Factors Associated with Intrauterine Fetal Death at Paropakar Maternity Women's Hospital

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ABSTRACT

Background

Intrauterine fetal death (IUFD) is a demise occurring at 20 or more weeks of gestation and weight 500 gram or more. Intrauterine fetal death at any point during gestation is a traumatic event not only to the patient but also to the care giver. The purpose of this study is to know the risk factors associated with intrauterine fetal death.

Objective

To determine the factors associated with intrauterine fetal death.

Method

Prospective observational study was conducted at Paropkar maternity women's hospital, Thapathali, Kathmandu. All the cases with intrauterine fetal death were admitted and delivered in the hospital with period of gestation 20 weeks to term pregnancy. All the relevant data were recorded in pre-designed proforma. The collected data were entered in SPSS 25 version for analysis.

Result

There was a total 5153 deliveries in three months, with prevalence of 1.2% and intrauterine rate of 12.03 per 1000 births. Out of 50 enrolled cases, 78% (n=50) of patient had not attended antenatal checkup. Majority (n=50; 74%), belonged to age group 21-35 years, 48% of intrauterine fetal death were term pregnancies of 37 to 42 weeks of gestation. Maximum 20% of IUFD, weighed between (1-1.5 kg) (1.5-2 kg) and (2.5-3 kg). Thirty-nine babies were macerated and eleven non-macerated. Pregnancy induced hypertension was most common (26%), followed by ante-partum hemorrhage (8%), hypothyroidism and anemia (6%), meconium stained liquor and cord prolapse (6%), gestational diabetes mellitus, congenital anomalies, chronic hypertension (4%), intrauterine growth restriction and urinary tract infection (2%). Twelve cases underwent cesarean section. Postpartum complications were found in 10 cases; 4 cases had postpartum hemorrhage, 4 had prolonged hospital stay and 2 cases developed hemolysis, elevated liver enzyme, low platelet count (HELLP) syndrome.

Conclusion

This study concluded that maximum no. of intrauterine fetal death were seen antenatally, as 78% of cases were found macerated. The commonest identified risk factor was pregnancy induced hypertension, followed by ante-partum hemorrhage, anemia, hypothyroidism, which seem to be preventable risk factors of intrauterine fetal death, but still unidentified risk factors are of great challenges for the obstetricians.

KEY WORDS

Ante-partum haemorrhage, Intrauterine fetal death, Postpartum haemorrhage

INTRODUCTION

Intrauterine fetal death (IUFD) is defined as fetal death after 20 weeks of gestation and weighing more than 500 grams.[1] It a major obstetrical catastrophe at any gestational age but the emotional pain and distress caused by this event increases in direct relation to the duration of pregnancy.[2] The stillbirth rate varies sharply by countries. The lowest rates of 2 per 1000 births arerecorded Finland and Singapore and the highest (47 per 1000) in Pakistan and (42 per 1000) in Nigeria. IUFD rate also varies widely within different states in countries like in India, i.e. 20 to 66 per 1000 births in different states.[3]

The main aim of this study was to find out the risk factors associated with intrauterine fetal death in Paropakar Maternity and Women's Hospital, as there is increasing number of unknown fetal demise.

METHODS

The study was an observational study, which was done from February 2020 to April 2020, for three months at Paropakar Maternity Women's Hospital, Thapathali, Kathmandu.

Patients were enrolled in the study only after getting informed written consent. Gestational age was calculated according to last menstrual period. Risk factors related to maternal, fetal, placenta and cord was noted. The parameters for the analysis included maternal age, parity, and probable medical and obstetrics cause for IUFD, booked case or un-booked case, macerated, non-macerated, mode of delivery, maternal complications-early and late IUFD. History regarding her menstrual cycles, past history, personal history was also elicited and noted in the proforma. General examination, local examination findings, per vaginal examination, mode of delivery was done thoroughly. Relevant investigations were also done.

The inclusion criteria were, women with IUFD admitted and delivered in the hospital irrespective of mode of delivery. The period of gestation included was 20 weeks to 42 weeks of gestation. All the data collected was entered in the computer using SPSS version 25. A descriptive cross-sectional study was done accordingly.

RESULTS

During the study period, the total number of deliveries recorded was 5153. Deliveries were conducted in labor room, birthing centre, emergency room, antenatal wards and operation theatre. The number of IUFD during the period was 62 (12.03 per 1000 births). Fifty of these cases constituted the study population.

Intrauterine fetal death was seen more commonly in the age group 21-35 years, which comprises about 74% of the total cases (table 1). Out of 50 IUFD cases, 66% were

Table 1. Maternal demographic age distribution of IUFD (n=50).

Age (years)	Frequency	Percentage (%)
<20	09	18
21-35	37	74
>35	04	08

Table 2. Gestational age distribution (n=50).

Gestational age (weeks)	Frequency	Percentage (%)
< 28	05	10
28-32	11	22
32-37	10	20
37-42	24	48

Table 3. Maternal medical risk factors (n=50).

Medical cause	Frequency	Percentage (%)
Hypothyroidism	03	06
Anemia	03	06
Chronic hypertension	02	04
Urinary tract infection	01	02

Table 4. Obstetric maternal risk factors (n=50).

Obstetric cause	Frequency	Percentage (%)
Pre-eclampsia	10	20
Ante-partum hemorrhage	04	08
Gestational hypertension	03	06
Gestational Diabetes mellitus	02	04
Obstetric cholestasis	01	02

Table 5. Fetal, placental and cord factors (n=50).

Fetal, placental and cord	Frequency	Percentage (%)
Intrauterine growth restriction	01	2
Meconium stain liqor	03	6
Anomalous Baby	02	4
Cord around the neck	03	6
Cord prolapsed	02	4

unbooked cases, whereas 34% were booked cases with minimum of 2 ANC visit (Fig. 1). IUFD was noted to be more common at term pregnancy, 48% followed by 22% at 28-32 weeks of gestation and 10% at less than 28 weeks of gestation (table 2). There were no preconceptional medical complication noted in 84% of cases, 6% has hypothyroidism and anemia, 4% had chronic hypertension and 2% had urinary tract infection (table 3). Among Maternal obstetric risk factors, 20 cases had identifiable maternal risk factors, of which 20% had Pre-eclampsia, 8% had APH (including one abruption placenta), 6% had gestational HTN, 4% had GDM, and 2% had obstetric cholestasis (table 4). Intra-partum findings of 3meconium stained liquor, 2 cases of anomalous baby, 3 cases of cord around the neck, 2 cases of cord prolapse and 1 case of IUGR were identified as fetal causes of IUFD (table 5).

Postpartum complications were recorded in 10 cases. 8% had postpartum hemorrhage and required blood transfusion, 8% had prolonged hospital stay because of uncontrolled blood pressure and 2 had deranged coagulation profile.

DISCUSSION

In this study done at Paropakar Maternity Women's Hospital, a total of 50 cases of mother with intrauterine fetal demise were recorded with a mean age of 28.54 (SD 5.542). There were total of 5153 deliveries in the hospital within three months, out of which there were 62 babies born after 20 weeks of gestation with no signs of life. After excluding 12 cases, 50 cases were enrolled in the study. The prevalence of IUFD was 1.2% (12.03 per 1000 births). Similarly in a study done at Kathmandu Medical College and Teaching Hospital in 2009 rate of IUFD was recorded to be 22.7 per 1000 births. In a study by Ashish et al. two case-control studies conducted between July 2012 and September 2013, on ante-partum and intra-partum IUFD separately showed an intrauterine fetal death demise rate of 17.6 per 1000 deliveries.[4,5]

Of the maternal characteristics in our study that were taken into analysis that may be of risk association, were maternal age and parity. Majority of the participants, 62% belonged to age group 21-30 years, 12% were from 31-35 years and 8% were more than 35 years of age. This is in accordance to the study by Dave et al. in which the maximum number of IUFD occurred in women of age group 21-29 (65%).[6] But this results slightly differs from result of similar study done by Ashish et al. in Kathmandu Medical College in, where percentage of stillbirth was 76% among 21-30 years, 11.6% among 30-35 years and 5% and 5.5% among extreme of age group less than 20 years and more than 35 years respectively.[5] In contrast to this, 18% incidence of still birth was recorded in age group < 20 years and 8% in > 35 years in this study. This difference noted may be due to the socioeconomic conditions or accessibility. The age of the youngest mother in our study was 15 years and the eldest mother was 39 years of age. The mean maternal age was 25.84. Extreme maternal age has been found, a common occurring factor, hence considered to be a risk factor in many other studies as well.[3,7]

However, study done by Archibong et al. shows a different distribution of age group in; 15% in teenage mothers and 17% elderly mothers, while 20% were of age 21-25 years and 29% were 26-30 years, which are 3-10% less than our results.[8] The reason behind difference in age distribution can be compared it with the general distribution of maternal age in the population.

Most of the studies shows substantial number of women with stillbirths has not undergone antenatal supervision. In a study done in India by Jindal et al. where out of total 94 IUFD cases, 65.97% of women were un-booked cases.[7]

Similarly, in a study done in Saudi Arabia by Archibong et al. of a total of 191 stillbirth cases, only 11.5% had antenatal care, while the rest 88.5% had no documented evidence of antenatal care in any medical facility.[8]

We found 48% of IUFD occurred in term pregnancies, 20% were late preterm of 33 to 36+6 weeks of gestation, 22% were early preterm of 28 to 32+6 weeks of gestation and 10% were extreme preterm of less than 28 weeks of gestation. Whilst 49 cases were singleton pregnancies, one was twin pregnancy with one twin live and another twin born stillbirth. The maximum (20%) of the IUFD weighed between (1000-1500 gram),(1500-2000 gram) and (2500-3000 gram), 16% weighed less than 1000 gram, 14% 2000-2500 gram and 10% more than 3000 grams. Among the total 50 IUFD, male sex was 28 (56%), which was higher than female sex 22(44%).

One of the major aim of this study was to find the risk factors of intrauterine fetal demise cases, but since there is no definite indicator of ante-partum or intra-partum IUFD, categorization and analysis of IUFD was done as fresh and macerated IUFD. The identifiable risk factors observed were, 10 cases of pre-eclampsia, 4 cases of ante-partum hemorrhage (3 cases of placenta previa and one case of abruption placenta), 3 cases of gestational hypertensive disorders, 3 cases meconium stained liquor, 3 cases of anemia, 3 cases of hypothyroidism, 3 cases of cord around the neck, 2 cases of chronic hypertension, 3 cases of cord prolapsed, 2 cases of anomalous baby, one case of obstetric cholestasis, one case of IUGR, and one case of UTI. Similar studies have shown that women with these risk factors are at high risk for poor fetal outcome and intrauterine fetal demise compared to those with no risks.[7,8]

As a result, the identifiable risk factors in this study, preeclampsia were the commonest (20%), followed by ante-partum hemorrhage (8%), gestational hypertension, meconium stained liqor, anemia, hypothyroidism, cord around the neck each (6%), gestational diabetes mellitus, Cord prolapsed, anomalous baby, chronic hypertension each (4%), whereas intrauterine growth restriction, obstetric cholestasis and urinary tract infection, each (2%).

A study by Owais et al. on risk factors for IUFD and neonatal mortality, it was seen that ante-partum hemorrhage was one of the main risk factors for IUFD and strongly associated with increased risk of neonatal death.[9] Many studies have stated hypertensive disorders of the pregnancy to be a most common risk factor of IUFD.[3,10,11] While the second most common factor varies; in Jindal et al. severe IUGR, in Rathava et al. Abruptio placenta, in Divya et al. it was Hypothyroidism.[7,10,11] This variation may be as general common factors among pregnant in different regions. In a study by Kumar et al. done in Banglore in 2017, the most common factor was congenital anomaly, followed by hypertensive disorders of pregnancy and abruption placenta.[12]

In our study at PMWH, onset of labor was spontaneous in 26%, while 50% need induction. Induction of labor was done with Misoprostol and its dose varied according to gestational age. Whereas in a study done by Singh et al. 37.5% patient underwent spontaneous labour and 50.01% needed induction of labor, which was similar to our study.[13]

Similarly, 74% of cases had vaginal delivery, 24% underwent caesarean section and 2% had instrumental delivery. This varies by study done by Jamal et al. where 84.82% had vaginal delivery and 15.82% had operative delivery.[14] The major indication for caesarean section in our study group was history of previous cesarean delivery.

Most of the women, 74% had uneventful delivery and all were discharged after 24-48 hours of the vaginal delivery. Whereas 26% had prolonged hospital stay from 4-10 days, most of them were the women who had caesarean section. Those with prolonged stay beyond 7 days were HELLP syndrome and pre-eclampsia cases. Maternal caesarean section and co-morbidities were reasons for prolonged hospitalization.

The sample size in our study was relatively smaller that had impact in our result. Also the time frame was relatively short. Lack of investigations such as placental histopathology amd post mortem of the fetus would have helped in determing the cause of unexplained intrauterine fetal death. Lack of pre-conceptional awareness was also seen.

CONCLUSION

This study concluded that maximum number of IUFD was seen antenatally, as 78% of cases were found macerated. The commonest identified risk factor was pregnancy induced hypertension, followed by ante-partum hemorrhage, anemia, hypothyroidism, which seems to be preventable risk factors of IUFD. Unidentified risk factors are of greatest challenges for the obstetrician till date. By determining the cause of IUFD the chances of recurrence can be reduced and further pregnancy complications can be prevented.

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