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A Retrospective Study of Intra-uterine Fetal Deaths at a Tertiary Care Centre

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ABSTRACT

Objective: *To identify the risk factors and to streamline preventive and management protocols for intra uterine fetal death (IUD).*

Methods*: This was a retrospective study from Jan'11 to Feb'14 which was conducted at FAA Medical College, Barpeta, Assam. IUD was defined as fetal death beyond 28 weeks of gestation and / or birth weight >500gm. Maternal and fetal records were analyzed. Mode of delivery and associated complications were studied.*

Results*: Total number of deliveries were 1776 with total no of IUD being 57. Incidence of IUD at our institute was 32 per 1000. Of these 51% (29) were ante-partum and 49% (28) were intra-partum. In 7% of cases, no causes were indentified. Among the identifiable causes, very severe anemia (37 %) and hypertensive disorders (17%) were most common followed by placental causes (16%). Induction was done in 10 patients, 47 patients had spontaneous onset of labour and caesarean section was done in 7 patients.* ***Conclusions****: The present study is an effort to compile a profile of maternal, fetal and placental causes culminating to IUD at our institute. This emphasizes the importance of proper antenatal care and identification of risk factors and its treatment. Institutional deliveries should be promoted to prevent intra-partum fetal deaths. A substantial number of IUD are still labeled as unexplained, hence cannot be prevented. Decrease in the incidence of IUD would significantly reduce the perinatal mortality.*

Keywords*: Intra uterine fetal death, unexplained fetal death, tertiary care centre*

INTRODUCTION

Intrauterine fetal death (IUD) is an unfortunate and tragic situation for the obstetrician and a traumatic event for the family. WHO defines IUFD as death prior to the complete expulsion or extraction from its mother of a product of conception after the age of viability (according to American College of Obstetricians and Gynecologists, ACOG-22 weeks.[1] The Perinatal Mortality Surveillance Report [CEMACE, 2011] defines stillbirth as a baby delivered without signs of life after 24 completed weeks of pregnancy and was accepted by the Royal College of Obstetricians and Gynecologists in their 2010 Green-top Guideline.[2] Only cases with > 28 weeks of gestations are included in this study.

More than 3.2 million stillbirths occur globally each year. Still birth rate in India is 9 per 1000 total births. Perinatal mortality includes number of stillbirths in the first week of life per 1000 live births. It is a major marker to assess the quality of health care delivery. Intrauterine fetal death (IUFD) remains one of the areas of obstetrics in which improvements could be made.

The major problem facing the obstetrician is the identification of those truly at risk remains problematic as many cases seem to occur in the absence of recognized risk factors. Intrauterine fetal death is a significant

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contributor to perinatal mortality in developing countries although improved antenatal care, advanced techniques of perinatal diagnosis and better intrapartum monitoring has reduced the incidence. Intrauterine fetal death may be antepartum or intrapartum. Antepartum fetal deaths are associated with several maternal, placental or fetal factors. Hypertensive disorders of pregnancy, anaemia, obesity, diabetes, high parity, advanced maternal age are well recognized maternal factors whereas congenital anomalies and intrauterine growth retardation are important fetal factors. Placental causes include abruption and antepartum hemorrhage. Intrapartum fetal death is usually the result of fetal distress and / or obstructed labour and reflects poor quality of clinical care. Cord complications include cord prolapse, tight cord around neck and true knot.

Our study was carried out with the aim of identifying epidemiology of intrauterine deaths and its risk factors, to find the incidence and to streamline the preventive and management protocols in our rural population at Barpeta and nearby areas.

MATERIALS AND METHODS

This was a retrospective study from Jan 2011 to Feb 2014 which was conducted at FAA Medical College, Barpeta, Assam. Total number of deliveries during this period was 1776. Among this, total number of IUD including both ante and intra partum deaths were 57. Pregnancy and maternal characteristics related data were collected from tickets and labour room register books of the hospital. Fetal death diagnosed by ultrasound before the 28th week of gestation was excluded. Records of mother were thoroughly analyzed taking into account the age, parity, gestational age, associated complicating factors like hypertensive disorders of pregnancy, diabetes, Rh isoimmunization, severe anaemia, history of IUD in previous pregnancy. Fetal characteristics were studied with respect to sex, birth weight and gross congenital anomalies. Risk factors related to placenta and cord i.e. true knot, cord prolapse and tight cord around neck were also analyzed along with mode of delivery associated complications and co-morbidities were also studied. Transabdominal USG was done to confirm IUD. Laboratory investigations were studied. Postmortem examination of dead foetus after delivery was not performed.

RESULTS

Total number of deliveries in our study was 1776 and total no of IUD was 57. Incidence of IUD at our centre was 32 per 1000.

Age wise distribution of cases:

An initial univariate analysis was performed to identify those factors that seemed to be associated with stillbirth. Majority of the patients were belonged to age groups 21–30 years, i.e., the period of maximum reproducibility. 51% (29) were ante-partum and 49% (28) were intra-partum death (**Figure 1**).

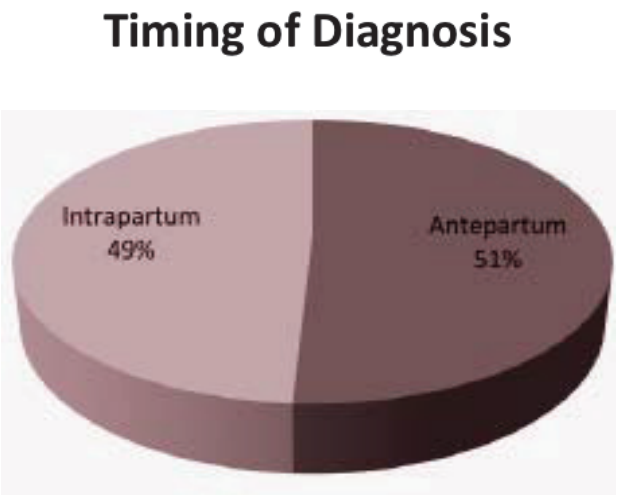

Figure 1 Age wise distribution of cases

Causes of Intrauterine Fetal Death (IUD):

In 7% cases, no causes were identified. Among the identifiable causes, 37% was very severe anemia (21) and it was the most common cause. Hypertensive disorders was in 17% (10) followed by placental causes (16%). Among the placental factors, 16% were due to ante partum haemorrhage. Among the APH, 11% were due to abruption and 5% IUDS were due to placenta previa. Malpresentation was in 12% IUDs. Obstructed labour (3%) was the major intrapartum factor. Ruptured uterus was in 2% cases, multiple pregnancies in 2% cases and in 2% cases cause was fetal malformation. In 7% cases of IUD no cause was identified. The different causes of IUDs are shown in **Table 1.**

Table 1 Different causes of Intrauterine Fetal Death (IUD) cases

Sl. No	Causes	Frequency	Percentage(%)
1	Severe anaemia	21	37
2	Antepartum Haemorrhage	09	16
3	Malpresentation	07	12
4	Pregnancy Induced Hypertension	06	10
5	Eclampsia	05	7
6	Obstructed Labour	02	3
7	Ruptured Uterus	01	2
8	Fetal malformation	01	2
9	Twin Pregnancy	01	2
10	Prolonged Labour	01	2
11	Unidentified	04	7
Total number of IUD cases		57	100

We observed that 39% of IUDs were primipara and 61% were multipara. Out of 61% multipara, 21% patients were grand multipara. Women who are older have a greater risk of stillbirth. Parity, although not significant on univariate analysis, showed in the multivariate analysis that being para 2 was slightly protective against stillbirth. When the causes among primipara and grand multipara were analyzed, placenta previa was found to be common in grandmultipara, but in primipara, causes were mainly unexplained.

Modes of delivery: Out of 57 IUDs, induction was done in 10 patients, 47 patients had spontaneous onset of labour **(Table 2)**.

Table 2 Modes of delivery of intrauterine fetal death (IUD) cases

Sl. No	Modes of delivery	Number of cases	Percentage (%) of cases
1	LSCS	07	12.2
2	LSCS	01	1.7
3	Breech extraction	06	10.5
4	SVD	43	75.4
Total number of cases:		**57**	**100**

Gestational Age (**Figure 2**): Majority (48%) of IUD occurred between 35-37 wks of pregnancy. 34% occurred between 28-35 wks of pregnancy. At term or post mature pregnancy IUD occurred only in 18%. Two fetal deaths were diagnosed after the 41st week of gestation.

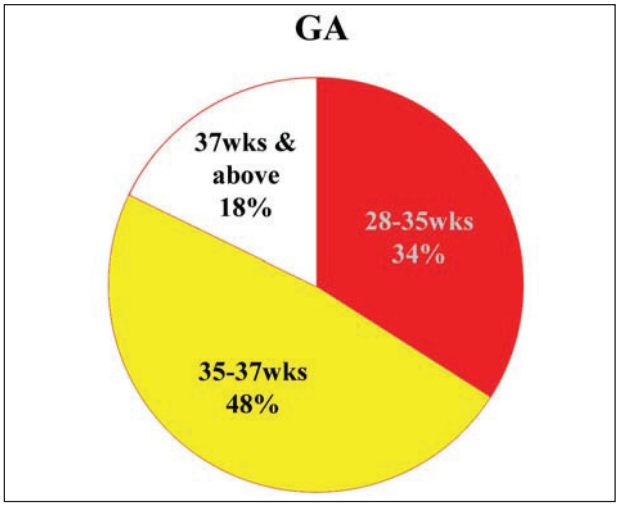

Figure 2 Diagnosis of IUD at different gestational age

Frequency of antenatal check-up: In our study we observed that full antenatal check-up was done only in 4% of cases. In 14% cases patients visited antenatal OPD only 2-3 times. ANC was not carried out in 82% cases in our study.

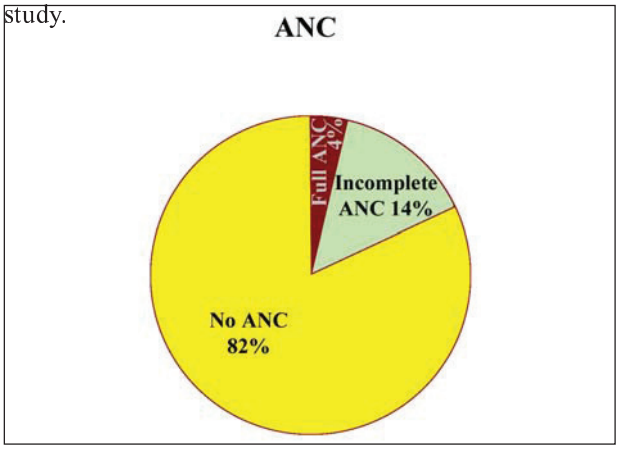

Figure 3 Frequency of antenatal check-up of the cases

Investigations (**Figure 3**): In our study investigations was done only in 14% cases. Other 86% cases did not do any investigation and did not attend ANC clinic or were irregular in ANC.

It was observed that 58% of dead fetus weighed from 1.5 to 2.5 kg. Among the IUD fetuses, male sex was found to be significantly higher (64%) as compared to female sex (36%). In our study 66% fetuses were non-macerated as compared to 34% macerated fetuses. Most common morbidity encountered in patients with IUD was psychological upset (30 % patients).

DISCUSSION

In our study, we tried to identify pregnancy features associated with IUFD. Incidence of IUD at our institute were found to be 32 per 1000 which is in accordance to the study conducted by Maleckiene L et al in Lithuania[3] and was comparable to other studies also.[4, 5, 6] Out of 57 cases, only 9 (15.7%) cases were booked and 48 (84.3%) cases were unbooked. Patients were admitted with chief complaints of loss of fetal movements or less fetal movements (78.3%), pain abdomen (6%) and bleeding per vaginum (15.7%).

It is interesting that in more than half of the recorded cases (54.7%) the complaint was of reduced or absent fetal movements. Reduced fetal movements can be associated with adverse fetal outcome, and women who report reduced fetal movements should be investigated thoroughly. In our study majority of women were in the age group 20-30 years. This is in contrast to other studies [7, 8] where advanced maternal age was associated with higher risk of IUD. This is because more pregnancy occurs in early age as in our locality as early marriage is prevalent.

Intrapartum fetal death accounted for 49 % of fetal deaths. Among intrapartum complications, Malpresentation (12%) leading to IUD was common (6.08%). Next case was obstructed labour (3%). These are rarely seen in developed countries. In our locality, this is due to patient's ignorance, late diagnosis of malpresentstion and lacks of well equipped health care delivery system at grass root level. In our study; cause of intrauterine fetal death was identifiable in 93% fetuses which included both ……..

Cause of antepartum IUD was maternal, fetal and placental factors. Among the maternal factors very severe anemia (37%), i.e. Hb- 4-5gm/dl and hypertensive disorders of pregnancy (17%) were associated with significant number of fetal deaths. This was observed because our institute being tertiary care centre where patients were referred from elsewhere. Majority of patients were unbooked and did not receive any antenatal care. Hypertension as a leading cause of IUD was also seen in several other studies.[11, 12]

In our study 39% patients were primipara, 21% were grand multipara[13] and parity of 2 to 4 were 40% which was in accordance with study conducted by Tariq et al who also found that parity has no relation with IUD.[14]

A past history of intrauterine fetal death indicates some subclinical genetic or chromosomal problem, which can recur in future pregnancies. Our study showed a solitary case with congenital Neural tube defect, which also had a history of previous IUD due to anomaly. This was in contrast to the study conducted by Tariq et al where congenital malformations accounted for 25.2% cases of IUD. This may be due to the lack of folic acid supplementation in periconceptional period.[15]

Two of the cases had Rh–ve blood group, but there was no Rh isoimmunization in our study. Cause of IUD was different in those two cases. One was due to obstructed labour and the other was due to severe anemia. This was supported by a study conducted by Choudhury Anjali and Gupta Vineeta.[16]

Among the placental causes, 11% was due to abruption and 5% was due to placenta previa. This is in accordance to study conducted by Jahanfar et al.[17, 18]

It was noticed that most of our fetuses were lost between 35- 37 weeks (48%). 18% IUD occurred at 37 weeks and beyond. The critical peak at which fetuses were lost is variable in various literatures suggesting different predisposing pathology for IUFD in different communities.

It is evident that poor growth was a factor in many of these cases. The vast majority of IUGR fetuses were not diagnosed during the antenatal period. A previous study performed in Kathmandu[19] during a similar time frame confirmed that only 17% of fetuses in < 10th percentile group were identified antenatal in a population of women identified as being low-risk at booking. In our study, there was no antenatal checkup in 82% cases and no investigations were done in 86% cases primarily because of ignorance and poor socioeconomic condition. This is also in accordance to other studies[20]. Post mortem was not done in our study. Hence, in 7% cases, causes were obscure.

CONCLUSION

The purpose of counting IUD is to understand the contributory factors and to seek ways of avoiding recurrence by proper antenatal care and early diagnosis of complications and its adequate management. Clinical assessment and evaluation is recommended to assess maternal wellbeing and to determine the cause of death, the chance of recurrence and of avoiding further pregnancy complications (RCOG, 2010 guidelines). The maternal risk factors such as hypertension, severe anaemia

and diabetes control can prevent intrauterine fetal death. First and second trimester ultrasound evaluation may be helpful to rule out congenital malformations and placental disorders which are also implicated in intrauterine fetal death. Better intrapartum fetal monitoring for high risk cases can lead to prevention of IUFD. In conclusion, the associated risk factors in our community seem to be preventable. Attention should be paid to health education with emphasis on antenatal care, the benefit of regular attendance, improved periconceptional environment, nutrition and micronutrient status especially iron and folic acid intake. Identification of high risk cases and timely referral to higher centres may save the baby. Patient compliance is important in reducing most of these preventable fetal losses.

Women with a history of IUFD should attend antenatal clinic in their next pregnancy and undergo increased antenatal surveillance. Future research should focus on improved means of clinical assessment of fetal well being and defining pathophysiological pathways leading to still birth associated with maternal disease. Parents have the greatest stake of all in the wellbeing of their baby, and must be part of the drive to reduce stillbirth. We must let the life of every mother and baby count.

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Conflict of interest: None declared.

Ethical clearance: Taken.

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