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Intrauterine fetal demise: A retrospective study in tertiary care center

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Abstract
Aim: To establish the possible components of stillbirths or intrauterine foetal demise.
Methods: The current study included all pregnant women who were delivered at the hospital with Intrauterine Fetal Demise or Still Birth at or after 24 weeks of pregnancy. Maternal age, parity, probable cause for Intrauterine Fetal Demise, booked/unbooked case, route of delivery (vaginal/LSCS), and maternal complications-early were among the variables examined.
Results: The mean age of women was 27.19±4.93 (20-39) years with majority in 20-25 years age group (48.2%). Most of the intra-uterine death was between women with primigravida (3.7%), 1-2 gravida (16.4%), 2-4 gravida (41.1%) and Gestational age of 28-30 weeks (14.2%), 30-32 weeks (22.4), 32-34 weeks (8.1). Normal delivery was among 62.3% and Emergency LSCS was done for 27.1% and elective LSCS for 7.1%. Distribution were 49.4% male and 50.6% female babies with 76.5% low birth weight babies. The factor contributing to intra-uterine death were Pregnancy induced hypertension (29.0%), Antepartum hemorrhage (21.8%), Anemia (14.5%), Fetal growth retardation (10.9%), congenital malformation (9.4%), Prematurity (3.5%) and Unknown (5.9%).
Conclusion: The causes of IUFD are multifactorial, and they can be avoided via community education, effective obstetric care, and prompt medical intervention to prevent stillbirth and improve India's perinatal mortality rate.

Keywords: Antepartum hemorrhage, emergency LSCS, intrauterine fetal demise, pregnancy induced hypertension

Introduction

At any gestational age, an IUFD is a significant obstetrical disaster. Maternal, neonatal, and child health are given a lot of attention all throughout the world. The sector of maternal and neonatal health care is receiving more attention and funding, yet births are still the least studied and documented [1]. IUFD is defined as fetal death (FD) after 20weeks of gestation [2] which can either early or late IUFD. If FD occurs <twenty four weeks of pregnancy, it is called early IUFD; if occurs >24 weeks, it is called late IUFD. FD occurs in about 1% of all pregnancies [2].

According to the International Classification of Diseases, revision 10 (ICD -10) [3], a FD weighing at least five hundred gms (or, if birth weight is unavailable, after twenty two weeks gestation or a crown-heel length of less than 25 cms). A late FD is defined as the death of a foetus weighing at least one thousand grams (or gestational age of 24 weeks or a crown-heel length of thirty five cms) at least 24 weeks after conception. In many countries particularly in the developing world, intrauterine foetal death (IUFD) is calculated on the basis of deaths at 28 or more weeks of gestation or weight of 1000 gms or more [3].

According to the Indian census of 2006, the rate of IUFD is 6.4 per 1000 live births in a developing country like India, while the rate of perinatal mortality is 32 per 1000 live births [4]. The lowest rates of IUFD are seen in Finland and Singapore, where it is as low as 2 per 1000 births, while the highest rates are found in Pakistan, where it is 47 per 1000, and Nigeria, where it is 42 [5].

When a foetus dies unexpectedly during a pregnancy that had previously appeared to be perfectly normal, it is extremely upsetting. It is an event that tests the doctor's medical as well as personal abilities. To estimate the likelihood of recurrence, prevention, or corrective action, it is critical to identify specific likely causes of foetal mortality. Documentation of the primary incident or circumstance that led to foetal death is critical for an obstetrician [6].

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Only when the probable aetiology of foetal death has been determined can the patient be provided appropriate treatment, preventive, and recurrence prevention advice. Stillbirths account for more than 98 percent of all births in poor nations [6].

Stillbirth has been understudied and underreported for a variety of reasons, and efforts have been made to reduce the prevalence of unfavorable pregnancy outcomes in developing nations [7]. Perinatal mortality is a sensitive indication of maternity and child health (MCH) care and one of the country's most critical health indicators. Stillbirths account for about 60% of perinatal mortality in our country, and they can be avoided to a greater extent [8].

Despite improvement in antenatal care and intrapartum care, stillbirths remain an important, largely unstudied and major problem in obstetrics worldwide, especially in developing country like India. Although the overall perinatal mortality rate has fallen in the past several decades, the incidence of stillbirth in developing countries varies from 1.5 to 2.2%. In India still births rate is as high as 100/1000 births in some regions [9].

This retrospective study was conducted to determine the possible causes of stillbirths or IUFD.

Materials and Methods
After receiving approval from the protocol review committee and institutional ethics committee, this observational study was done in the department of Obstetrics and Gynecology, TMMCRC, TMU, Moradabad, India, from March 2019 to April 2020. After obtaining informed consent, the patient or relatives, if the patient was not in good health, were asked to provide a complete medical history. All patients were informed about the procedure's approach, risks, advantages, outcomes, and associated complications.

The current study included all pregnant women who were delivered at the hospital with Intrauterine Fetal Demise or Still Birth at or after 24 weeks of pregnancy. Maternal age, parity, probable cause for IUFD, booked/unbooked case, mode of delivery, maternal complications and placental histopathology were among the parameters used in the study.

Statistical analysis
Data was analysed using software version 24 and the tests used were Chi-square test and Fischer test. Incidence was calculated for 1000 live births.

Results
The study population included 85 women with intra-uterine demise. The mean age of women was 27.19±4.93 (20-39) years with majority in the age group of 20-25 years (48.2%) followed by 26-30 years (29.4%) and more than 30 years (22.4%). Majority of the cases were unbooked (90.6%). (Table 1)

Most of the intra-uterine death were among women with 2-4 gravida (61.2%), followed by primigravida (24.7%) and ≥ 5 (14.1%). Gestational age was less than 28 weeks among 193 (22.4%), 28-34 weeks among 38 (44.7%), 34-37 weeks among 16 (18.8%) and more than 37 weeks among 12 (14.1%) women. Emergency Laparotomyy was done for 4(4.7%), Emergency LSCS among 23 (27.1%), LSCS for 6 (7.1%) and Normal vaginal delivery among 52 (61.2%) subjects. (Table 2)

There were 42 (49.4%) male and 43 (50.6%) female babies. There were 65 (76.5%) low birth weight babies. (Table 3)

The factors contributing for the intra-uterine death were Pregnancy induced hypertension (31.0%), Antepartum hemorrhage (22.8%), Co-morbidities (15.5%), Fetal growth retardation (11.9%), congenital malformation (9.4%), Prematurity (3.5%) and Unknown (5.9%). (Table 4)

Table 1: Age distribution of the study population

Age	Frequency	Percent
20-25 years	41	48.2%
26-30 years	25	29.4%
More than 30 years	19	22.4%
Mean±SD	27.19±4.93 (20-39) years	

Table 2: Parity and Mode of delivery among study population

		Frequency	Percent
Booking status	Unbooked	77	90.6%
	Booked	8	9.4%
Parity	Primigravida	21	24.7%
	2-4	52	61.2%
	≥ 5	12	14.1%
Gestational age (in weeks)	< 28	19	22.4%
	28-34	38	44.7%
	34-37	16	18.8%
	> 37	12	14.1%
Mode of delivery	Emergency LSCS	25	29.4%
	Elective LSCS	7	8.2%
	Normal vaginal delivery	53	62.3%

Table 3: Distribution of Gender and Birth weight of baby

		Frequency	Percent
Gender of baby	Male	42	49.4%
	Female	43	50.6%
Low Birth weight	No	20	23.5%
	Yes	65	76.5%

Table 4: Causes of intrauterine fetal death

Cause	Frequency	Percent
Pregnancy induced hypertension	31	31.0%
Antepartum hemorrhage	23	22.8%
Co-morbidities	16	15.5%
Fetal growth retardation	12	11.9%
Congenital malformation	9	9.4%
Prematurity	3	3.5%
Unknown	6	5.9%

Discussion
In India, the rate of still birth rate in India is reported to be 20-66 per 1000 total birth in different states [110]. The still birth rate in our study is close to the lower limit of the national average. Bhatia T *et al*. [11] reported the still birth rate to be 27.76/1000 birth and Korde-Nayak *et al*. [12]. Showed stillbirth rate of 23.4/1000 birth which were closer to our study. Vidyadhar B *et al*. [13] showing stillbirth rate of 33/1000 births which were higher than our study.

Eurasia, Southeast Asia, and Latin America and the Caribbean had the lowest stillbirth rates (12, 13, and 13 per 1,000, respectively) [14], which are still lower than our country. India has the highest rate of stillbirths (75%) in comparison to South-East Asian countries [15].

The higher rates in the current study as compared to western countries could be explained by the fact that ours tertiary care institute catering to rural population. Poor socioeconomic status, poor nutrition leads to anemia and malnutrition which is a major contributor for perinatal mortality. Illiteracy, lack of awareness of adequate antenatal care and unsupervised deliveries also contribute to higher stillbirth rate. IUFD rates were higher in high birth order which highlights the importance of family planning.

In this study, the highest percentage of stillbirths was in the age group between 20 to 25 years (48.2%). A study by Anupamarani V *et al*. [16] showed maximum rate of stillbirth in 21-30 years age group (69.09%) and Kumar *et al*. [1]. Mostafa *et al*. [18] reported that socio-demographic variables are important risk factors for perinatal deaths.

In our study, majority of the cases were unbooked (90.6%) and only 9.4% were booked cases. This co-incided with the findings by Sharma *et al*. [19], majority were unbooked cases was 90.6% and booked cases were 9.4%. Whereas Kumar *et al*. [17], stated that ninety eight point four percent of women were booked. Katti *et al*. [20] also found that IUFD rates were higher in unbooked cases (67.15%) as compared to booked cases (32.85%). Al Kadri *et al*. [21] also reported similar evidence in which unbooked women had 70% risk of IUFD. Improper antenatal care leads to lack of identification of high risk factors, anemia, preclampsia, placenta previa, malpresentations, Rh negative status, fetal anomalies and delay in effective management of these cases.

Most of the intra-uterine death were among women with 2-4 gravida (61.2%), followed by primigravida (24.7%) and ≥ 5 (14.1%). Karale *et al*. [22] found that the maximum stillbirths were in multigravida mother (57.0%) than primigravida (43.0%). Unlike in two separate studies by Mostafa *et al*. [18] and Golding *et al*. [23] observed that women with no previous children were found to have the highest incidence of stillbirth.

In the present study, 61.2% delivered vaginally which was lesser than that reported by Korde NV *et al*. [12], Chitra K *et al*. [24] and Karale *et al*. [22]. Katti *et al*. [20] also reported that majority of women delivered vaginally (85.7%).

In our study, the stillbirths were more among women with low-birth-weight babies (76.5%). In another case-control study [23], low birth weight was found to be associated with stillbirth with 54% stillborn babies had low birth weight (< 2500 gms), and 19% had very low birth weight (< 1500 gms). Kumar *et al*. [17] reported that (47.5%) weighed <1000 grams, 19.7% 1001-1500 grams, 9.8% 1501-2000 grams and 9.8% were 2001-2500 grams. Sujata *et al*. [25] stated that occurrence of stillbirth was associated with lowbirth-weight babies. Chitrakumari *et al*. [26] found that preterm labour and low birth weight were associated with more stillbirths and Vidyadhar *et al*. [13] also stated similar findings.

Most common complications associated with IUFD which is trauma and stress of labour, seen in 29.4% of cases. Singh N *et al*. [27] reported psychological upset in 22.63%. Proper counselling of parents should be done regarding future pregnancy and to keep space between pregnancies as patient needs some time to come out from stress. Other complications associated with IUFD were mostly due to underlying etiologies like APH 11.8% and PIH 20.0%. In present study 9.4% cases of congenital malformation lead to IUFD. Anjali C *et al*. [28] had reported IUFD due to congenital malformation in 10.5% and 10% respectively.

In our study, Pregnancy induced hypertension contributed to 20.0% cases of intra-uterine death. This was quite similar to the study by Kumar *et al*. [17], hypertensive disorders of pregnancy which contributes to 16.39% death. The hypertensive disorders of pregnancy contributing to the IUD was 14.1% in the study by Safarzadeha *et al*., Chippa S *et al*. (24.39%) and Yogesh *et al*. (17%) [29-31].

PIH and eclampsia constituted major cause of IUFD accounting upto 36.17%. Patel S *et al*. reported PIH & eclampsia as cause of IUFD 33.7% [32]. A pregnant woman with severe pre-eclampsia has a 0.5 percent chance of dying, and a 13 percent chance of perinatal death [33]. If the illness is not addressed and eclampsia develops, the mother's risk of death rises to 5% and the baby's risk rises to 28%. This underlines the need of good prenatal care, including preeclampsia screening and treatment with low-dose aspirin. Pre-eclampsia can also be detected early and treated appropriately, which minimizes perinatal death and morbidity.

Vidyadhar *et al*. [13] observed that 7% of total stillbirths were congenitally malformed. Sikha Rani *et al*. [34] observed that long referral interval between health centres and tertiary health institutions, delay in seeking care, inadequate intrapartum monitoring were major causal factors for intranatal stillbirths in that locality.

Intrapartum stillbirths are the results of foetal distress and obstructed labour and often reflect poor care during delivery. Lack of antenatal care, low socio-economic status and other pregnancy complications are responsible for adverse pregnancy outcomes. Stillbirths are difficult to prevent unlike early neonatal death, because all the risk factors have not been adequately identified, for which substantial portion of stillbirths are still classified under the heading of unexplained group.

Prevention of intranatal foetal death as well as stillbirths and unexpected early neonatal deaths should be a multi-disciplinary approach and should include obstetricians, paediatric pathologists, paediatricians, radiologists, geneticist and other paramedical support stuffs. Preconception care, early detection of risk factors like maternal diseases, congenital malformations, IUGR etc are necessary to plan the next level of management. The mothers should be referred to a tertiary care centre for management of prematurity and other obstetric and medical complications. Finally, awareness in the community level improves the ultimate outcome to a large extent.

Conclusions

Correct stillbirth evaluation and enhanced cause-of-death data can help advocate for child survival efforts. We can seek solutions to avoid recurrence of IUFD by providing excellent antenatal care and early detection and therapy of obstetric problems by knowing the underlying variables.

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