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Analytical Study of Intrauterine Fetal Death Cases and Associated Maternal Conditions

Dr. Maheshwari[1], Dr. VeerendraKumar C M[2]

[1]Resident, BMCRC Ballari
Email: *dr.maheshwarikumbar[at]gmail.com*

[2]Professor and HOD, Department of OBG, BMCRC Ballari
Email: *veerendrakumarcm[at]gmail.com*

Abstract: ***Background: Intrauterine fetal death (IUFD) is a heart - breaking and tragic event. Intrauterine deaths remain an enormous challenge in the care of pregnant women, especially in developing countries. Intrauterine fetal death is an important indicator of maternal and perinatal health of a given population. This study was undertaken to study the maternal and fetal factors associated with intrauterine fetal death. Materials and Methods: This was an analytical study carried out in department of Obstetrics and Gynaecology, Ballari Medical College and Research Centre, Ballari from August 2023 to January 2024 for duration of 6 months. Informed consent was taken from all the participants. A predesigned proforma was used to collect relevant information from all those who gave consent to participate in the study. The details of complaints at admission, obstetrical history, menstrual history, examination findings, per vaginal examination findings, mode and method of delivery, fetal and maternal outcomes, placental examination, condition of cord and investigation reports were recorded. Result: A total of 60 intrauterine fetal deaths were reported amongst 3823 deliveries conducted during the study period in our hospital. The incidence rate of IUFD was 15/1000 live births. Amongst the identifiable causes, hypertensive disorders (18.60%) and very severe anaemia (11.40%) were the most common ones followed by placental causes (16.67%). Congenital malformations were responsible for (18.33%) cases of IUFD and in rest (35%) cases no obvious cause could be identified. Induction was done in 35 patients, 21 patients had spontaneous onset of labour and 4 patients underwent caesarean delivery. Conclusion: The Intrauterine fetal death (IUFD) is associated with different causes and risk factors like anemia, preeclampsia, abruptio placenta, hypertensive disorders of pregnancy, maternal infection, Rh isoimmunisation. Intrauterine death rate can be reduced by proper management of these risk factors during antenatal care and intrapartum care with proper health counselling.***

Keywords: Intrauterine fetal death, incidence, antenatal, hypertensive disorders, anaemia, congenital malformations

1. Introduction

Intrauterine fetal death (IUFD) is a heart - breaking and tragic event [1], it remains an enormous challenge in the care of pregnant women, especially in developing countries [2 - 3]. The definition recommended by WHO for international comparison is a baby born with no signs of life at or after 20 weeks gestation or birth weight of >500gms [4].

The occurrence of IUFD can constitute a nightmare for parents and the attending clinician. Intrauterine fetal death is an important indicator of maternal and perinatal health of a given population. Fetal death is an obstetric death accounting for approximately half of perinatal death. The mode of antepartum and intrapartum surveillance for fetal wellbeing has advanced in last few decades. There are so many maternal conditions and diseases that are responsible for poor obstetrical outcomes. Intrauterine death is useful index to measure the quality of antenatal and intranatal care. By proper antenatal check - ups, the high - risk cases associated with poor outcomes can be identified [5]. Most intrapartum IUFDs are associated with obstetric emergencies, whereas antepartum IUFDs are associated with maternal diseases, and infections [6]. They include pre - eclampsia, intrauterine growth restriction, abruptio placenta, infections, umbilical cord complications and environmental hazards. Advanced maternal age, high parity, obesity, and obstructed labor are also widely recognized risk factors for IUFD [7 - 8].

The primary aim of this study is to analyse the maternal conditions resulted with intrauterine fetal death with specific reference to clinical characteristics, fetal, and maternal complications/risk factors and to find the preventable causes of fetal death [9 - 10]. Secondary objective of this study is to understand the prevalence, socio - epidemiological and etiological factors of IUFD and IUFDs analysis at tertiary care hospital. Causes of fetal death are typically categorized according to the compartment, primarily responsible for the pathologic process: Fetal, Maternal and Placental [11 - 12].

2. Materials and Methods

All patients admitted in Department of Obstetrics and Gynaecology, labour room, at Ballari Medical College and Research Centre, Ballari. The patients mainly presented with chief complaints of decreased or loss of fetal movements, history of leaking, bleeding per vagina. This was an analytical study carried out in department of Obstetrics and Gynaecology, Ballari Medical College and Research Centre, Ballari from August 2023 to January 2024 for a period of 6 months. A total 3823 deliveries occurred during this study period, among these 2018 underwent caesarean delivery and 1815 had vaginal delivery.60 intrauterine fetal deaths were reported during the study. Socio - demographic characters and clinical parameters were noted including maternal age, parity, gestational age, mode of delivery, birth weight, place of residence, and booking status including obstetric complication, maternal, and placental risk factors were recorded.

Inclusion Criteria:

- All the women with gestational period beyond 20 weeks to full term pregnancy having normal/malformed fetus.

Exclusion Criteria:

- The records of births below 20 weeks of gestation.
- Fetus weighing below 500gm
- Twin babies were excluded.

3. Results

This study was conducted from August 2023 to January 2024. In the study period there was total 3823 deliveries and among them total number of IUFD was 60. The Incidence of IUFD at our centre was 15 per 1000 live birth (Table 1).

Table 1: Total deliveries and total IUFD during the study period

Total deliveries and total IUFD	
Total deliveries	3823
Total IUFD	60

Table 2: Distribution of cases according to demographic area

Demographic area		
Demographic Area	No of Cases	% of Cases
Rural	34	56.67
Urban	26	43.33
Total	60	100

In this study patients were distributed according to demographic area. Most of the patients 34 (56.67%) belong to rural area and other 26 (43.33%) belong to urban area. Rural areas with lack of medical facilities, meager knowledge and awareness about routine antenatal checkup has impact on incidence of intrauterine fetal death (Table 2).

Table 3: Distribution of cases according to maternal age.

Maternal Age Range	No. of Cases	% of Cases
<20	5	8.33
21 - 25	17	28.33
26 - 30	15	25
31 - 35	22	36.67
>35	1	1.67
Total	60	100

In our study 5 (8.33%) fetal demise occurred in women <20 years of age, 17 (28.33%) fetal deaths occurred in age group of 21 - 25, Majority of fetal deaths 22 (36.67%) occurred in women between 31 to 35 years of age (Table 3).

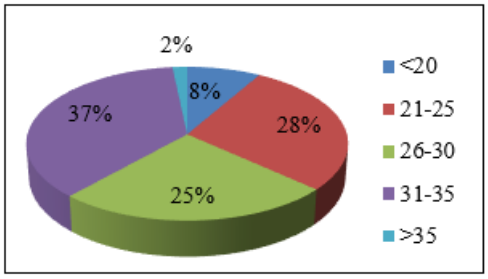


Table 4: Distribution of cases according to gravidity

Gravidity	No of Cases	% of Cases
G1	10	16.67
G2	22	36.67
G3	15	25
G4	10	16.67
G5	1	1.67
G7	2	3.33
Total	60	100

Among the study cases 10 (16.67%) were primigravida, 22 (36.67%) women were 2nd gravida, 15 (25%) women were 3rd gravida, 10 (16.67%) women were 4th gravida, 1 (1.67%) women was 5th gravida and 2 (3.33%) women were 7th gravida. In our study overall 50 (83.33%) women were multigravida, as gravidity increases risk of IUFD increases hence multi gravida were more effected (Table 4).

Table 5: Gestational age distribution of IUD fetus

Gestational age of IUD fetus in weeks	No. of Cases	% of Cases
21 - 32	29	48.33
33 - 36	19	31.67
≥37	12	20
Total	60	100

Majority of IUFD 29 (48.33%) occurred between 21 to 32 weeks of gestation and all those babies were preterm, 19 (31.67%) IUFD occurred between 33 - 36 weeks of gestation and 12 (20%) IUFD occurred at ≥37 weeks of gestation (Table 5).

Table 6: Based on Fetal birth weight

Birth weight	No. of Cases	% of Cases
<2000 gms	34	56.67
≥2000 gms	26	43.33
Total	60	100

In this study 34 (56.67%) fetal deaths were noticed with birth weight of <2000gms and 26 (43.33%) fetal deaths had birth weight of > 2000gms (Table 6).

Table 7: Based on IUFD causes

Causes of IUFD	No. of Cases	% of Cases
Fetal	11	18.33
Placental	10	16.67
Maternal	18	30
Unknown	21	35
Total	60	100

Majority of fetal deaths 21 (35%) were due to unexplained etiology. IUFD occurred due to maternal causes were 18 (30%), followed by placental and fetal accounting for 10 (16.67%) and 11 (18.33%) respectively (Table 7).

Table 8: Based on previous history of IUFD.

Previous History of IUFD	No. of Cases	% of Cases
Yes	12	20
No	48	80
Total	60	100

In our study 12 cases had previous history of IUFD (Table 8). Various causes of previous history of IUFD are listed below.

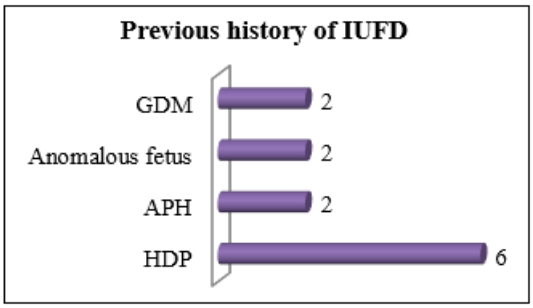


Table 9: Based on previous bad obstetric history

Previous BOH	No. of Cases	% of Cases
YES	31	51.67
NO	29	48.33
Total	60	100

Among 60 cases, 31 had previous bad obstetric history (Table 9). Different reasons of previous BOH are listed below.

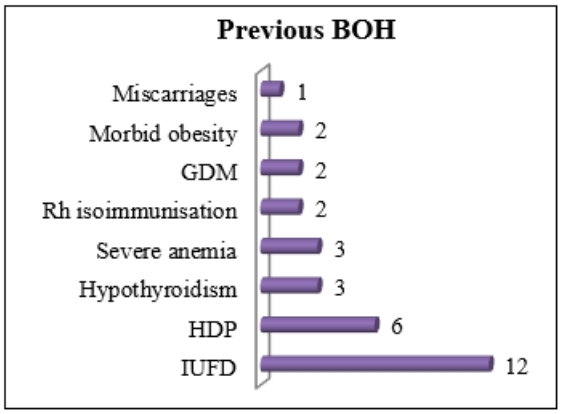
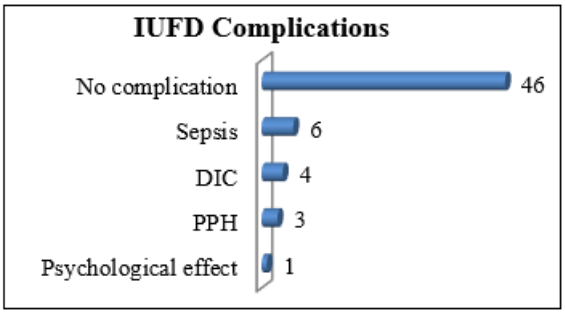


Table 10: Based on IUFD complications

Complications	No. of Cases	% of Cases
Psychological effect	1	1.67
PPH	3	5
DIC	4	6.67
Sepsis	6	10
No complication	46	76.67
Total	60	100



In our study, 1 patient was psychologically affected accounting to (1.67%), 3 (5%) turned to be complicated by PPH, 4 (6.67%) were found to have DIC, 6 (10%) had sepsis and uncomplicated being 46 (Table 10).

4. Discussion

This study consists of 60 IUFD cases amongst 3823 total births. Thus, the incidence of IUFD was 15/1000 live births. The incidence of IUFD reported from Lalita Meena et al. [2] was 38.22/1000 and Hanslata et al. [3] was 37/1000. The incidence rate reported from various centers in India is 24.4 - 41.9% [2 - 5].

The various reasons of IUFD at our center is, being a tertiary care center, all high risk and complicated cases were referred. The other reason could be a high number of unsupervised pregnancies due to various reasons like illiteracy, poverty and the inadequacy of monitoring facilities in rural areas. Nutritional deficiency and anemia are leading cause of poor pregnancy outcome.

The increased risk of fetal death is present amongst the teenage group and older women. The study carried out by Dr Anjali Choudhary et al. [4] had shown increased risk of IUFD in women over 32 years of age. In our study also the fetal deaths were more in the age group of 31 - 35 years. This is because most of the women in India complete the family before 35 years of age.

In order to reduce the IUFD in our study analysis of cases with previous history of IUFD and bad history of obstetric was focused; same parameters analysis was done by Dasgupta S et al [11].

The incidence of IUFD is higher amongst women with minimal or no antenatal care. Patient compliance is important in reducing most of these preventable fetal losses. In case of unexplained IUFD fetal autopsy, placental and membrane examination could be helpful for finding out causes and patients should be counselled in a positive way to explore unexplained IUFD.

Due to the lack of antenatal care, high - risk pregnancies are still undiagnosed, leading to untimely IUFD [9 - 10]. Intake of folic acid and iron therapy will protect from risk of neural tube defects in the fetus and severe anemia, resulting in fetal death and complications in different mothers [11 - 12]. It is a well - established fact that adequate and regular prenatal care is associated with better pregnancy outcomes; same was highlighted by Sinha K et al. [5] in their study.

5. Conclusion

Nothing is as sad and depressing as intrauterine death of a fetus for both parents and the obstetrician. Congenital fetal malformations and aneuploidies are unavoidable but IUFD due to these causes can be prevented by routine prenatal screening. Despite advances in diagnostic and therapeutic modalities a large number of fetal deaths remain unexplained, even with proper antenatal care. The majority of IUFD is associated with common causes and risk factors like preeclampsia, abruptio placenta, severe anemia, gestational diabetes, multiple pregnancies, and maternal infection which increased in presence of low socioeconomic status and lack of antenatal care, low resources in rural hospital and lack of mother education regarding IUFD. Targeting these factors and causes that related to IUFD is

very important issues to diminish intrauterine fetal death rate. Hypertensive disorders, diabetes antepartum hemorrhage, maternal infections are the common factors causing fetal demise which are preventable. Since the health of pregnancy is closely linked to maternal health, strategies to improve the health and well - being of women living in low - resource hospitals should also improve the outcome of pregnancy. Fetal demise can be prevented in our society by reserving and offering appropriate antenatal care through preconception and conception period with health counseling, and encourage pregnant women to visit health facilities to detect high - risk pregnancy, referral of these cases to higher center may save a lot of babies and help researchers and health care providers to set strategies to prevent other intrauterine fetal deaths.

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