etiology	Number	Percentage	
Unknown	77	39.9	
Ante partum			
Maternal	Preeclampsia and eclampsia	51	26.4
	Anemia	10	5.1
	Diabetes	7	3.6
	Oligohydramnios	4	2.0
	Jaundice	4	2.0
	Fever	1	0.5
	Trauma	1	0.5
Fetal	Congenital malformation	2	1.0
Placental	Abruptio placenta	15	7.7
	Placenta previa	14	7.2
	IUGR	3	1.5
Intra partum			
	Obstructed labor	2	1.0
	Cord prolapse	2	1.0

As shown in Table 2, majority 89(46.1%) patients had not taken any antenatal visits and only 7(3.6%) had taken three or more antenatal visits.

As shown in Table 3, majority of 77(39.9%) IUFD were due to unexplained etiology. IUFD occurred due to pre-eclampsia-eclampsia, anemia and uncontrolled diabetes in 51(26.4%), 10(5.1%) and 7(3.6%) respectively. IUFD occurred due to oligohydramnios and jaundice in 4(2.0%) each. Fever and trauma lead to IUFD in 1(0.5%) each. Congenital malformation was the cause of IUFD in 2(1.0%). IUFD occurred in 15(7.7%) of abruptio placenta and in 14 (7.2%) of placenta previa.

As shown in Table 4, vaginal delivery occurred in 151(78.2%) and LSCS was performed in 42(21.7%) of patients.

Table 4: Mode of delivery (N=193).

Vaginal delivery 151 (78.2%)		LSCS 42 (21.7%)	
Spontaneous	74 (38.3%)	Previous scar	27
After induction	77 (39.8%)	APH	9
		Failure of induction	4
		Obstruction	2

As shown in Table 5, majority of dead babies 111 (57.5%) were male and 82 (42.4%) were female. Majority of babies born, 71(36.7%) were weighing 1kg or less. Only 1(0.5%) baby was more than 3500 grams in mother having history of diabetes. Majority of dead babies 101(52.33%) were fresh and 92(47.6%) dead babies were macerated.

Table 5: Details of baby (N=193).

Details of baby	Number	Percentage
Sex		
Male	111	57.5
Female	82	42.4
Baby weight		
500g-1000 g	71	36.7
1100g-1600 g	58	30.0
1700g-2200 g	48	24.8
2300g-2800 g	13	6.7
2900g-3400 g	2	1.0
≥3500 g	1	0.5
Appearance of dead baby		
Fresh	101	52.3
Old macerated	92	47.6

As shown in Table 6, all patients who delivered dead fetus had an emotional upset and were managed by counseling. DIC was present in 21(10.8%). PPH occurred in 15(7.7%). Out of these, obstetric hysterectomy was required in one patient. ARF due to eclampsia occurred in one patient.

Table 6: Complications.

Complications*	Number	Percentage
Emotional upset	193	100.0
DIC	21	10.8
PPH	15	7.7
ARF	1	0.5

*More than one complication was present in some patients.

DISCUSSION

During the study period, there were 193 patients with IUFD out of 11,192 deliveries. Incidence of IUFD at our institute was 17.2 per 1000 birth. Patel S et al, Kanavi J V et al and Balu D et al had reported incidence of IUFD as 43.2, 39 and 29.2 respectively.^{4,6}

In present study, majority of patients 145(75%) were in age group of 21-30 years. This is because majority of woman conceive during this age group. Study by Patel S et al and Balu D et al have reported 79(98.2%) and 96(80%) of patients in less than 30 years of age respectively.^{4,6} In present study, majority of patients 115(59.5%) came as an emergency, while 78(40.4%) were registered patient. Patel S et al and Anjali C et al had reported 70% and 89.5% of patients with IUFD as an emergency patient respectively.^{4,7} In present study, majority of patients 152 (78.7%) were from lower socio-economic class. Sharma et al had reported 71.2% patients in low-income group.⁸ In present study, majority of patients 94(48.7%) were primigravida. Patel S et al and Balu D et al have reported majority of patients, with IUFD being primigravida 40% and 39.1% respectively.^{4,6}

In present study, more than half 103(53.3%) patients had no significant past obstetric history. History of abortion and IUFD was present in 62(32.1%) and 28(14.5%) respectively. Patel S et al had reported history of IUFD and abortion in 16.2% and 11.2% respectively.⁴ In present study, majority 89(46.1%) patients had not taken any antenatal visit and only 7(3.6%) had taken three or more antenatal visit. As per WHO, pregnant woman should take first antenatal visit in first 12 weeks of gestation and with subsequent visit should be at 20, 26, 30, 34, 36 and 40 weeks.⁹ Lack of adequate antenatal care is the most important issue that needs urgent attention. If patient takes adequate antenatal care (ANC) then complication like anemia, pre-eclampsia, eclampsia, jaundice etc. can be diagnosed at earlier stage and treated by earlier admission, expert supervision, monitoring and successful delivery. Regular ANC not only detects complications but also help in its management and fetomaternal morbidity and mortality can be prevented. In present study, majority of IUFD 82(42.4%) occurred between 26 to 31 weeks of gestation and only 3(1.5%) occurred at 37 weeks of gestation or more. Singh N et al¹⁰ had reported 64.1% IUFD from 37 to 40 weeks and preterm IUFD in 31%.

In present study, majority of 77 (39.9%) IUFD were due to unexplained etiology. Patel S et al and Li-Chun L et al had reported 38% and 29.85% patients of IUFD having unexplained cause respectively.^{4,11} The proportion of unknown or unexplained stillbirth is dependent on what information is available and it is higher when information is scarce. In present study, the reason for higher proportion of unexplained etiology was present as majority of patients were unregistered and had inadequate ANC. Out of 77 patients of unknown etiology 36 had not taken any antenatal visit and 27 had taken only one antenatal visit. The number of unexplained stillbirths has been sharply reduced by increasing reports of autopsy in western countries. The absence of autopsy in present study seriously inhibited on diagnostic accuracy as consent for autopsy was not possible due to cultural reason.

In present study, IUFD occurred due to pre-eclampsia and eclampsia in 51(26.4%). Out of these, pre-eclampsia and eclampsia were present in 41 and 10 respectively. No antenatal visit was taken in 24 patients and only one visit was taken in 23 patients. Patel S et al had reported pre-eclampsia and eclampsia as a cause in 33.7% of IUFD.⁴ In present study, IUFD occurred due to anemia in 10(5.1%), out of these, 8 patients were severely anemic. out of 10 patients of anemia, 5 patients had not taken any antenatal visit and 4 had taken only one antenatal visit. Anjali C et al and Patel S et al reported IUFD due to anemia in 16% and 11.2% respectively.^{4,7} IUFD due to anemia could have been prevented by adequate antenatal care along with iron-folic acid supplementation. In present study, IUFD occurred due to uncontrolled diabetes and jaundice in 7(3.6%) and 4(2.0%) respectively. Out of 7 diabetic patients 4 had not taken any antenatal visit and 3 patients had taken only one antenatal visit. Jaundice due to HEV and HBV was present in 3 and 1 patient respectively. Singh N et al reported IUFD due to Diabetes in 1.35%. Patel S et al reported IUFD due to jaundice in 1.2%.^{4,10}

In present study, IUFD occurred due to congenital malformation in form of anencephaly in 2(1%). Patel S et al, Anjali C et al and Bakshi L et al had reported IUFD due to congenital malformations in 2.5%, 10.5% and 8.3% respectively.^{4,7,12} IUFD occurred due to APH in 29(15.0%). Out of these abruption and placenta previa were present in 15(7.7%) and 14(7.2%) respectively. Singh N et al reported IUFD due to abruption and placenta previa in 6.7% and 3.37% respectively.¹⁰ In present study, intrapartum IUFD occurred due to obstruction and cord prolapse in 2(1%) each. Singh N et al, Patel S et al and Anjali C et al had reported IUFD due to cord prolapse in 2.7%, 2.5% and 1.9% respectively.^{4,7,10}

In present study, vaginal delivery occurred in 151(78.2%) and LSCS was performed in 42(21.7%). Out of 151(78.2%) who delivered vaginally, spontaneous labor occurred in 74(38.3%) and in 77(39.8%), delivered after

induction. Induction failure was present in 4 patients. There were 81 patients who were induced, 45(55.5%) were induced by tab misoprostol and 36(44.4%) were induced by prostaglandin gel. Injection oxytocin was used for augmentation of labor in 26 patients who went in to spontaneous labor. Green top guidelines 55 recommend a combination of mifepristone and misoprostol preparation and WHO recommends oral or vaginal misoprostol for induction of labor in a patient of IUFD.^{3,13} Singh N et al had reported that 51% patients needed induction and 37.5% had spontaneous onset of labor.¹⁰

In present study, majority of dead babies 111 (57.5%) were male and 82 (42.4%) were female. Male sex was found significantly higher, 51.6% and 54.0% in studies reported by Balu D et al and Singh N et al respectively.^{6,10} Male sex is independently risk factor for poor pregnancy outcome.¹⁴ In present study, majority of babies born, 71(36.7%) were weighing 1kg or less. Only 1(0.5%) baby was more than 3500 grams in mother having history of diabetes. Majority of dead babies 101(52.3%) were fresh and 92(47.6%) dead babies were macerated. Balu D et al and Singh N et al reported 68.3% and 66.8% dead babies fresh respectively.^{6,10}

In present study, all patients who delivered dead fetus had an emotional upset and managed by counseling. Singh N et al reported psychological upset in 22.6%.¹⁰ Balu D et al reported postpartum psychosis in 0.8%.⁶ In present study, DIC was present in 21(10.8%). Major causes of DIC were due to eclampsia, severe preeclampsia and jaundice. PPH occurred in 15(7.7%). Out of these, obstetric hysterectomy was required in one patient. ARF due to eclampsia occurred in one patient. Blood and blood components were transfused in 57(29.5%), who had complication like anemia, PPH and DIC. Patel S et al had reported DIC in 22.5%.⁴ Singh N et al reported DIC in 4.72% and blood transfusion was required in 52.7%.¹⁰ Balu D et al reported blood transfusions in 15%.⁶

CONCLUSION

Majority of patients were unregistered and had not taken antenatal care or had inadequate antenatal care. Pre-eclampsia, eclampsia, APH, anemia and diabetes were the leading cause of IUFD along with unknown causes. A significant proportion of IUFD can be prevented by health education regarding importance of adequate antenatal care, warning signs and institutional deliveries. Adequate antenatal and intra natal care can prevent IUFD due to modifiable risk factors such as pre-eclampsia, eclampsia, anemia, diabetes, jaundice. Timely reference to higher center is also necessary. Previous history of abortion and IUFD was also present in little less than half of the patients. Women with history of IUFD should attend hospital based antenatal clinic in their next pregnancy and undergo increase antenatal surveillance. Emotional support and counselling of patients and her relatives are very much essential in patients having

IUFD. Contraception advice and prenatal counselling before next pregnancy can be helpful for better obstetric outcome. Future research should focus on improved means of assessment of fetal wellbeing and defining pathophysiological pathways leading to IUFD associated with maternal disease and need to address gaps in knowledge by setting research priorities.

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