Original Research Article

Analysis of Factors Pertaining to Intrauterine Fetal Death at Tertiary Care Centre

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Abstract:

Introduction: Intrauterine fetal death (IUFD) is unpredictable aspect during regular antenatal checkup. Early assessment and timely intervention can reduce the incidence of IUFD.

Aim: The aim of this current study is to know incidence of intra-uterine fetal death, etiology or risk factors for antepartum and intrapartum fetal deaths (IUFD) and their management strategies.

Method: A retrospective observational study was carried out in Government Hospital, Kurnool Medical College between March 2021 to March 2022. Total 100 cases of IUFD were included in this study.

Results: Majority study subjects were at age of 21 years and most of them are primigravida who are unbooked cases belonging to lower socioeconomic class and many of them were past dated pregnancies. 22% study subjects were having previous history of IUFD/stillbirths. 50% of the study subjects had maternal cause of IUFD, among those pregnancy induced hypertension (32%) followed by gestational diabetes mellitus (GDM) and 40% had foetal causes and 10% were of undetermined cause. Majority of IUFD fetus were male and weighed between 1.5 to 2 kg birth weights.

Conclusion: Majority of subjects was primies, unbooked, lower socioeconomic class and postdated pregnancy suggesting these are the risk factors for IUFD. IUFD can be prevented by providing patient and community health education for regular antenatal care regarding warning signs during antenatal, hospital delivery, and early hospital visit.

Keywords: Intrauterine foetal death, primigravida, gestational diabetes mellitus, meconium-stained liquor.

Introduction

Intrauterine Fetal Death (IUFD) is defined as death prior to complete extraction from the mother of a product of human conception irrespective of duration of pregnancy and it is not induced termination of pregnancy.1 Literally, IUFD embraces all fetal deaths weighing 500 g or more and more than 22 weeks of gestation.2 In India, rates range from 20 to 66 per 1000.[3] Prevalence of IUFD is the direct indicator of the quality of antenatal care in society.[4]

The frequency of perinatal deaths in a community is a reliable barometer of the standard of antenatal care provided there. In wealthy nations, the occurrence of IUFD has decreased to a minimally avoidable rate, but it is still relatively high in poor and developing nations. The incidence of intrauterine growth retardation and stillbirth can be measured by looking at the number of foetal deaths that occur for every one thousand live births. The incidence rate varies greatly from country to country, ranging from five per 1000 births in countries with high incomes to 36 per 1000 births in countries with low levels of development. This research is being done with the goal to determine the factors that increase the likelihood of a foetus passing away inside the uterus and looking at possible preventative measures.[5,6]There are several reasons for stillbirth, includes pregnancies lasting more than 40 weeks, problems during deliveries, high blood pressure, diabetes, infection, congenital and genetic abnormalities, and infections.

Risk factors for IUFD include intrauterine fetal asphyxia which impaired placental blood gas exchange leading to progressive fetal hypoxemia and hypercapnia with metabolic acidosis, malpresentation, abruptio placentae, cord prolapse.[10,11] IUFD risk increases by four times with pregnancy at an early age i.e. age of 16 years or

less than 16 years.[7] This is a catastrophe that will affect society as a whole in the long run. We need to learn more about the reasons behind stillbirths. This knowledge will assist those who have been affected to deal with their loss and, more importantly, will help them prepare to reduce the risk of stillbirth in subsequent pregnancies. This activity covers the role of the healthcare team in evaluating, monitoring, and improving care for patients who have been diagnosed with stillbirth. Current study aimed to identify the incidence of intra-uterine fetal death, probable etiology for antepartum and intrapartum fetal deaths and its management.

Materials and Method

A retrospective observational study was conducted in Department of Obstetrics and Gynaecology, Government Hospital, Kurnool Medical College, Kurnool, Andhra Pradesh during the period from March 2021 to March 2022.

Inclusion criteria: Ultrasonography confirmed the presence of pregnant women>20 weeks with absent fetal heart sounds.

Exclusion criteria: Pregnancy with live fetus and molar pregnancy.

Procedure: A written and informed consent from all the patients included in study. Institutional review board and ethics board approval was obtained for this study. The study included women with intermediate and late IUFD diagnoses that were sonologically proven to have occurred after 20 weeks of gestation. Analysis of all the records from the past was performed. Detailed history of each individual case was taken and examination was done. The demographic profile, obstetric information on the current and previous pregnancies, gestational age at diagnosis, and any other medical or obstetrical complications related were also noted as study parameters. The case sheet's investigations, including the haemogram, blood group and Rh factor, urine test, HIV-1 and -2, HBs Ag, Anti-HCV, VDRL, random blood sugar, LFT, KFT, and serum TSH levels, were also examined. Depending on the case's importance, special investigations were also examined. perinatal incidents and To identify the likely reason and any peripartum maternal problems, recorded data was examined. Fetal weight and gender were recorded. Fetus was examined for any possible cause of IUFD. The entire data was recorded in individual patient's proforma. The results were statistically analysed. The SPSS software version 17.0 was used for statistical analysis (SPSS, Chicago, Illinois). Categorical variables were reported as absolute numbers and percentages, and continuous variables were presented as mean. Before statistical analysis, the normality of the data was evaluated. The Mann-Whitney U test was used for variables that were not normally distributed, while the unpaired test will be used to compare continuous variables that were regularly distributed. Either the Fisher's exact test or the chi square test will be used to examine categorical variables. Statistics were judged significant at p <0.05.

Results

This research is retrospective conducted in a tertiary health care centre among 100 cases of Intrauterine foetal death (IUFD). Mean age was recorded as 21.40 ± 2.59 yrs, with of minimum 18yrs to maximum of 29yrs. Majority of study subjects 46% are in the age group 21-25yrs followed by 46% subjects in the age group ≤20yrs. Mean age of study subjects is 21.40 ±2.59 yrs with a range of 11yrs. It was found that the extreme age of the mother is for IUFD. According to modified Kuppuswamy socioeconomic scale, it was noted that majority of study subjects 37% are in lower class followed by 30% study subjects in middle class. Still births are present in 15% of study subjects. Consanguity was seen in 4% subjects. It was observed that history of infertility is present in 3% study subjects. Based on parity, it was observed that majority of study subjects (79%) were primi. Majority (54%) of study subjects have not booked pregnancy and hence, unbooked pregnancies are more to develop IUFD's. About 22% study subjects were having previous history of IUFD/stillbirths.

In clinical presentation, majority of study subjects (32%) are having pain abdomen as presenting complaint followed by (25%) study subjects having reduced fetal movements. Fever in 6%, breathlessness in 4%, Bleeding P/V in 11%, absent of fetal movements in 11%, and PROM in 10% study subjects respectively. It was found that majority of study subjects (33%) were in gestational age ≥37 weeks. 30% were in 34-36 gestational weeks, 15% were in 28-34 gestational weeks, and 22% in 20-28 gestational weeks respectively. It was observed that post-dated pregnancies are more prone to develop IUFD. Majority of study subjects (54%) have normal BMI followed by (37%) study subjects were of overweight. 9% have underweight. Overweight mothers have more chances of IUFD compared to underweight mothers.

Maternal causes of IUFD: It was observed that 50% study subjects have maternal cause of IUFD. About 16(32.00%) study subjects have Pregnancy induced hypertension(PIH) followed by 13(26.00%) study subjects having Gestational Diabetes mellitus (GDM) as major maternal causes of IUFD (Table 1).

Foetal causes of IUFD: It was observed that foetal causes are present among 40(40%) study subjects. About 22(55%) study subjects have meconium stained liqour followed by 8(20%) study subjects

have cord around neck as major foetal causes of IUFD (Table 2).

Undetermined causes

10(10%) study subjects etiology is not known.

Table 1: Maternal causes and IUFD

Maternal cause	Frequency	Percentage
PIH	16	32.00
GDM	13	26.00
Oligohydramnios	08	16.00
Placental abruption	08	16.00
Rh incompatibility	05	10.00
Total	50	100.00

Table 2: Foetal causes and IUFD

Foetal cause	Frequency	Percentage
Cord around neck	08	20.00
Cord prolapse	03	07.50
Meconium stained liquor	22	55.00
IUGR	05	12.50
Breach	02	05.00
Total	40	100.00

It was observed that majority 47(47%) of IUFD's have birth weight 1.5-2.0kg followed by 35(35%) IUFD's birth weight 2.0-2.5kg (Table 3). It was observed that majority 58(58%) IUFD's are males and 42(42%) are females.

Table 3: Birth weight and IUFD

Birth weight(kg)	Frequency	Percentage
1.0-1.5	14	14.00
1.5-2.0	47	47.00
2.0-2.5	35	35.00
2.5-3.0	04	04.00
Total	100	100.00

Discussion

This is a retrospective study conducted among 100 cases of Intrauterine foetal death (IUFD) to know the frequency of intrauterine fetal death, probable etiology for antepartum and intrapartum fetal deaths and its management. In this present study, the mean age of study subjects is 21.40 ±2.59 yrs with a range of 11yrs. It found that extremes the age of the mother is a risk factor for IUFD. majority of study subjects (37%) are in lower class followed by (30%) study subjects in middle class and majority 54(54%) of study subjects have not booked pregnancy. Unbooked pregnancies are more likely to develop IUFD.

It was observed that majority of study subjects (54%) are having normal BMI followed by (37%) study subjects are overweight. Overweight mothers have more chances of IUFD compared to underweight mothers.

Susmita Sharma et al study found that 42% of patients were from metropolitan regions and 58% of patients were from rural areas. Nearly 71.2% of the population came from low-income families, 17.2% from middle-income families, and 11.2% from high-income families. 222 deliveries (88.8%) were unbooked, compared to 28 (11.2%) that were booked and supervised.

It was observed that stillbirths are present among 15(15%) study subjects. Similarly, in a study done by Susmita Sharma et al, 132 (52.8%) of the 250 were mature and 118 (47.2%) were preterm. There were 63 macerated stillbirths and 187 fresh stillbirths.

The majority of study subjects (79%) were primi. It was found that young mothers who are primi are more prone to have IUFD. It was observed that the majority of study subjects 33(33.00%) were in gestational age ≥37 weeks. It was found that post-dated pregnancies are more prone to develop IUFD.

In a study done by Shreya Gupta et al. [9] most of the intrauterine deaths 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 and by Rao et al, Gestational weeks mean was 35.70±2.46 weeks.

Majority of study subjects 32(32%) are having pain abdomen as presenting complaint followed by 25(25%) study subjects having reduced fetal movements. Similarly, in a study done by, Shehla Jamal et al, Majority, 77.1% complained of reduced fetal movements.[10]

In our study, it was observed that H/o infertility is present among 3% study subjects. It was observed that about 50(50%) study subjects have maternal causes of IUFD. 16(32%) study subjects have Pregnancy induced hypertension(PIH) followed by 13(26%) study subjects having Gestational Diabetes mellitus (GDM) as major maternal causes of IUFD.

In a study done by, Sushmita Sharma et al, 9.2% of women had a history of a previous stillbirth. Among the illnesses, anaemia and hypertension were linked to a higher rate of stillbirth. 38 (15.2%) of the 52 hypertensives (32.8%) had severe gestational hypertension. A total of 16 (6.4%) ruptured uteruses, 12 (4.8%) had extended labor, 9 (3.6%) had obstructed labor, and 6 (2.4%) had the cord wrapped around the baby's neck. [8,11] They came to the conclusion that ante-partum foetal fatalities were most commonly caused by proximal biological risk factors.[12]

In the current investigation, maternal morbidity was present in 2 cases. A study done by Shehla Jamal et al, Hypertensive disorders of pregnancy were the leading maternal cause in 41% cases. Congenital anomalies accounted for 23.2% in fetal causes, and 30.3% of still births were due to abruption, amongst the placental causes. 12.5% cases remained unexplained. Prolonged labor was the most common labor complication seen in 33.9% of them. Sepsis complicated 8.92% of the total cases.[12]

In our study, it was observed that foetal causes are present among 40(40.00%) study subjects. About 22(55.00%) study subjects have meconium stained liqour followed by 08(20%) study subjects have cord around neck as major foetal causes of IUFD. The cause for IUFD among 10(10.00%) study subjects is not known.

In a second study, Manocha A et al. [13] evaluated the characteristics of placenta cases resulting in IUFD. Maternal vascular malperfusion (MVM), which includes retroplacental hematomas, foetal vascular malperfusion (FVM), inflammatory lesions, and idiopathic lesions were the four categories into which the lesions were separated. The most common intraoperative injury was to the coronary artery (30%), followed by injuries to the mother and joint FVM (10%). (62) In 12 and 6% of cases, different inflammatory lesions with FVM were seen. 18% had no assigned cause. In 35 cases, lesions indicating foetal hypoxia were found. The MVM was heavily weighted in both the early and late PT (23 and 5%). The most frequent reason for the term "placentas" was idiopathic. IUFD was frequently brought on by MVM lesions, which also directly contributed to the decline of the foetus.

In our study, there was only 2 babies with IUFD, one with anencephaly and one with hydrocephalus was found. In a similar study done by, Susmita

Sharma et al, total of anamolies were Hydrocephalus (3.6) Anencephaly was (2.8) Multiple congenital anomalies was (0.8) Spina bifida was (0.8) Omphalocele major was (0.8) and Hiroko Takita et al, More than half of cases with foetal factors were attributable to chromosomal abnormalities, while 56% of IUFDs were caused by prenatal morphological abnormalities. Fetal morphological abnormalities associated with trisomy 18 to 21 were often seen.[8,11,14] In our study, There was a finding that the majority (47%) of IUFD have birth weight 1.5-2.0kg followed by (35%) IUFD's birth weight 2.0- 2.5kg. There was a finding that the majority 58(58.00%) IUFD are males and 42(42.00%) are females. In a study by Shreya Gupta et al, the distribution of Gender and Birth weight of baby male were 40.6% and Low Birth weight were 23.5%.

Conclusion

Majority of subjects were primies, unbooked, lower socioeconomic class and postdated pregnancy suggesting these are the risk factors for IUFD. 50% study subjects had maternal cause of IUFD, commonest being PIH followed by GDM. 40% had foetal causes, commonest being meconium stained liqour followed by cord around neck; cause was undetermined in 10% of cases.

Hence we recommend that patient education, attention to the warning signals, regular checkups, and early referral can avoid a substantial majority of IUFD. Additional testing can be performed to identify the most likely cause for counselling the family and reducing the likelihood of IUFD recurrence. More research is warranted and protocols to prevent and manage the IUFD.

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