Original Research Article

Etiology and management of intrauterine fetal death

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Abstract

Aim: To study the aetiology and managementof intrauterine fetal death. **Methods:** This was a prospective study carried out in MKCG medical college and hospital over a duration of 21months. **Results:** There were 721 cases of intrauterine fetal death, out of 15,755 deliveries during the study period giving rise to a still birth rate of 45.76. 66% were in the age group 21-30 yrs. 50.5% were in their first pregnancy.46.87%, 35.92% belonged to SES class IV and V respectively. 80.9% cases were unbooked. 54.64% cases were preterm. Aetiological factor could be ascertained in 79.82% cases and no cause could be explained in 20.18%cases. PIH and its complications accounted to a maximum of 16.22% cases followed by severe anaemia (12.34%) and abruptio placentae (11.37%). Rupture uterus (6.51%) was most common intrapartum cause of stillbirth. 58% were males and 42% were females. Fresh still born (55.1%) were more than macerated still born (44.9%).61.30% weighed 2500grams or less. **Conclusion:** The common associated risk factors of IUFD like PIH andits complications, severe anaemia in our community can be prevented with early booking, regular ANC and health counselling. Intrapartum complications accounted 14.96% cases of stillbirth which could have been prevented with early diagnosis and timely referral. Identification of High risk pregnancies and referral to higher centre may save many babies.

Key Words: IUD, Stillbirth.

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INTRODUCTION

Intrauterine fetal death (IUFD) is a heart-breaking and tragic event. It remains one of the areas of obstetrics in which improvements could be made. According to the 2003 revision of the Procedures for Coding Cause of Fetal Death Under ICD-10, the National Center for Health Statistics defines fetal death as "Death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy and which is not an induced termination of pregnancy, death indicated by fact that after such separation fetus does not show any evidence of life such as beating of heart, pulsation of cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps[1]. The definition recommended by WHO for international comparison is a baby born with no signs of life at or after 28 weeks' gestation[2]. In UK, stillbirths are those babies born dead after 24 weeks of gestation. In other countries, such as Australia, Canada, Finland, New Zealand, Iceland and many states in the USA, fetal death occurring after 20 weeks of gestation is termed as stillbirth.[3] The estimated global still birth rate worldwide was 18.4 per 1000 total birth in 2015.[4] The estimated still birth rate in India in 2015 was 22 per 1000 total birth.[7]According to 2011 census still birth rate in urban odisha was 5 and rural odisha 8.[5] This study was carried out in a tertiary care hospital to identify the causes, to study maternal complications of Intrauterine fetal death, and to suggest possible preventive measures to decrease the further incidence of intrauterine fetal death. In our study cases with gestational age more than 28 weeks were included.

MATERIALS AND METHODOLOGY

This was a prospective study carried out between December 2014 to September 2016 in the Department of Obstetrics and Gynaecology of MKCG MCH, Berhampur, Odisha.

Inclusion Criteria: Women diagnosed with intrauterine fetal death after an USG confirmation at gestational age 28 wks and more or Fetal weight more than 1000g when gestational age is not known.

Exclusion Criteria

- All pregnancies with gestational age less than 28wks.
- All pregnancies of gestational age more than 28wks with live fetus.

Methodology

On admission detail history regarding age, parity, SES, education, occupation, relevant past history, ANC, immunisation, IFA and calcium intake was collected. Thorough clinical and laboratory examination was done and relevant findings were recorded. After delivery foetuses were observed for any congenital anomalies present. Weight of the dead fetuses were recorded. After gross examination placenta was sent for histopathological studies. Autopsy could not be done as it was refused by majority of patients on religious grounds. During immediate post-partum period and subsequent post-natal period, the condition of the mother was closely observed for detection of any complications and their management.

Statistical Analysis: All data were entered in a SPSS data based programme and were analysed.

RESULTS

Table 1: Incidence of stillbirth

Total no of births	15,755
Total no of Still births	721
SBR	45.76

Table 2: Sociodemographic factors

		No.	Percentage (%)
Maternal age	<20	167	23.2
	21-30	476	66.0
	31-35	42	5.8
	>35	36	5.0
Parity	G1	364	50.5
	G2	220	30.5
	G3	71	9.8
	G4	18	2.5
	≥G5	48	6.6
SES	I	15	2.08
	II	44	6.10
	III	65	9.01
	IV	338	46.87
	V	259	35.92
Booking status	Booked	138	19.10
	Unbooked	583	80.90
GA	Preterm	394	54.64
	Term	279	38.69
	Post term	48	6.65

Table 1 represented incidence of stillbirth. Out of 15,755 deliveries in our hospital within the stipulated study period still birth occurred in 721 cases giving rise to a still birth rate of 45.76.

Table 2 represented sociodemographic factors contributing to intrauterine fetal death. Majority of cases (66%) belonged to age group of 21 to 30 yrs and were more common in primigravida (50.5%). Most of the cases belonged to SES class IV (46.87%) and V (35.92%) and were unbooked (80.9%). Maximum number of intrauterine fetal death were seen in preterm (54.64%) followed by term (38.69%) pregnancy.

Table 3: Gestational age at the time of admission

GA (wks)	No	Percentage (%)
Preterm	394	54.6
Term	279	38.7
Post term	48	6.7
Total	**721**	**100**

Table 3 showed that out of total 721 intrauterine fetal deaths, 394 (54.6%) were preterm accounting to a maximum toll in this gestational age. Next in sequence were term (38.7%)and post term (6.7%).Least incidence of fetal death was found in post terms.

Table 4: Aetiological factors of stillbirth

		No.	Percentage (%)
Antepartum	Severe Anaemia	89	12.34
	PIH andcomp	117	16.22
	GDM and DM	15	2.08%
	Thyroid disorders	15	2.08%
	Multiple pregnancy	16	2.21%
	Infections	42	5.82
	Abruptio placentae	82	11.37
	Placenta previa	18	2.49
	Prolongedpregnancy	48	6.65
	Diagnosed IUGR	14	1.94
	Oligohydramnios	8	1.10
	Cong anomaly	56	7.77
	Rh isoimmunisation	7	0.97
Intrapartum	Obstructed labour	13	1.80%
	Cord prolapsed	30	4.16%
	Trans lie hand prol	18	2.49%
	Rupture uterus	47	6.51%
Unexplained		146	20.18

As depicted in table 4an aetiological factor could be ascertained in 79.82% cases and no cause could be explained in 20.18%cases. Out of various causative factors PIH and its complications accounted to a maximum of 16.22% cases followed by severe anaemia (12.34%) and abruptio placentae (11.37%). It was

observed that 8.18% cases with abruptio placentae had associated PIH and its complications. Rupture uterus (6.51%) was most common intrapartum complication causing stillbirth.

Table 5: Mode of termination

MOT	No	Percentage (%)
VD	590	81.83
LSCS	84	11.65
Repair	17	2.35
STH	30	4.16

Table 5 depicted various modes of pregnancy termination. Vaginal delivery occurred in 81.83% cases and LSCS was conducted in 11.65% for different indications. Obstetric hysterectomy was performed in 30 (4.16%) and repair in 17 (2.35%) of cases who presented with rupture uterus.

Table 6: Methods of vaginal termination

MOT	SVD (n= 172)	Ind VD (n=418)	Total(n=590)
NVD	166(96.51%)	405(96.88%)	571(96.77%)
LPF	4(2.32%)	5(1.19%)	9(1.52%)
Ventouse	2(1.16%)	8(1.91%)	10(1.69%)

Table 6 explained that vaginal delivery was allowed spontaneously in 172 and labour induction was done in 418 cases. Out of 172 who were left for spontaneous vaginal delivery, 166 (96.51%) cases delivered spontaneously with minimal aids. Low perineal forceps and ventouse were applied in 6 cases. Normal vaginal delivery occurred in 405 (96.88%) out of 418 cases where IOL was tried. Low perineal forcep and ventouse were applied in 1.19% and 1.91% cases in IOL group. Ignoring whether labour was allowed spontaneously or induced, normal vaginal delivery occurred in 96.77% and low perineal forceps and ventouse were applied in 3.21% cases.

Table 7: Different indications for LSCS (n=84)

Indications	Preterm	Term	Post term	Total
Obstructed labour	0(0.00%)	9(1.24%)	4(0.55%)	13(1.80%)
Transverse lie	3(0.41%)	12(1.66%)	2(0.27%)	17(2.35%)
Prev 2 LSCS	1(0.13%)	3(0.41%)	0(0.00%)	4(0.55%)
Prevcs with FOI	0(0.00%)	5(0.69%)	2(0.27%)	7(0.97%)
PIH	7(0.97%)	16(2.21%)	4(0.55%)	27(3.74%)
Abruptio placentae	2(0.27%)	5(0.69%)	0(0.00%)	7(0.96%)
Placenta praevia	3(0.41%)	0(0.00%)	0(0.00%)	3(0.41%)
Failed IOL	1(0.13%)	5(0.69%)	0(0.00%)	6(0.82%)

The above table showed various indications of LSCS most common being PIH and its complications (3.74%) followed by transverse lie(2.35%). Incidence of obstructed labour resulting in intrauterine death was 1.8%. In 6 cases LSCS was done for failed induction of labour and 4 cases had 2 previous LSCS. LSCS was done in cases of abruptio placentae and placenta previa with active bleeding per vaginum in 7 and 3cases respectively.

Table 8: Features of stillborn

Features	No.	No.	Total
Sex	Female(42%)N=303	Male(58%)N=418	721(100%)
Gross features	FSB(55.1%)N=397	MSB(44.9%)N=324	721(100%)

Out of 721 cases 303(58%) were males and 418 (42%) were females. Percentage of fresh stillborn was55.1% and macerated stillborn was 44.9% cases.

Table 9: Weight of newborns (n=721)

Weight of Newborns in Kg.	No. of Cases	Percentage (%)
1-1.5	191	26.49
1.6-2.5	251	34.81
2.6 and above	279	38.69
Total	**721**	**100**

Table 9 represented weight of newborn babies. Maximum number of foetuses 442(61.30%) weighed 2500grams or less. 38.69% foetuses had birth weight 2600grams or more.

Table 10: H/P STUDY OF PLACENTA (n = 721)

H/P Finding	No. of Cases	Percentage (%)
Retroplacental haematoma	82	11.37
Infarction	74	10.26
Chorioamnionitis	166	23.02
Chorioangioma	5	0.69
Villus immaturity	31	4.29
Villus hypoplasia	50	6.93
Normal study	216	29.99
Failed follow up	97	13.45
Total	**721**	**100**

Table 10 demonstrated that placental abnormalities on histopathological examination were found in 56.56% of placenta. The above table depicted chorioamnionitis in 23.02%, retroplacental haemorrhage in 11.37%, infarction in 10.26%,villus hypoplasia in 6.93%,villus immaturity in 4.29% patients. Normal placental histology was found in 29.99% cases. 97(13.45%) patients did not report with placenta to pathology department. and hence were lost to follow up.

Table 11: Maternal complications (n =394)

Complications	No	Percentage (%)
PPH	57	7.90
Psychological upset	187	25.9
Puerperal infection	86	11.92
DIC	43	5.96
ARF	21	2.91
Maternal mortality	18	2.49
Total	**412**	**57.13**

Table 11 demonstrated different maternal complications that occurred following delivery of an IUD foetus. Post partum complications developed in 412 (57.14%) cases. Most common complication was psychological upset found in 187 (25.9%) cases. Next common was puerperal infection which was observed in 11.92%**.** Other less

common complications were PPH (7.90%), DIC (5.96%), ARF (2.91%). Maternal mortality occurred in 18 (2.49%) out of 721 cases.

DISCUSSION

During the study period there were 721 stillborns in our hospital out of 15,755 total births delivered after 28 weeks of gestational age. Incidence of stillbirth in our set up was 45.76 per 1000 birth. The reason for such high stillbirth rate in our centre was being it a tertiary care referral centre, Patients from very faraway places were referred here after an ultrasonographic diagnosis for further management. Maximum intrauterine fetal death i.e. 66% occurred in the age group between 21 to 30 years reflecting the period of maximum reproducibility. Maximum number of stillbirths in our study were primigravidas (50.5%).Maximum (80.9%) cases were unbooked and 82.79% cases belonged to socioeconomic class IV and V .Majority of studies showed that intrauterine fetal death was more closely associated with low socioeconomic status and unbooked cases. Because of lack of antenatal care high risk pregnancies remain undiagnosed leading to untimely fetaldemise. And also no intake of iron and folic acid poses them at risk of fetal neural tube defects and severe anaemia leading fetal death and various maternal complications. It is a well established fact that adequate ANC is associated with better pregnancy outcome.[2] Cause of IUFD could be explained in 79.82% cases and remained unexplained in 20.18% cases.In our study maximum stillborns were preterm (54.6%) similar to the study by Tamrakar SR[12]and majority (30.5%) of them occurred at late preterm. Most common attributable cause of intrauterine death, in our study was hypertension and its complications (16.21%) which was consistent with Kumar *et al* (19%) and Rathava R Y *et al*(17%) study.[2] In our research severe anaemia (12.3%) was next in frequency to hypertension and its complications as a cause for intrauterine fetal death. This high incidence of severe anaemia in our study might be due to poor compliance to oral iron therapy, hookworm infestation and food faddism. In our study Diabetes, thyroid disorders contributed 2.08% and 2.08% to intrauterine fetal death respectively which was in accordance with Patel S *et al* study.[8] In our study infection as a cause of fetal death was found in 5.67% cases which was consistent with the study by Choudhary A *et al*[9]. Abruptio placentae was seen in 11.37% cases which was in accordance with Rathava R Y *et al*[6] (12%) and Dave A *et al*[1] (14%) studies. In our study 8.18% cases had associated pregnancy induced hypertension. This causative factor could have been identified early and prevented with routine antenatal check up and proper management avoiding untimely intrauterine fetal demise and maternal morbidity and mortality. In our study 81.8% cases delivered by vaginal route and 18.2% cases operative intervention was taken which is consistent with almost all studies reviewed. In our study normal vaginal delivery occurred in 96.77% and low perineal forceps and ventouse were applied in 3.21% cases which is very much similar to a study by Singh N *et al*[10]. This suggests maximum number of dead foetuses are delivered vaginally with minimal aids. A very few cases require instrumental delivery in the form of low perineal forceps and ventouse. Most common indication for C section in our study was hypertensive disorders of pregnancy and its complications with low Bishop's score. Transverse lie with hand prolapse was the most common (2.35%) intrapartum complication requiring LSCS followed by obstructed labour (1.80%). Literatures reviewed does not clearly specify the different indications for LSCS in pregnancy with intrauterine fetal death. In our study the stillborn foetuses were predominantly malessuggesting a link between male sex and increased rate of stillbirth which is in accordance with almost all literatures reviewed. Previous studies also suggested that male foetuses are more likely to suggest from ante or intrapartum hypoxia. Maximum number of foetuses 442(61.30%) weighed 2500grams or less which was in accordance with the study by Dave a *et al*[1] (61.5%). This might suggest a possible role of prematurity and IUGR in causing fetal death. In our study incidence of IUGR diagnosed was very less (1.94%) as unbooked cases were too high (80.9%) in our set up. So maximum cases of IUGR remained undiagnosed in our study. Placental histopathology was normal in 29.99% cases and chorioamnionitis was next most common cause identified in 23.02% cases.Placental abnormalities on histopathological examination were found in 56.56% of placenta. Chorioamnionitiswas found in 23.02%, retroplacental haemorrhage in 11.37%, infarction in 10.26%,villus hypoplasia in 6.93%,villus immaturity in 4.29% patients. Normal placental histology was found in 29.99% case Our study findings are similar with Ptacek *et al*.[11] In our study psychological upset and DIC were observed in 25.9% and 5.96% os patients respectively which is consistent with research by Singh N *et al*.[10]Post partum haemorrhage in our study was observed in7.9% cases, puerperal infection in 11.92% and ARF in 2.91% (Table 30) which is in accordance with research article by Rathava R Y*et al*[6]. Maternal mortality in our study was 2.49% which is consistent with Patel S *et al*[8]

CONCLUSION

The common associated risk factors of IUFD like PIH and its complications, severe anaemiain our community

can be prevented with early booking, regular ANC and health counselling. Intrapartum complications accounted 14.96% cases of stillbirth which could have been prevented with early diagnosis and timely referral.
Identification of High risk pregnancies and referral to higher centre may save many babies.

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